NATIONAL BANK

ANNUAL REPORT 2019

At a Glance

Founded in 1859, National Bank of Canada offers financial services to individuals, businesses, institutional clients and governments across Canada. We are one of Canada's six systemically important banks and among the most profitable banks on a global basis by return on equity.

We operate through three business segments in Canada—Personal and Commercial Banking, Wealth Management and Financial Markets—which represent our main sources of revenue. A fourth segment—U.S. Specialty Finance and International—complements the growth of our domestic operations.

We are a leading bank in our core Quebec market and also hold leadership positions across the country in selected activities.

We strive to meet the highest standards of social responsibility while creating value for our shareholders. We are proud to be recognized as an employer of choice and for promoting diversity and inclusion.

We are headquartered in Montreal, and our securities are listed on the Toronto Stock Exchange (TSX: NA).

2.7 million Clients[(1)]

25,487 Employees[(2)]

495 Branches[(3)]

1,480 Banking Machines[(4)]

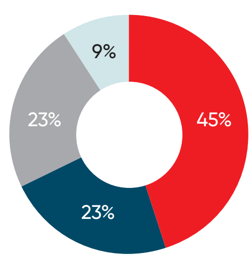
$565 B Assets under Administration and under Management

$281 B Total Assets

$7,432 M Total Revenues

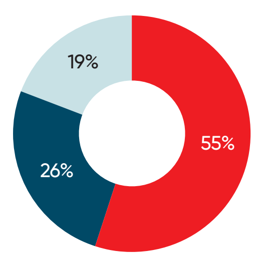
$2,322 M Net Income

$22.7 B Market Capitalization



2019 Total Revenues by Business Segment[(5)]

- Personal and Commercial
- Wealth Management
- Financial Markets
- U.S. Specialty Finance and International



2019 Total Revenues by Geographic Distribution[(5)]

- Province of Quebec
- Other Canadian provinces
- Outside of Canada

(1) Clients of the Personal and Commercial segment
(2) Worldwide
(3) 422 in Canada, 70 in Cambodia and 3 in the United States (Florida)
(4) 939 in Canada and 541 in Cambodia
(5) Excluding the *Other* heading

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Investing in National Bank

Strong Earnings Growth[1]
2015–2019 / CAGR[2]

+8.9%

Consistent Dividend Growth[3]
2015–2019 / CAGR[2]

+6.9%

Solid Capital Position[4]
As at October 31, 2019

11.7%

- Canadian super-regional bank with leading franchise in core Quebec market
  - Favourable economic conditions in both Quebec and Canada
- Targeted growth strategy across Canada and focused international strategy delivering high returns
- Transformation driving efficiencies and enhanced customer experience
- Strong credit quality supported by sound geographic and product diversification
- Strong capital position providing flexibility
- Industry-leading ROE[5]
- Attractive dividend yield and consistent annual dividend growth
- Track record of delivering superior total shareholder returns

2019 RETURN ON EQUITY **18.0%**

Industry-Leading Total Shareholder Returns (CAGR[2])

(for the periods ended October 31, 2019)

	National Bank	Canadian Peers[6]	TSX	Ranking[7]
1 year	**18.9%**	8.4%	13.1%	**#1**
3 years	**17.1%**	9.4%	7.1%	**#1**
10 years	**13.9%**	11.4%	7.4%	**#1**

(1) Based on diluted earnings per share
(2) Compound annual growth rate
(3) Based on annual dividends per common share
(4) Common Equity Tier 1 (CET1) capital ratio
(5) Based on adjusted ROE as reported by Canadian peers, including Bank of Montreal, Canadian Imperial Bank of Commerce, Royal Bank of Canada, Bank of Nova Scotia and Toronto-Dominion Bank
(6) Includes Bank of Montreal, Canadian Imperial Bank of Commerce, Royal Bank of Canada, Bank of Nova Scotia and Toronto-Dominion Bank
(7) Among Canadian peers, as defined above

Financial Overview

Medium-Term Objectives and 2019 Results

	Medium-term objectives	2019 results
Growth in diluted earnings per share excluding specified items[1]	5–10%	7.1%
ROE excluding specified items[1]	15–20%	18.0%
Dividend payout ratio excluding specified items[1]	40–50%	41.6%
CET1 capital ratio	> 10.75%	11.7%
Leverage ratio	> 3.75%	4.0%

Financial Highlights

As at October 31 or for the year ended October 31 (millions of Canadian dollars, except per share amounts)	2019	2018	% change
Operating results			
Total revenues	**7,432**	7,166	**4**
Net income	**2,322**	2,232	**4**
Diluted earnings per share	**$ 6.34**	$ 5.94	**7**
Return on common shareholders' equity	**18.0 %**	18.4 %	
Operating results on a taxable equivalent basis and excluding specified items[1]			
Total revenues on a taxable equivalent basis and excluding specified items	**7,666**	7,411	**3**
Net income excluding specified items	**2,328**	2,232	**4**
Diluted earnings per share excluding specified items	**$ 6.36**	$ 5.94	**7**
Return on common shareholders' equity excluding specified items	**18.0 %**	18.4 %	
Dividend payout ratio excluding specified items	**42 %**	41 %	
Efficiency ratio on a taxable equivalent basis and excluding specified items	**54.5 %**	54.8 %	
Dividends declared	**$ 2.66**	$ 2.44	**9**
Total assets	**281,458**	262,471	**7**
Regulatory ratios under Basel III			
Common Equity Tier 1 (CET1) capital ratio	**11.7 %**	11.7 %	
Leverage ratio	**4.0 %**	4.0 %	
Liquidity coverage ratio (LCR)	**146 %**	147 %	

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Message From the President and Chief Executive Officer

Another Strong Year for National Bank

Fiscal 2019 was another strong year for National Bank. Across the Bank, we achieved solid business growth and record profitability. Our performance reflects our commitment to delivering consistent value to all stakeholders: our clients, our employees, our shareholders and our communities.

In 2019, we generated diluted earnings per share of $6.34, up 7% from last year, and we met all of our medium-term objectives. Our credit quality is excellent, reflecting our prudent approach to lending. Our transformation translated into further improvements in our efficiency ratio. Again this year, we delivered an industry-leading return on equity of 18.0%.

National Bank's share price reached new highs in 2019, and the Bank is in the unique position of having delivered industry-leading compound annual total shareholder returns of 18.9%, 17.1%, 13.9% and 15.1% over the one, three, ten and twenty-year periods, respectively.

National Bank's share price reached new highs in 2019, and the Bank is in the unique position of having delivered industry-leading compound annual total shareholders returns, [...]

Our capital deployment strategy is clear and remains unchanged. Our top priority is to maintain strong capital levels, providing us with the flexibility to invest in growth initiatives in our core markets and to return capital to shareholders. In 2019, we raised our dividend by 9% and returned $281 million of additional capital through share repurchases.

Well-Positioned for Growth

As a Canadian super-regional bank with a leading franchise in Quebec, we continue to benefit from favourable economic conditions both in our home province and across Canada. The Quebec economy remains strong, with historically low unemployment rates, sound public finances and housing affordability well above the national average.

At this point of the economic cycle, we remain very comfortable with our business positioning and our prudent approach to risk. As we are entering a new year, we will maintain our overweight positions in the province of Quebec as well as in secured lending, which we view as favourable in the current environment. We will also continue to strive to achieve the right balance between volume growth, healthy margins, and strong credit quality. Our overall objective is to position the Bank to perform well through the cycle.

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Our Personal and Commercial Banking segment is benefitting from our strong market position in Quebec. In the retail market, we are deepening relationships with clients, focusing on advice and leveraging our digital platforms to create a compelling and secure client experience, which drives customer loyalty and acquisition. In Commercial Banking, we are pursuing a focused growth strategy across Canada in specialized markets, harnessing our recognized strengths in healthcare, agriculture, technology, creative industries and real estate.

As a leading franchise in Quebec and firmly established in Canada, we are pleased with the differentiated positioning of our Wealth Management segment. With a focus on distribution, our open-architecture model responds to client needs for choice and unbiased advice. We are proud to be the Canadian leader in providing administrative services to independent asset managers.

Our Financial Markets segment is a strong pillar for the Bank. Our established leadership in selected niches across Canada is underpinned by our entrepreneurial culture, our differentiated business mix and our flexible approach to capital allocation. We continue to invest in our franchise to further our presence domestically and capitalize on targeted opportunities abroad.

We are very satisfied with the overall performance of our international strategy, which generates strong growth and superior returns. Both Credigy in the U.S. and ABA Bank in Cambodia have greatly exceeded our expectations, and we continue to see attractive growth potential for each platform. Looking ahead, our efforts and capital dedicated to international markets will be concentrated on these two successful subsidiaries.

Message From the President and Chief Executive Officer (cont.)

People and Culture: A Competitive Advantage

At a time of profound change, we believe that people and culture are the cornerstone of our long-term success. Our entrepreneurial culture, deeply rooted within the organization, is a key differentiator in the way we transform the Bank, serve our clients, and attract people with the right skills and values. Our evolution as an agile organization goes hand-in-hand with our digital transformation—all essential components to delivering superior customer experience, sustainable revenue growth and higher operating efficiency.

At National Bank, we are putting People First.

In 2019, we adjusted our mission statement to respond to the rapid evolution of our operating environment. At National Bank, we are putting People First. We believe that building long-term relationships with our clients, our employees and our communities is key to creating sustainable long-term value for all stakeholders.

Ensuring Long-Term Sustainability

The long-term sustainability of an institution like ours depends on the ability to maintain a healthy balance between the interests of all stakeholders. As a proud founding signatory of the UN Principles for Responsible Banking and joining the UN Principle for Responsible Investment in 2019, we are putting the full strength of our organization behind our environmental, social and governance guiding principles with the aim to develop a green economy, enrich our communities, and uphold the highest standards in corporate governance. How we achieve success is crucial and our principles must translate into tangible action. As we look forward, we are more committed than ever to maximizing the positive impact of our actions to the benefit of our clients, employees, communities and shareholders.

Moving Forward With Confidence

As we embark on a new year, I look to the future with cautious optimism. The outlook in Quebec remains favourable and we continue to take advantage of Canada's broader economic soundness. Our credit quality is excellent, our capital ratios are strong, and disciplined cost management remains a priority throughout the organization. In an environment of macroeconomic and geopolitical uncertainties, we are comfortable with our current positioning and we remain vigilant in balancing our objectives of sustainable growth with prudent risk management.

As we mark our 160th anniversary, I am proud of the Bank's influential role in the economic and social development of Quebec and Canada. I wish to sincerely thank my colleagues of the Office of the President for their leadership and our more than 25,000 employees for their contribution in achieving our mission each day. I thank the Board of Directors for its judicious counsel and support. I also thank our 2.7 million clients and our shareholders for their trust and continued support. We have the right team in place to ensure the Bank's long-term success and truly live our mission of putting People First.

Louis Vachon
President and Chief Executive Officer

Members of the Office of the President

Louis Vachon
President and Chief Executive Officer

Stéphane Achard
Executive Vice-President,
Commercial Banking and Insurance

Lucie Blanchet
Executive Vice-President,
Personal Banking and Client Experience

William Bonnell
Executive Vice-President,
Risk Management

Dominique Fagnoule
Executive Vice-President,
Information Technology

Laurent Ferreira
Executive Vice-President and
Co-Head, Financial Markets

Martin Gagnon
Executive Vice-President,
Wealth Management;
Co-President and Co-Chief Executive
Officer, National Bank Financial

Nathalie Généreux
Executive Vice-President,
Operations

Denis Girouard
Executive Vice-President and
Co-Head, Financial Markets

Brigitte Hébert
Executive Vice-President,
Employee Experience

Ghislain Parent
Chief Financial Officer and Executive
Vice-President, Finance

Message From the Chairman of the Board

National Bank celebrated its 160th anniversary in 2019, and the Board is truly proud of its heritage and rich history. Over the last century and a half, the Bank has successfully evolved and made positive contributions to the economic and social development of its communities.

Against this backdrop, the Board is very pleased with the Bank's strong performance in 2019 and with the continued execution of its strategy. The Bank has demonstrated, once again, its capacity to create tangible value for all stakeholders: its clients, employees, communities and shareholders.

Strategic Oversight

As stewards of the Bank, the Board plays a critical and active role in overseeing the sound execution of the Bank's strategy to ensure its long-term success. The Board participates in annual strategic reviews with the senior leadership team and in monitoring the progress of the Bank's initiatives and key performance indicators.

In order to provide sound guidance to management, the Board remains at the forefront of new realities facing the financial services industry and stays abreast of emerging technologies and other innovations. The Board also continues to engage meaningfully with stakeholders, including shareholders, to always keep its finger on the pulse of its industry.

Focused on Talent and Culture

The Board works closely with management to ensure talent development. Succession planning is also a key Board responsibility, and we have great confidence in the strength of the leadership team and a solid pipeline of talent across the Bank.

People and culture are the cornerstone of the Bank's long-term success. As the banking industry evolves in an ever-changing environment, a strong entrepreneurial culture with the ability to adapt rapidly have become competitive advantages in the pursuit of our transformation.

Strong Risk Management Culture

The Board champions a strong risk management culture, strengthened through active compliance, controls, and audits across all business lines. The Board assesses the soundness of business opportunities against the Bank's risk management framework, which considers both financial and non-financial risks.

In 2019, cybersecurity remained a key priority for the Board, and the Bank continued its significant investments in this critical aspect of our industry. Protecting client information is of the utmost importance, and risk-reduction strategies are continually being assessed by the Board.

Best-in-Class Board Governance

Leadership in the area of governance is fundamental. We have a strong Board, thanks to the active engagement of its dedicated members who put forth diverse perspectives, backgrounds, and expertise, all critical to strong oversight.

To ensure that the Board's composition is both aligned with and can anticipate the Bank's ever-evolving needs, we remain proactive in promoting the highest standards of board renewal and committee chair rotations. In 2019, we welcomed Patricia Curadeau-Grou to the Board, a National Bank alumna who brings deep knowledge of the banking industry and solid expertise in finance and risk management.

Embedding ESG Principles Into our Decision-Making

The Bank recognizes that its long-term success is directly tied to its ability to create sustainable value for all stakeholders.

Corporate responsibility and ethical standards have always been embedded into the Bank's culture. The Board understands the increasing importance of environmental, social, and governance (ESG) factors to all stakeholders. In 2019, we made significant progress in this regard, with the development and formal adoption of the Bank's ESG principles by the Board.

Ready for the Future

On behalf of the Board, I would like to thank Louis Vachon and our executive team for their leadership and lasting contributions. I would also like to thank the Bank's more than 25,000 employees for their unwavering commitment and for being dedicated Bank ambassadors in their communities. Our passion for people has allowed us to successfully build lasting relationships for the past 160 years, and we look forward to continuing to do so in the future.

I wish to conclude by thanking our customers for their loyalty, our shareholders for their support, and all our stakeholders for the confidence they continue to manifest in National Bank.

Jean Houde
Chairman of the Board of Directors

For more information regarding the Bank's governance, please refer to the *Statement of Corporate Practices* available on the Bank's website at nbc.ca.

Members of the Board of Directors

Jean Houde
Montreal, Quebec, Canada
Chairman of the Board of Directors,
National Bank of Canada
and Corporate Director
Director since March 2011

Raymond Bachand
Montreal, Quebec, Canada
Strategic Advisor,
Norton Rose Fulbright Canada LLP
and Corporate Director
Director since October 2014

Maryse Bertrand
Westmount, Quebec, Canada
Corporate Director
Director since April 2012

Pierre Blouin
Town of Mount-Royal, Quebec, Canada
Corporate Director
Director since September 2016

Pierre Boivin
Montreal, Quebec, Canada
President and Chief Executive Officer,
Claridge inc.
Director since April 2013

Patricia Curadeau-Grou
Montreal, Quebec, Canada
Corporate Director
Director since April 2019

Gillian H. Denham
Toronto, Ontario, Canada
Corporate Director
Director since October 2010

Karen Kinsley
Ottawa, Ontario, Canada
Corporate Director
Director since December 2014

Rebecca McKillican
Oakville, Ontario, Canada
Chief Retail Officer,
McKesson Canada
Director since October 2017

Robert Paré
Westmount, Quebec, Canada
Strategic Advisor,
Fasken Martineau DuMoulin LLP
and Corporate Director
Director since April 2018

Lino A. Saputo Jr.
Montreal, Quebec, Canada
Chief Executive Officer and
Chairman of the Board of Directors,
Saputo Inc.
Director since April 2012

Andrée Savoie
Dieppe, New Brunswick, Canada
President and Chair of the
Board of Directors,
Acadian Properties Ltd.
Director since April 2015

Pierre Thabet
St-Georges, Quebec, Canada
President, Boa-Franc inc.
Director since March 2011

Louis Vachon
Beaconsfield, Quebec, Canada
President and Chief Executive Officer,
National Bank of Canada
Director since August 2006

Board Committees

Audit Committee
Karen Kinsley *(Chair)*
Maryse Bertrand
Pierre Blouin
Andrée Savoie
Pierre Thabet

Human Resources Committee
Pierre Boivin *(Chair)*
Maryse Bertrand
Pierre Blouin
Gillian H. Denham
Rebecca McKillican

Risk Management Committee
Pierre Thabet *(Chair)*
Raymond Bachand
Patricia Curadeau-Grou
Karen Kinsley
Lino A. Saputo Jr.

Conduct Review and Corporate Governance Committee
Lino A. Saputo Jr. *(Chair)*
Raymond Bachand
Jean Houde
Robert Paré
Andrée Savoie

OUR ONE MISSION

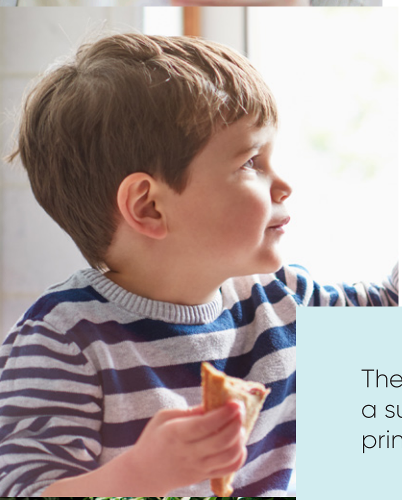
We exist to have a **POSITIVE IMPACT** in people's lives.

By building ***long-term relationships*** with our clients, employees and communities.

People first.

Integral to our one mission is support for **sustainable development**.

We incorporate **environmental**, **social**, and **governance** matters into our business and operating decisions.



The Board of Directors has approved a sustainable development framework and principles that inspire our thoughts and actions.

The Bank's Commitments

This past year, National Bank signed some major agreements:

- One of the first North American signatories to the United Nations' Principles for Responsible Banking
- United Nations' Global Standards of Conduct for Business: Tackling Discrimination Against Lesbian, Gay, Bi, Trans and Intersex People (LGBTI)
- United Nations Environment Programme Finance Initiative (UNEPFI)
- National Bank Investments: Signatory to the United Nations' Principles for Responsible Investment (PRI)

National Bank supports the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD). The Bank has therefore agreed to include, as part of its disclosure activities, information on the various questions addressed by this group. In addition, in collaboration with banking industry partners, the Bank is working to develop a relevant disclosure methodology.

The Bank is committed to having a positive impact on people's lives. Our principles reflect the importance of striking a balance among society's stakeholders.

We are working to develop a green economy

1. We consider the fight against climate change in our economic and community actions
2. We guide and advise our clients in their energy transition
3. We manage and reduce our environmental footprint in all of our business segments

We enrich communities

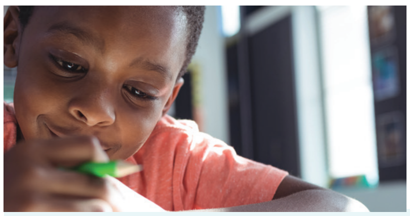
4. We maximize the potential of individuals and the community
5. We promote inclusion and diversity
6. We foster entrepreneurship, financial literacy, philanthropy, and support for health and education

We govern according to the highest standards

7. We promote a strong ethics culture, sound governance practices, and rigorous risk management
8. We manage according to responsible business practices
9. We ensure the long-term viability of the institution

Key United Nations sustainable development goals covered by our principles

Our Accomplishments



Environmental

We are working to develop a green economy

- Renewable energy loan portfolio growing faster than the non-renewable energy portfolio in support of the energy transition
- Equal investment allocated to the renewable and non-renewable energy sectors
- Multi-award winning energy efficiency program
- Several LEED® certifications
- New head office designed to meet the highest standards of sustainable construction and occupant health and well-being (LEED v4 Gold certification)
- External disclosure of a framework for issuing NBC Sustainability Bonds, an environmental policy, and a code of supplier conduct
- Completion of four sustainability bond issuances, including the first international issuance of USD Sustainability Bonds by a North American bank
- Assets under management governed by National Bank Investments' OP4+ process: 95% (↑) of our fund managers meet the Principles for Responsible Investment
- Several initiatives put in place by the Positive Environmental Impact Committee (end of purchase of disposable water bottles, eco-friendly lunches, etc.)

Social

We enrich communities

Helping our clients power their ideas

- Leading-edge digital and mobile banking solutions and many specialized services
- New branch concepts where advice and technology converge
- Active participation in developing the entrepreneurial ecosystem

Supporting the community

- Many millions of dollars paid to the community in the form of donations and sponsorships and through fundraisers
- Hundreds of organizations supported Canada-wide
- Committed to enhancing the impact of our social investments

Stimulating economic development

- $121 million invested in our facilities
- $1.1 billion spent on goods and services

Promoting diversity and inclusion

- Listed in the 2019 Bloomberg Gender-Equality Index
- Active support of women, cultural communities, and the LGBTQ+ community
- Listed as one of Canada's Best Diversity Employers for many years

Governance

We govern according to the highest standards

- Mandates of the Conduct Review and Corporate Governance Committee, the Audit Committee, and the Risk Management Committee include ESG-related responsibilities
- Policy regarding diversity on the Board of Directors (diversity of gender, age, designated groups, sexual orientation, ethnocultural groups, and geographic origins)
- Listed in the 2019 FTSE4 Good Index of ethical companies recognized for social responsibility

For more information: **nbc.ca**

Risk Disclosures

In 2012, the Financial Stability Board (FSB) formed a working group, the Enhanced Disclosure Task Force (EDTF), that was mandated to develop principles for enhancing the risk disclosures of major banks, to recommend improvements to current risk disclosures, and to identify risk disclosure best practices used by major financial institutions. The EDTF published a report entitled *Enhancing the Risk Disclosures of Banks*, which contains 32 recommendations. The Bank makes every effort to ensure overall compliance with those recommendations and is continuing to enhance its risk disclosures to meet the best practices on an ongoing basis. The risk disclosures required by the EDTF are provided in this Annual Report and in the document entitled *Supplementary Regulatory Capital and Pillar 3 Disclosure* available on the Bank's website at nbc.ca.

		Pages	
		Annual Report	Supplementary Regulatory Capital and Pillar 3 Disclosure(1)
General			
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	Management's Discussion and Analysis	50 to 94, 107, 109 and 110	
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(1) Fourth quarter 2019.
(2) These pages are included in the document entitled *Supplementary Financial Information – Fourth Quarter 2019.*

Management's Discussion and Analysis

December 3, 2019

The following Management's Discussion and Analysis (MD&A) presents the financial condition and operating results of National Bank of Canada (the Bank). This analysis was prepared in accordance with the requirements set out in *National Instrument 51-102*, *Continuous Disclosure Obligations*, released by the Canadian Securities Administrators (CSA). It is based on the audited annual consolidated financial statements for the year ended October 31, 2019 (the consolidated financial statements) and prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB), unless otherwise indicated. IFRS represent Canadian generally accepted accounting principles (GAAP). This MD&A should be read in conjunction with the consolidated financial statements and accompanying notes for the year ended October 31, 2019. All amounts are presented in Canadian dollars. Additional information about the Bank, including the *Annual Information Form*, can be obtained from the Bank's website at nbc.ca and SEDAR's website at sedar.com.

Caution Regarding Forward-Looking Statements

From time to time, the Bank makes written and oral forward-looking statements, such as those contained in the Economic Review and Outlook section of this Annual Report, in other filings with Canadian securities regulators, and in other communications, for the purpose of describing the economic environment in which the Bank will operate during fiscal 2020 and the objectives it hopes to achieve for that period. These forward-looking statements are made in accordance with current securities legislation in Canada and the United States. They include, among others, statements with respect to the economy—particularly the Canadian and U.S. economies—market changes, observations regarding the Bank's objectives and its strategies for achieving them, Bank-projected financial returns and certain risks faced by the Bank. These forward-looking statements are typically identified by future or conditional verbs or words such as "outlook," "believe," "anticipate," "estimate," "project," "expect," "intend," "plan," and similar terms and expressions.

By their very nature, such forward-looking statements require assumptions to be made and involve inherent risks and uncertainties, both general and specific. Assumptions about the performance of the Canadian and U.S. economies in 2020 and how that will affect the Bank's business are among the main factors considered in setting the Bank's strategic priorities and objectives and in determining its financial targets, including provisions for credit losses. In determining its expectations for economic growth, both broadly and in the financial services sector in particular, the Bank primarily considers historical economic data provided by the Canadian and U.S. governments and their agencies.

There is a strong possibility that express or implied projections contained in these forward-looking statements will not materialize or will not be accurate. The Bank recommends that readers not place undue reliance on these statements, as a number of factors, many of which are beyond the Bank's control, could cause actual future results, conditions, actions or events to differ significantly from the targets, expectations, estimates or intentions expressed in the forward-looking statements. These factors include credit risk, market risk, liquidity and funding risk, operational risk, regulatory compliance risk, reputation risk, strategic risk and environmental risk, all of which are described in more detail in the Risk Management section beginning on page 58 of this Annual Report, and more specifically, general economic environment and financial market conditions in Canada, the United States and certain other countries in which the Bank conducts business, including regulatory changes affecting the Bank's business; changes in the accounting policies the Bank uses to report its financial condition, including uncertainties associated with assumptions and critical accounting estimates; tax laws in the countries in which the Bank operates, primarily Canada and the United States (including the U.S. *Foreign Account Tax Compliance Act* (FATCA)); changes to capital and liquidity guidelines and to the manner in which they are to be presented and interpreted; changes to the credit ratings assigned to the Bank; and potential disruptions to the Bank's information technology systems, including evolving cyberattack risk.

The foregoing list of risk factors is not exhaustive. Additional information about these factors can be found in the Risk Management section of this Annual Report. Investors and others who rely on the Bank's forward-looking statements should carefully consider the above factors as well as the uncertainties they represent and the risk they entail. Except as required by law, the Bank does not undertake to update any forward-looking statements, whether written or oral, that may be made from time to time, by it or on its behalf.

The forward-looking information contained in this document is presented for the purpose of interpreting the information contained herein and may not be appropriate for other purposes.

Financial Reporting Method

As stated in Note 1 to the consolidated financial statements, the Bank adopted IFRS 15 on November 1, 2018. As permitted by IFRS 15, the Bank did not restate comparative consolidated financial statements, and Note 1 to the consolidated financial statements presents the impact of IFRS 15 adoption on the Bank's Consolidated Balance Sheet as at November 1, 2018.

The presentation of segment disclosures is consistent with the presentation adopted by the Bank for the year beginning November 1, 2018. This presentation reflects the fact that advisor banking service activities, which had previously been presented in the Wealth Management segment, are now presented in the Personal and Commercial segment. The Bank made this change to better align the monitoring of its activities with its management structure.

Non-GAAP Financial Measures

The Bank uses a number of financial measures when assessing its results and measuring its overall performance. Some of these financial measures are not calculated in accordance with GAAP, which are based on IFRS. Presenting non-GAAP financial measures helps readers to better understand how management analyzes results, shows the impacts of specified items on the results of the reported periods, and allows readers to assess results without the specified items if they consider such items not to be reflective of the underlying performance of the Bank's operations. Securities regulators require companies to caution readers that non-GAAP measures do not have a standardized meaning under GAAP and therefore may not be comparable to similar measures used by other companies.

Like many other financial institutions, the Bank uses the taxable equivalent basis to calculate net interest income, non-interest income and income taxes. This calculation method consists of grossing up certain tax-exempt income (particularly dividends) by the income tax that would have been otherwise payable. An equivalent amount is added to income taxes. This adjustment is necessary in order to perform a uniform comparison of the return on different assets regardless of their tax treatment.

The specified items related to the acquisitions of recent years (mainly those of the Wealth Management segment) are no longer presented as specified items as of November 1, 2018, since the amounts are not considered significant. The figures for the year ended October 31, 2018 reflect this change.

Reconciliation of Non-GAAP Financial Measures

Year ended October 31 (millions of Canadian dollars)	Personal and Commercial	Wealth Management	Financial Markets	USSF&I	Other	2019	2018[1]
Net interest income	2,383	469	283	656	(195)	3,596	3,382
Taxable equivalent	–	1	191	–	3	195	144
Net interest income on a taxable equivalent basis	2,383	470	474	656	(192)	3,791	3,526
Non-interest income	1,069	1,273	1,141	59	294	3,836	3,784
Taxable equivalent	–	–	135	–	–	135	101
Gain on disposal of Fiera Capital shares[2]	–	–	–	–	(79)	(79)	–
Gain on disposal of premises and equipment[3]	–	–	–	–	(50)	(50)	–
Remeasurement at fair value of an investment[4]	–	–	–	–	33	33	–
Non-interest income on a taxable equivalent basis and excluding specified items	1,069	1,273	1,276	59	198	3,875	3,885
Total revenues on a taxable equivalent basis and excluding specified items	3,452	1,743	1,750	715	6	7,666	7,411
Non-interest expenses	1,816	1,067	743	285	390	4,301	4,063
Impairment losses on premises and equipment and on intangible assets[5]	–	–	–	–	(57)	(57)	–
Provisions for onerous contracts[6]	–	–	–	–	(45)	(45)	–
Charge related to Maple[7]	–	–	–	–	(11)	(11)	–
Severance pay[8]	–	–	–	–	(10)	(10)	–
Non-interest expenses excluding specified items	1,816	1,067	743	285	267	4,178	4,063
Contribution on a taxable equivalent basis and excluding specified items	1,636	676	1,007	430	(261)	3,488	3,348
Provisions for credit losses	237	–	30	80	–	347	327
Income before income taxes on a taxable equivalent basis and excluding specified items	1,399	676	977	350	(261)	3,141	3,021
Income taxes	372	176	(66)	71	(91)	462	544
Taxable equivalent	–	1	326	–	3	330	245
Income taxes on the gain on disposal of Fiera Capital shares[2]	–	–	–	–	(11)	(11)	–
Income taxes on the gain on disposal of premises and equipment[3]	–	–	–	–	(7)	(7)	–
Income taxes on the remeasurement at fair value of an investment[4]	–	–	–	–	6	6	–
Income taxes related to impairment losses on premises and equipment and on intangible assets[5]	–	–	–	–	15	15	–
Income taxes on provisions for onerous contracts[6]	–	–	–	–	12	12	–
Income taxes on the charge related to Maple[7]	–	–	–	–	3	3	–
Income taxes on severance pay[8]	–	–	–	–	3	3	–
Income taxes on a taxable equivalent basis and excluding specified items	372	177	260	71	(67)	813	789
Net income excluding specified items	1,027	499	717	279	(194)	2,328	2,232
Specified items after income taxes	–	–	–	–	(6)	(6)	–
Net income	1,027	499	717	279	(200)	2,322	2,232
Non-controlling interests	–	–	–	40	26	66	87
Net income attributable to the Bank's shareholders	1,027	499	717	239	(226)	2,256	2,145

(1) For the year ended October 31, 2018, certain amounts have been reclassified, mainly amounts related to advisor banking service activities, which have been transferred from the Wealth Management segment to the Personal and Commercial segment.
(2) During the year ended October 31, 2019, following the Bank's disposal of a portion of its investment in Fiera Capital Corporation (Fiera Capital) the Bank recorded a gain on disposal of $79 million ($68 million net of income taxes), including a gain of $31 million ($27 million net of income taxes) upon remeasurement at fair value of the retained interest.
(3) During the year ended October 31, 2019, the Bank completed the sale of its head office land and building located at 600 De La Gauchetière Street West, Montreal, Quebec, Canada, for gross proceeds of $187 million, and a gain on disposal of premises and equipment of $50 million ($43 million net of income taxes) was recorded.
(4) During the year ended October 31, 2019, the Bank remeasured at fair value its investment in NSIA Participations (NSIA) and recorded a loss of $33 million ($27 million net of income taxes).
(5) During the year ended October 31, 2019, the Bank recorded $57 million ($42 million net of income taxes) in impairment losses on premises and equipment and on intangible assets related to computer equipment and technology developments.
(6) During the year ended October 31, 2019, the Bank reviewed all of its corporate building leases and recorded provisions for onerous contracts of $45 million ($33 million net of income taxes).
(7) During the year ended October 31, 2019, the Bank recorded a charge of $11 million ($8 million net of income taxes) related to the company Maple Financial Group Inc. (Maple) following the event of November 19, 2019, as described in the section entitled Event After the Consolidated Balance Sheet on page 47.
(8) During the year ended October 31, 2019, following an optimization of certain organizational structures, the Bank recorded $10 million ($7 million net of income taxes) in severance pay.

Financial Disclosure

Disclosure Controls and Procedures

The Bank's financial information is prepared with the support of a set of disclosure controls and procedures (DC&P) that are implemented by the President and Chief Executive Officer (CEO) and by the Chief Financial Officer and Executive Vice-President, Finance (CFO). During the year ended October 31, 2019, in accordance with *Regulation 52-109 Respecting Certification of Disclosure in Issuers' Annual and Interim Filings* (Regulation 52-109), released by the CSA, the design and operation of these controls and procedures were evaluated to determine their effectiveness.

As at October 31, 2019, the CEO and the CFO confirmed the effectiveness of the DC&P. These controls are designed to provide reasonable assurance that the information disclosed in annual and interim filings and in other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified by that legislation. These controls and procedures are also designed to ensure that such information is accumulated and communicated to the Bank's management, including its signing officers, as appropriate, to allow for timely decisions regarding disclosure.

This Annual Report was reviewed by the Disclosure Committee, the Audit Committee, and the Bank's Board of Directors (the Board), which approved it prior to publication.

Internal Controls Over Financial Reporting

The internal controls over financial reporting (ICFR) are designed to provide reasonable assurance that the financial information presented is reliable and that the consolidated financial statements were prepared in accordance with GAAP, which are based on IFRS, unless indicated otherwise as explained on pages 14 and 15 of this MD&A. Due to inherent limitations, the ICFR may not prevent or detect all misstatements in a timely manner.

The CEO and the CFO oversaw the evaluation work performed on the design and operation of the Bank's ICFR in accordance with Regulation 52-109. These controls were evaluated in accordance with the control framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO — 2013) for financial controls and in accordance with the control framework of the *Control Objectives for Information and Related Technologies* (COBIT) for general information technology controls.

Based on the evaluation results, the CEO and CFO concluded, as at October 31, 2019, that there are no material weaknesses, that the ICFR are effective and provide reasonable assurance that the financial reporting is reliable, and that the Bank's consolidated financial statements were prepared in accordance with GAAP.

Changes to Internal Controls Over Financial Reporting

The CEO and CFO also undertook work whereby they were able to conclude that, during the year ended October 31, 2019, no changes were made to the ICFR that have materially affected, or are reasonably likely to materially affect, the design or operation of the ICFR.

Disclosure Committee

The Disclosure Committee assists the CEO and CFO by ensuring that disclosure controls and procedures and internal control procedures for financial reporting are implemented and operational. In so doing, the committee ensures that the Bank is meeting its disclosure obligations under current regulations and that the CEO and CFO are producing the requisite certifications.

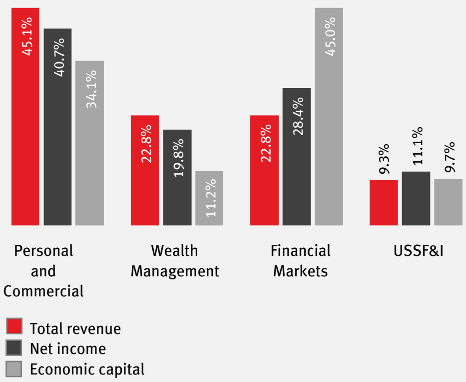
Overview

Highlights

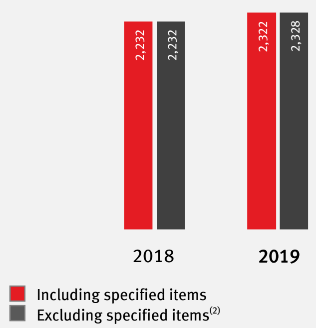
As at October 31 or for the year ended October 31 (millions of Canadian dollars, except per share amounts)	2019	2018	% change
Operating results			
Total revenues	7,432	7,166	4
Net income	2,322	2,232	4
Net income attributable to the Bank's shareholders	2,256	2,145	5
Return on common shareholders' equity	18.0 %	18.4 %	
Dividend payout ratio	42 %	41 %	
Earnings per share			
Basic	$ 6.39	$ 6.01	6
Diluted	6.34	5.94	7
Operating results on a taxable equivalent basis and excluding specified items(1)			
Total revenues on a taxable equivalent basis and excluding specified items	7,666	7,411	3
Net income excluding specified items	2,328	2,232	4
Return on common shareholders' equity excluding specified items	18.0 %	18.4 %	
Dividend payout ratio excluding specified items	42 %	41 %	
Efficiency ratio on a taxable equivalent basis and excluding specified items	54.5 %	54.8 %	
Earnings per share excluding specified items(1)			
Basic	$ 6.40	$ 6.01	6
Diluted	6.36	5.94	7
Common share information			
Dividends declared	$ 2.66	$ 2.44	9
Book value	36.89	34.40	
Share price			
High	68.02	65.63	
Low	54.97	58.69	
Close	68.02	59.76	
Number of common shares *(thousands)*	334,172	335,071	
Market capitalization	22,730	20,024	
Balance sheet and off-balance-sheet			
Total assets	281,458	262,471	7
Loans and acceptances, net of allowances	153,251	146,082	5
Deposits	189,566	170,830	11
Equity attributable to common shareholders	12,328	11,526	7
Assets under administration and under management	565,396	485,080	17
Regulatory ratios under Basel III			
Capital ratios			
Common Equity Tier 1 (CET1)	11.7 %	11.7 %	
Tier 1	15.0 %	15.5 %	
Total	16.1 %	16.8 %	
Leverage ratio	4.0 %	4.0 %	
Liquidity coverage ratio (LCR)	146 %	147 %	
Other Information			
Number of employees – worldwide	25,487	23,450	9
Number of branches in Canada	422	428	(1)
Number of banking machines in Canada	939	937	–

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

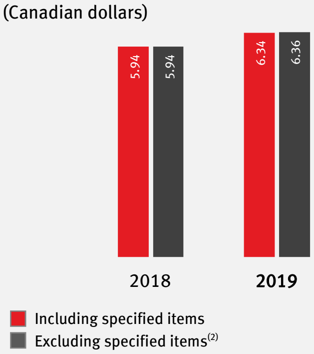
Business Mix[1]
Year ended October 31, 2019
(taxable equivalent basis)[2]



Net income
Year ended October 31
(millions of Canadian dollars)



Diluted earnings per share
Year ended October 31
(Canadian dollars)



(1) Excluding the *Other* heading.
(2) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

About National Bank

The Bank carries out its activities in four business segments: Personal and Commercial, Wealth Management, Financial Markets, and U.S. Specialty Finance and International. For presentation purposes, other operating activities, certain non-recurring items, and treasury activities are grouped in the *Other* heading of segment results. Each reportable segment is distinguished by services offered, type of clientele, and marketing strategy. Additional information is provided in the Business Segment Analysis section of this MD&A.

Objectives and 2019 Results

When setting its objectives, the Bank aims for a realistic challenge in the current business environment and factors in the predictable evolution in banking industry financial results as well as the Bank's business development plan. When the Bank sets its medium-term objectives, it does not take specified items[1] into consideration, as they are inherently unpredictable or non-recurring. Management therefore excludes specified items when assessing the Bank's performance against its objectives.

In fiscal 2019, the Bank recorded $2,322 million in net income compared to $2,232 million in fiscal 2018. Its 2019 diluted earnings per share stood at $6.34 versus $5.94 in fiscal 2018, and its 2019 return on common shareholders' equity (ROE) was 18.0% versus 18.4% in 2018. Net income excluding specified items totalled $2,328 million in fiscal 2019, up 4% year over year, and diluted earnings per share excluding specified items stood at $6.36, up 7% from $5.94 in 2018. Furthermore, ROE excluding specified items was 18.0% in 2019 versus 18.4% in 2018.

The following table compares the Bank's medium-term objectives with its 2019 results.

Medium-Term Objectives and 2019 Results

	Medium-term objectives (%)	2019 results (%)
Growth in diluted earnings per share excluding specified items[1]	5-10	7
ROE excluding specified items[1]	15-20	18.0
Dividend payout ratio excluding specified items[1]	40-50	42
CET1 capital ratio	› 10.75	11.7
Leverage ratio	› 3.75	4.0

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

In 2019, the Bank's financial results met all of the medium-term objectives. The 7% growth in diluted earnings per share excluding specified items was driven by solid net income growth in all business segments, except in the Financial Markets segment, where net income was affected by a slowdown during the first six months of fiscal 2019. And, even though the dividend per share was raised twice, for a 9% increase in fiscal 2019, the dividend payout ratio excluding specified items was at the lower end of the target range, mainly due to rapid growth in diluted earnings per share.

Dividends

For fiscal 2019, the Bank declared $892 million in dividends to common shareholders (2018: $829 million), representing 42% of net income attributable to common shareholders (2018: 41%).

Regulatory Capital Ratios

As at October 31, 2019, the Bank's CET1, Tier 1 and Total capital ratios were, respectively, 11.7%, 15.0% and 16.1%, i.e., above the regulatory requirements, compared to ratios of, respectively, 11.7%, 15.5% and 16.8% as at October 31, 2018. The CET1 capital ratio remained stable. Net income net of dividends, and common share issuances under the Stock Option Plan offset the application of the *Standardized Approach for measuring Counterparty Credit Risk* (SA-CCR) rules for measuring counterparty credit risk, growth in risk-weighted assets, the common share repurchases during the year ended October 31, 2019, and remeasurements of pension plans and other post-employment benefit plans. The decreases in the Tier 1 capital ratio and the Total capital ratio were essentially due to growth in risk-weighted assets. As at October 31, 2019, the leverage ratio was 4.0%, stable compared to October 31, 2018. The growth in Tier 1 capital was offset by growth in total leverage exposure.

High-Quality Loan Portfolio

For fiscal 2019, the Bank recorded $347 million in provisions for credit losses, $20 million more than those recorded in fiscal 2018. The higher year-over-year provisions stem mainly from provisions for credit losses on credit card receivables and on loans in the Financial Markets segment. However, the provisions for credit losses on loans of the USSF&I segment were down, essentially related to the Credigy Ltd. (Credigy) subsidiary. The 2019 provisions for credit losses represented 0.23% of average loans and acceptances, unchanged from fiscal 2018.

Risk Profile

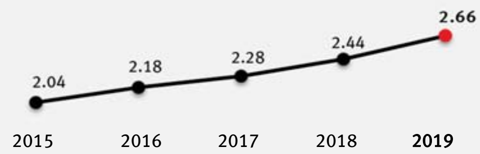
As at October 31 or for the year ended October 31 (millions of Canadian dollars)	2019	2018
Provisions for credit losses	347	327
Provisions for credit losses as a % of average loans and acceptances	0.23 %	0.23 %
Provisions for credit losses on impaired loans as a % of average loans and acceptances	0.21 %	0.23 %
Net write-offs as a % of average loans and acceptances	0.20 %	0.23 %
Gross impaired loans[(1)]	684	630
Net impaired loans[(2)]	450	404

(1) All loans classified in Stage 3 of the expected credit loss model are impaired loans. The impaired loans presented in this table exclude purchased or originated credit-impaired (POCI) loans.

(2) Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn. The net impaired loans presented in this table exclude POCI loans.

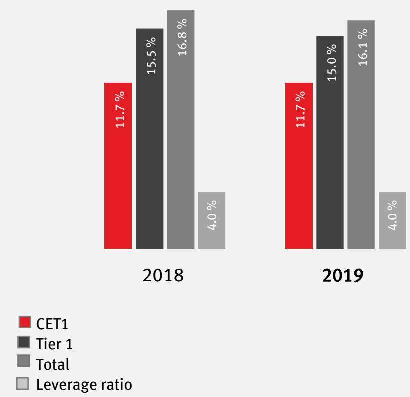
Annual Dividend per Common Share

Year ended October 31
(Canadian dollars)



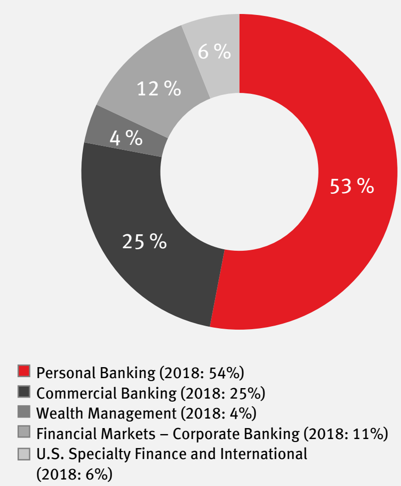
Evolution of Regulatory Ratios under Basel III

As at October 31



Breakdown of the Average Loan and Acceptance Portfolio[(1)]

As at October 31, 2019



(1) Excluding loans and acceptances in the *Other* heading

Economic Review and Outlook

Global Economy

While talks between China and the Unites States in the trade war opposing the two countries seem to be making headway, the damage to the global economy has already been considerable. Worldwide, the manufacturing sector has been contracting for the past six months, but the services sector has kept the economy afloat. Washington, like Beijing, stands to benefit from a truce. The trade war has hurt the Middle Kingdom, where slower growth is in large part due to a downturn not only in exports but also in investment. To address the situation, Chinese authorities have had to implement stimulus measures via monetary and budgetary policy in order to achieve their growth target of 6-6.5%. Owing to its relatively intense participation in the global value chain, the eurozone has been hardest hit by the turmoil of the trade war. Germany, for instance, may already be in the midst of a technical recession after its economy contracted again in the second quarter. Given the growing uncertainty, a majority of central banks have opted to ease their monetary policy in the third quarter, a record high since the global recession of 2008-2009. This should be enough for the global economy to keep expanding. We expect global economic growth to reach 3.2% in 2020[(1)], up slightly from 2019 (3.0%)[(1)].

In the U.S., the longest growth streak in history is showing signs of losing steam, thus reviving fears of recession in the present context of strained international trade relations. In our opinion, the probability of a recession in the next twelve months does not exceed 30%, as a truce remains the most likely scenario in light of the coming U.S. presidential election. Moreover, the resilience of consumption and of the labour market is largely compensating for the weakness in foreign trade, which is putting the brakes on business investment. By lowering interest rates in October after twice doing so this summer, the U.S. Federal Reserve has contributed to setting the yield curve back on an upward slope after its inversion in 2019 had raised alarm bells. We believe that this rate adjustment will suffice for now. With the 2020 election in the offing, we can expect both monetary and budgetary policy to remain accommodative. We expect U.S. GDP to grow 2.3% and 1.9% in 2019 and 2020[(1)], respectively.

Canadian Economy

The Canadian economy has once again proven the skeptics wrong after weakness in the energy and real estate sectors early in the year was seen as a bad omen. As it happens, the economy bounced back spectacularly in the second quarter, growing at an annualized rate of 3.7%. Job creation in the first ten months of the year has been the strongest ever since 2002 and wage growth has picked up relentlessly. The vitality of the labour market and lower interest rates have energized the housing market, which has managed to rebound in both Ontario and British Columbia. There is no denying that household debt levels are high and the savings rate very low at present. This should translate into moderate consumption growth. However, other sectors should step up in 2020 and push the economy to grow near potential (1.6%)[(1)]. Canadian exports should benefit from persistently strong U.S. demand and a weak currency. Furthermore, given the federal election results, a fiscal stimulus is in the cards for 2020. Given the economy's resilience and an annual core inflation rate essentially on target, the Bank of Canada should not have to follow the Fed's lead in easing monetary policy, unless hostilities flare up again between China and the United States.

Quebec Economy

The Quebec economy continues to forge ahead at a sustained pace. GDP has grown for ten months in a row, the longest such streak since statistics began to be calculated in 1997. The economy and the labour market are being spurred on by an accommodative monetary policy and budgetary stimulus. Over 87,000 net new jobs have been created in the province since the beginning of 2019, the best showing in this regard since 2012. The unemployment rate could hit a record low for a fourth straight year in 2019. Labour shortages are no doubt having an impact on the hourly wages of permanent employees, which in the past year have registered their steepest increase by far since 1998 (6.1% in 2019 third quarter). In this context, the real estate market, which remains more affordable in Quebec than elsewhere in Canada, is headed for a record year in terms of home sales. Economic growth is expected to slow down but should remain solid at 1.5% in 2020 (2.5% in 2019)[(1)]. The household savings rate is high and household debt is lower than in the rest of the country, which bodes well for consumption in the coming quarters.

(1) GDP growth expectations, Economy and Strategy Group

Financial Analysis

Consolidated Results

Year ended October 31 (millions of Canadian dollars)	2019	2018	% change
Operating results			
Net interest income	3,596	3,382	6
Non-interest income	3,836	3,784	1
Total revenues	7,432	7,166	4
Non-interest expenses	4,301	4,063	6
Contribution	3,131	3,103	1
Provisions for credit losses	347	327	6
Income before income taxes	2,784	2,776	–
Income taxes	462	544	(15)
Net income	2,322	2,232	4
Diluted earnings per share *(dollars)*	6.34	5.94	7
Taxable equivalent basis(1)			
Net interest income	195	144	
Non-interest income	135	101	
Income taxes	330	245	
Impact of taxable equivalent basis on net income	–	–	
Specified items(1)			
Gain on disposal of Fiera Capital shares	79	–	
Gain on disposal of premises and equipment	50	–	
Remeasurement at fair value of an investment	(33)	–	
Impairment losses on premises and equipment and on intangible assets	(57)	–	
Provisions for onerous contracts	(45)	–	
Charge related to Maple	(11)	–	
Severance pay	(10)	–	
Specified items before income taxes	(27)	–	
Income taxes on specified items	(21)	–	
Specified items after income taxes	(6)	–	
Operating results on a taxable equivalent basis and excluding specified items(1)			
Net interest income on a taxable equivalent basis	3,791	3,526	8
Non-interest income on a taxable equivalent basis and excluding specified items	3,875	3,885	–
Total revenues on a taxable equivalent basis and excluding specified items	7,666	7,411	3
Non-interest expenses excluding specified items	4,178	4,063	3
Contribution on a taxable equivalent basis and excluding specified items	3,488	3,348	4
Provisions for credit losses	347	327	6
Income before income taxes on a taxable equivalent basis and excluding specified items	3,141	3,021	4
Income taxes on a taxable equivalent basis and excluding specified items	813	789	3
Net income excluding specified items	2,328	2,232	4
Diluted earnings per share excluding specified items *(dollars)*	6.36	5.94	7
Average assets	286,162	265,940	8
Average loans and acceptances	148,765	139,603	7
Average deposits	184,460	167,176	10
Efficiency ratio on a taxable equivalent basis and excluding specified items(1)	54.5 %	54.8 %	

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Analysis of Consolidated Results

Financial Results

For fiscal 2019, the Bank's net income totalled $2,322 million compared to $2,232 million in fiscal 2018, a year-over-year increase owing essentially to net income growth across most of the business segments, tempered by a slowdown in the Financial Markets segment during the first six months of fiscal 2019. Specified items, net of income taxes, had a $6 million unfavourable impact on net income in fiscal 2019. The fiscal 2019 specified items, net of income taxes, include a $68 million gain on disposal of Fiera Capital shares, a $43 million gain on disposal of premises and equipment, a $27 million loss on the remeasurement at fair value of the Bank's investment in NSIA, $42 million in impairment losses on premises and equipment and on intangible assets, $33 million in provisions for onerous contracts, an $8 million charge related to Maple, and $7 million in severance pay. For fiscal 2019, the Bank's net income excluding specified items[(1)] totalled $2,328 million, up 4% from $2,232 million in fiscal 2018.

Total Revenues

For fiscal 2019, the Bank's total revenues amounted to $7,432 million, up $266 million or 4% from $7,166 million in fiscal 2018. The fiscal 2019 total revenues include a $79 million gain on disposal of Fiera Capital shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss arising from the remeasurement at fair value of the Bank's investment in NSIA. The increase in total revenues was driven by revenue growth across all of the Bank's business segments. The 2019 total revenues on a taxable equivalent basis and excluding specified items[(1)] were up $255 million or 3% year over year. For additional information about total revenues on a taxable equivalent basis[(1)], see Table 2 on page 104.

Net Interest Income

For fiscal 2019, the Bank's net interest income totalled $3,596 million, rising $214 million from $3,382 million in fiscal 2018. The 2019 net interest income on a taxable equivalent basis[(1)] was $3,791 million compared to $3,526 million in fiscal 2018 (Table 3, page 104).

In the Personal and Commercial (P&C) segment, the fiscal 2019 net interest income totalled $2,383 million, a $107 million or 5% year-over-year increase driven mainly by growth in loan volumes (primarily from mortgage and commercial lending activity) and in deposit volumes, which rose 5% and 7%, respectively. This increase in P&C's net interest income was tempered by a narrowing of the net interest margin, which was 2.23% in fiscal 2019 versus 2.24% in fiscal 2018, that was largely due to a decrease in loan margins. In the Wealth Management segment, the fiscal 2019 net interest income on a taxable equivalent basis[(1)] totalled $470 million, a $24 million year-over-year increase owing to growth in loan and deposit volumes.

As for the Financial Markets segment, its 2019 net interest income on a taxable equivalent basis[(1)] was up $65 million or 16% year over year, mainly due to trading activities, and should be examined together with the other items of trading activity revenues. In the USSF&I segment, the fiscal 2019 net interest income was up $72 million year over year owing to growth in loan and deposit volumes at the Advanced Bank of Asia Limited (ABA Bank) subsidiary, tempered by a decrease in net interest income at the Credigy subsidiary.

Non-Interest Income

For fiscal 2019, non-interest income totalled $3,836 million versus $3,784 million in fiscal 2018. The 2019 non-interest income includes a $79 million gain on disposal of Fiera Capital shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss arising from the remeasurement at fair value of the Bank's investment in NSIA. Non-interest income on a taxable equivalent basis and excluding specified items[(1)] amounted to $3,875 million in fiscal 2019 compared to $3,885 million in fiscal 2018. For additional information on non-interest income on a taxable equivalent basis[(1)], see Table 4 on page 105.

The fiscal 2019 revenues from underwriting and advisory fees were down 19% when compared to fiscal 2018, in particular due to merger and acquisition activities in the Financial Markets segment. Revenues from securities brokerage commissions were also down, declining $17 million as a result of lower transaction volume during fiscal 2019. Together, mutual fund revenues and trust service revenues totalled $1,058 million in fiscal 2019, a $33 million year-over-year increase resulting from growth in fee-based revenues and from an increase in assets under administration and under management arising from stronger stock market performance in 2019.

The trading revenues recorded in non-interest income amounted to $829 million in fiscal 2019 compared to $840 million in fiscal 2018. Trading revenues on a taxable equivalent basis[(1)] recorded in non-interest income totalled $964 million, an increase from $941 million in 2018. Including the portion recorded in net interest income, trading activity revenues on a taxable equivalent basis[(1)] amounted to $1,199 million in 2019, a $50 million year-over-year increase (Table 5, page 105) attributable to revenues from equity securities and from fixed-income securities, whereas revenues from commodities and foreign exchange activities and revenues from other segments decreased year over year.

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

In fiscal 2019, revenues from credit fees and revenues from acceptances and letters of credit and guarantee were up $14 million year over year, as there was increased credit activity in Commercial Banking, the Financial Markets segment, and the Credigy subsidiary. Card revenues posted 10% year-over-year growth during fiscal 2019, whereas revenues from deposit and payment service charges were down $9 million given a revision to rates. The Bank's fiscal 2019 insurance revenues were up $15 million year over year, partly due to a revision to actuarial reserves. As for other-than-trading foreign exchange revenues and gains on non-trading securities, they remained stable when compared to fiscal 2018. The Bank's share in the net income of associates and joint ventures was also up, rising $6 million year over year. Other revenues amounted to $251 million in fiscal 2019, a $78 million year-over-year increase owing mainly to the 2019 specified items, which include a gain on disposal of Fiera Capital shares and a gain on disposal of premises and equipment, tempered by a loss arising from a fair value remeasurement of the Bank's investment in NSIA.

Non-Interest Expenses

Non-interest expenses stood at $4,301 million in fiscal 2019, up $238 million from fiscal 2018 (Table 6, page 106). The 2019 non-interest expenses include $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, an $11 million charge related to Maple, and $10 million in severance pay. Non-interest expenses excluding specified items(1) stood at $4,178 million, up $115 million or 3% year over year.

Compensation and employee benefits stood at $2,532 million in fiscal 2019, a 3% year-over-year increase resulting from an increase in the number of employees, which essentially stems from the expansion of ABA Bank's banking network, and an annual increase in salaries, tempered somewhat by a lower pension expense. Occupancy expenses were also up, rising year over year due to provisions for onerous contracts recorded during the year in addition to business growth at ABA Bank. The increase in technology expenses, including amortization, came from the technology investments made to execute the Bank's transformation plan and for business development activities, in addition to impairment losses on premises and equipment and intangible assets recorded in fiscal 2019. Other expenses were also up, mainly due to expenses related to the activities of the Financial Markets segment and to the charge related to Maple.

Provisions for Credit Losses

For fiscal 2019, the Bank recorded $347 million in provisions for credit losses, $20 million more than the provisions recorded in fiscal 2018 (Table 7, page 107). This increase came mainly from higher credit loss provisions on credit card receivables, which rose $7 million year over year, and from higher credit loss provisions on loans in the Financial Markets segment, which rose $26 million year over year. These higher provisions relate mainly to provisions on impaired loans. In the USSF&I segment, provisions for credit losses on loans were down $14 million, essentially attributable to the Credigy subsidiary. At $313 million, the fiscal 2019 provisions for credit losses on impaired loans represent 0.21% of average loans and acceptances, less than last year's 0.23%, notably due to a decrease in the credit losses on impaired loans of the Credigy subsidiary, tempered by an increase in credit losses on impaired loans in the Financial Markets segment.

Income Taxes

Detailed information about the Bank's income taxes is provided in Note 24 to the consolidated financial statements. For fiscal 2019, income taxes stood at $462 million, representing an effective tax rate of 17% compared to $544 million and an effective tax rate of 20% in 2018. This change in effective tax rate was created mainly by a realization of capital gains taxed at a lower rate, by higher income from lower tax rate jurisdictions, and by a year-over-year increase in the 2019 tax-exempt dividend income.

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Business Segment Analysis

The Bank carries out its activities in four business segments, which are defined below. For presentation purposes, other activities are grouped in the *Other* heading. Each reportable segment is distinguished by services offered, type of clientele and marketing strategy.

The presentation of segment disclosures is consistent with the presentation adopted by the Bank for the year beginning November 1, 2018. This presentation reflects the fact that advisor banking service activities, which had previously been presented in the Wealth Management segment, are now presented in the Personal and Commercial segment. The Bank made this change to better align the monitoring of its activities with its management structure.

National Bank of Canada

Business Segment	Personal and Commercial	Wealth Management	Financial Markets	U.S. Specialty Finance and International
Major Activities	• Banking services • Credit services • Financing • Investment solutions • Insurance	• Full-service brokerage • Private banking • Direct brokerage • Investment solutions • Administrative and trade execution services • Transaction products for advisors • Trust and estate services	• Equities, fixed-income, commodities and foreign exchange • Corporate banking • Investment banking	• U.S. Specialty Finance – Credigy • International – ABA Bank (Cambodia) – Minority interests in emerging markets

Other: Treasury activities, liquidity management, Bank funding, asset/liability management, corporate units

Results by Business Segment

Year ended October 31[(1)]
(millions of Canadian dollars)

	Personal and Commercial		Wealth Management		Financial Markets		USSF&I		Other		Total	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Net interest income[(2)]	**2,383**	2,276	**470**	446	**474**	409	**656**	584	**(387)**	(333)	**3,596**	3,382
Non-interest income[(2)]	**1,069**	1,033	**1,273**	1,243	**1,276**	1,334	**59**	55	**159**	119	**3,836**	3,784
Total revenues	**3,452**	3,309	**1,743**	1,689	**1,750**	1,743	**715**	639	**(228)**	(214)	**7,432**	7,166
Non-interest expenses	**1,816**	1,782	**1,067**	1,058	**743**	697	**285**	251	**390**	275	**4,301**	4,063
Contribution	**1,636**	1,527	**676**	631	**1,007**	1,046	**430**	388	**(618)**	(489)	**3,131**	3,103
Provisions for credit losses	**237**	228	**–**	1	**30**	4	**80**	94	**–**	–	**347**	327
Income before income taxes (recovery)	**1,399**	1,299	**676**	630	**977**	1,042	**350**	294	**(618)**	(489)	**2,784**	2,776
Income taxes (recovery)[(2)]	**372**	347	**177**	166	**260**	278	**71**	72	**(418)**	(319)	**462**	544
Net income	**1,027**	952	**499**	464	**717**	764	**279**	222	**(200)**	(170)	**2,322**	2,232
Non-controlling interests	**–**	–	**–**	–	**–**	–	**40**	38	**26**	49	**66**	87
Net income attributable to the Bank's shareholders	**1,027**	952	**499**	464	**717**	764	**239**	184	**(226)**	(219)	**2,256**	2,145
Average assets	**112,798**	106,857	**6,219**	6,167	**112,493**	100,721	**10,985**	9,270	**43,667**	42,925	**286,162**	265,940

(1) For the year ended October 31, 2018, certain amounts have been reclassified, mainly amounts related to advisor banking service activities, which have been transferred from the Wealth Management segment to the Personal and Commercial segment.
(2) The *Net interest income*, *Non-interest income* and *Income taxes (recovery)* items of the business segments are presented on a taxable equivalent basis. See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Business Segment Analysis | Personal and Commercial

The Personal and Commercial segment meets the financial needs of close to 2.6 million individuals and approximately 137,000 businesses across Canada. These clients entrust the Bank to manage, invest, and safeguard their assets and to finance their projects. Clients turn to the Bank's experienced advisors who take the time to understand their specific needs and help them reach their financial goals. And thanks to the Bank's convenient self-banking channels, 422 branches and 939 banking machines across Canada, clients can do their daily banking whenever and wherever they wish.

Personal Banking

Personal Banking provides a complete range of financing and investment products and services, mainly in Quebec, to help clients reach their financial goals throughout every stage in their lives. It offers everyday transaction solutions, mortgage loans and home equity lines of credit, consumer loans, payment solutions, savings and investment solutions as well as a diverse range of insurance products.

Commercial Banking

Commercial Banking serves the financial needs of small and medium-sized enterprises and large corporations, helping them to achieve growth. It offers a full line of financial products and services, including credit, deposit and investment solutions, international trade, foreign exchange transactions, payroll, cash management, insurance, electronic transactions and complementary services. With deep roots in the business community for 160 years, Commercial Banking is Quebec's leading provider of the core banking products for businesses and is also known across Canada for its expertise in targeted specialized industries such as health, agriculture and agri-food, technology, creative industries, real estate, and energy.

Economic and Market Review

The economic environment is resilient in Quebec and in the rest of the country, driven by accommodative monetary policy and fiscal stimulus. Consumers are benefitting from strong employment gains and accelerating wages. The unemployment rate is on track to hit a record low for a fourth straight year in 2019 in Quebec. Wages are rising at the fastest pace among provinces, and the savings rate stands at a multi-year high, providing a cushion that can support consumption. Furthermore, both consumer and business confidence are high in Quebec. The province's household debt level is below the Canadian average, and housing affordability is better. Business investment is being supported by accelerated depreciation measures implemented by the federal and some provincial governments. The financial sector is quickly transforming toward digital and mobile services, and there is vigorous competition between established entities and new market participants that are distinguishing themselves through new technologies.

The economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Review and Outlook section on page 20.

Key Success Factors

- Strong penetration in our core Quebec market thanks to a full range of personal and commercial services.
- Well-established and enduring client relationships grounded in an ability to provide both advice and a full range of solutions tailored to specific client needs.
- The largest sales force in Quebec, consisting of both generalists and specialists, positioning us to offer the best advice to clients.
- Unmatched closeness to Quebec entrepreneurs, with leading expertise in business lending and risk management solutions.
- Recognized expertise across Canada in specialized industries.
- Ability to meet all of the needs facing businesses and entrepreneurs in collaboration with other Bank segments.

Objectives and Strategies

The Personal and Commercial segment is targeting growth by becoming a more simple, efficient bank focused on constantly improving the client experience.

Strategic Priorities	2019 Achievements and Highlights
Maintain volume growth and accelerate net client acquisition	> Raised our presence through greater geographic coverage, a larger sales force, and an enhanced advisory offering, including a partnership with M3 Mortgage Group whereby mortgage brokers can offer Bank products to their clients. > Personalized our advisory services to target strategic clients such as newcomers, millennials, professionals, people aged 50 to 64 and SMEs. > Assisted Canadian SMEs with their export activities through a partnership with Export Development Canada (EDC). > Maintained a high credit quality, with credit loss provisions on impaired loans at 22 basis points for Personal Banking and at 10 basis points for Commercial Banking.
Improve the client experience	> Enhanced the capabilities of the transactional platform and mobile app to deliver a simpler, safer, and more intuitive digital experience. > Placed emphasis on a team approach, one that combines generalists and specialists, to give customers the best possible advice and solutions. > Transformed 35 branches to assist clients in their switch to self-service, by removing physical barriers, and by being proactive with the advisory offering. > Strengthened business relations with companies and improved the advisory offering to entrepreneurs through strategic partnerships, such as the partnership with Operio whereby SMEs can benefit from integrated accounting and advisory services.
Accelerate the digital transformation	> Enhanced online origination processes (account opening and mortgage preapproval). > Launched NATgo, an entirely digital investment experience based on client goals. > Won three major Boomerang Awards, which recognize outstanding digital branding performance, for the experience provided on our transactional sites, mobile apps and website.
Improve efficiency	> Simplified our product offering, particularly for savings accounts. > Unified client processes, both for retail clients (account openings, payments, residential financing and investing) and for business clients (account openings, financing, and cash management).

Priorities and Outlook for 2020

Maintain volume growth and accelerate net client acquisition
- Grow our client base, particularly among newcomers, millennials, professionals, peopled aged 50 to 64 and SMEs, with our online origination capabilities, while enhancing the Bank's presence with clients who have strong growth potential.
- Continue to tailor our offering to market particularities, competition, geographic location and micromarkets.

Optimize the client experience
- Provide clients with a simple, unified experience characterized by an integrated approach across all products and distribution channels.
- Expand self-service options on our digital channels.
- Continue to deploy an innovative experience within 100-some branches in the network.
- Enhance the user experience by providing a consolidated view of all investments and a fully automated savings service.
- Help business clients to grow by giving them access to the Bank's network of entrepreneurs.

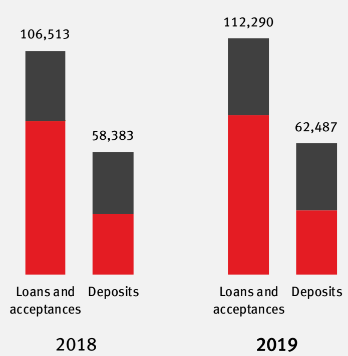
Focus on efficiency
- Continue simplification and automation of certain targeted processes (transactional solutions, payments, and commercial financing).

Segment Results – Personal and Commercial

Year ended October 31 (millions of Canadian dollars)	2019	2018[1]	% change
Net interest income	2,383	2,276	5
Non-interest income	1,069	1,033	3
Total revenues	3,452	3,309	4
Non-interest expenses	1,816	1,782	2
Contribution	1,636	1,527	7
Provisions for credit losses	237	228	4
Income before income taxes	1,399	1,299	8
Income taxes	372	347	7
Net income	1,027	952	8
Net interest margin[2]	2.23 %	2.24 %	
Average interest-bearing assets	106,995	101,446	5
Average assets	112,798	106,857	6
Average loans and acceptances	112,290	106,513	5
Net impaired loans[3]	409	386	6
Net impaired loans[3] as a % of average loans and acceptances	0.4 %	0.4 %	
Average deposits	62,487	58,383	7
Efficiency ratio	52.6 %	53.9 %	

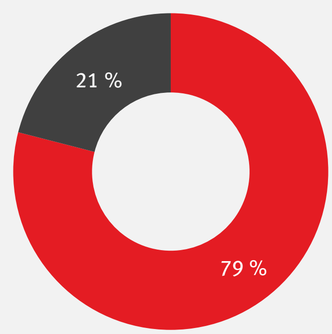
(1) For the year ended October 31, 2018, certain amounts have been reclassified, mainly amounts related to advisor banking service activities, which have been transferred from the Wealth Management segment to the Personal and Commercial segment.
(2) Net interest margin is calculated by dividing net interest income by average interest-bearing assets.
(3) Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn.

Average Loans and Acceptances and Deposits
Year ended October 31
(millions of Canadian dollars)



Personal Banking
Commercial Banking

Total Revenues by Geographic Distribution
Year ended October 31, 2019



Province of Quebec (2018: 79%)
Other provinces (2018: 21%)

Financial Results

In the Personal and Commercial segment, net income totalled $1,027 million in fiscal 2019, up 8% from $952 million in fiscal 2018. The segment's total revenues rose $143 million or 4% year over year, primarily owing to growth in net interest income, which was up $107 million, as well as to a $36 million increase in non-interest income. The growth in net interest income was driven mostly by higher personal and commercial loan and deposit volumes but was tempered by a narrowing of the net interest margin, which was 2.23% in fiscal 2019 versus 2.24% in fiscal 2018, a decrease resulting mainly from loan margins.

The segment's non-interest expenses stood at $1,816 million in fiscal 2019, a 2% year-over-year increase attributable mainly to increases in operations support charges and in amortization expense arising from the segment's activities as well as in compensation and employee benefits. Given these results, the segment's fiscal 2019 contribution was up 7% year over year. And, at 52.6% for fiscal 2019, the segment's efficiency ratio improved by 1.3 percentage points from 53.9% in 2018.

For fiscal 2019, the segment recorded $237 million in provisions for credit losses, $9 million more than the $228 million recorded in fiscal 2018. This increase came mainly from higher credit loss provisions on credit card receivables.

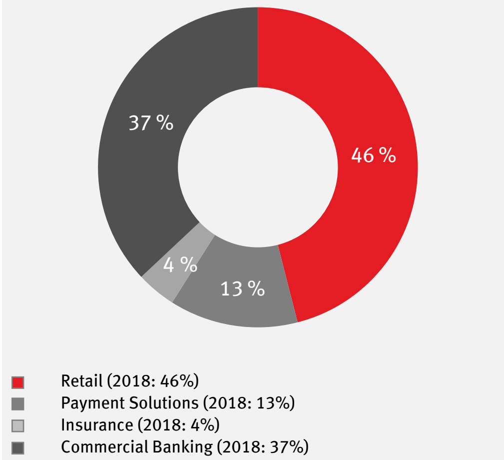
Personal Banking

For fiscal 2019, Personal Banking's total revenues amounted to $2,164 million, up 4% from $2,085 million in fiscal 2018. This growth came mainly from a 4% increase in loan volumes, mainly mortgage loans, and a 6% increase in deposit volumes. Non-interest income was up $21 million, essentially due to card revenues and to insurance revenues, reflecting revisions made to actuarial reserves. Personal Banking's non-interest expenses rose by $19 million in 2019, resulting mainly from higher technology investment expenses as well as higher operations support charges related to the segment's activities.

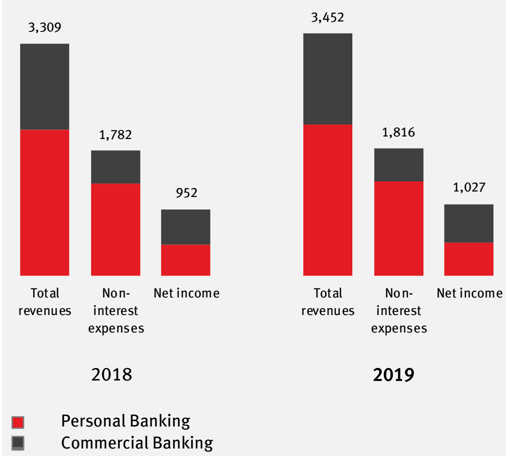
Commercial Banking

For fiscal 2019, Commercial Banking's total revenues amounted to $1,288 million, rising 5% from $1,224 million in fiscal 2018. Its net interest income was up, essentially due to growth in loan volumes and deposit volumes, both of which rose 8%, tempered by a narrowing of the net interest margin on loan and deposit volumes. Non-interest income grew $15 million year over year owing to increases in revenues from bankers' acceptances and in revenues from derivative financial instruments. Commercial Banking's non-interest expenses rose $15 million in fiscal 2019, mainly due to higher compensation and employee benefits as well as to higher operations support charges related to the segment's activities.

Total Revenues by Category
Year ended October 31, 2019



Operating Results
Year ended October 31
(millions of Canadian dollars)



Business Segment Analysis | Wealth Management

As a leader in Quebec and firmly established across Canada, the Wealth Management segment serves all market segments by emphasizing advisory services and close client relationships. It delivers a full range of wealth management products and solutions through a multi-channel distribution network and a differentiated business model. The Wealth Management segment also proposes investment solutions to independent advisors as well as solutions to institutional clients.

Business Units

Full-Service Brokerage
Drawing on the largest network of investment advisors in Quebec, National Bank Financial – Wealth Management (NBFWM) provides wealth management advisory services through close to 1,000 advisors at over 100 service points across Canada. Its advisors serve over 400,000 retail clients, proposing portfolio management services, financial and succession planning services, and insurance services while working in close collaboration with other segments of the Bank.

Private Banking
Private Banking 1859 (PB1859) offers highly personalized wealth management services and advice across Canada, helping affluent clients to benefit from comprehensive management of their personal and family fortunes. As a true market leader in Quebec, PB1859 continues to expand its operations across Canada with its extensive range of financial solutions and strategies covering the protection, growth, and transition of wealth.

Direct Brokerage
National Bank Direct Brokerage (NBDB) offers a multitude of financial products and investment tools to self-directed investors across Canada through its online investment solution. NBDB helps customers who want to manage their own investments to do so through a trading platform and an optimized mobile trading platform or by speaking directly to a representative on the phone.

Investment Solutions
National Bank Investments Inc. (NBI) manufactures and offers mutual funds, investment solutions, and services to consumers and institutional investors through the Bank's extended network. With its open architecture model, NBI is Canada's largest investment fund manager to entrust the management of its investments exclusively to external portfolio managers.

Administrative and Trade Execution Services
National Bank Independent Network (NBIN) is a Canadian leader in providing administrative services such as trade execution, custodial services, and brokerage solutions to many independent financial services firms across Canada, in particular to introducing brokers, portfolio managers, and investment fund managers.

Transaction Products
The Wealth Management segment provides independent advisors across Canada with an extensive range of investment products, including guaranteed investment certificates (GICs), mutual funds, notes, structured products, and monetization, helping to support their own business needs and client relationships.

Trust and Estate Services
Through National Bank Trust Inc. (NBT), the Wealth Management segment provides retail and institutional clients with turnkey services and solutions. Its team of experts offers a full range of high value-added services designed to consolidate, protect, and transfer its customers' wealth and give them peace of mind. NBT also offers integrated trustee and depository services as well as securities custody services.

Economic and Market Review

Policymakers acted pre-emptively as a fear of the global economy sliding into a recession increased as a result of the trade conflict between the United States and China. The U.S. Federal Reserve applied a rate-cut, realizing a 75-basis point decline in its policy rate. Given the resilience of the Canadian economy and inflation, the Bank of Canada did not deem stimulus as necessary as the Canadian economy is benefitting from lower long-term rates and improving global financial conditions. Those welcomed developments, combined with resilience in the labour market and housing market, suggest steady growth in the coming quarters.

The economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Review and Outlook section on page 20.

Key Success Factors

- Leadership position in Quebec in terms of market share and brand recognition.
- Largest manager of managers in Canada (open architecture); clients benefit from objective advice.
- Leadership position in Canada in securities custody and brokerage services for independent wealth management firms.
- Firmly rooted across Canada in full-service brokerage and private management services.
- Ability to forge solid, lasting client relationships built on personalized advice and solutions provided at every life stage.
- High level of client satisfaction with direct brokerage services.
- Proven track record and excellent reputation as a business partner among non-bank financial institutions.
- Ability to work closely with the Personal and Commercial segment and to leverage its distribution platform.

Objectives and Strategies

The Wealth Management segment will capitalize on the strength of the Bank's brand, distribution capacity, and differentiated business model to grow market shares in the mass and mass affluent markets. The segment seeks to increase market penetration across Canada through organic growth as well as targeted actions and partnerships.

Strategic Priorities	2019 Achievements and Highlights
Transform the partnership with clients	> Launched National Bank exchange-traded funds (ETFs). > Launched NATgo, an entirely digital investment experience based on client goals. > Deployed a strategy that centres on goals and life stages. > Deployed a new online brokerage platform.
Invest in high-growth markets	> Gradually deploying a new MFDA (Mutual Fund Dealers Association of Canada) platform for B2B clients. > Developed a new cross-selling strategy in partnership with other Bank segments. > Developed a strategy for women investors.
Continue transforming Wealth Management's culture	> Promoted a joint mission and an integrated client approach within Wealth Management. > Implemented concrete measures to promote innovation and accelerate transformation.

Priorities and Outlook for 2020

Transform the way we serve clients
- Deploy a customer relationship management (CRM) system for employees of NBFWM.
- Enhance the online brokerage and account opening platform.
- Increase the usability of the new MFDA platform, which is designed to replace certain existing asset management platforms.

Concentrate on fast-growing markets
- Launch new types of investment products.
- Develop markets outside Quebec, including the Ontario strategy to grow PB1859's market presence, and its acquisition of high net worth customers and increase synergies with the Personal and Commercial segment.
- Implement the multi-family office strategy.

Continue transforming Wealth Management's culture
- Invest in client satisfaction measures in various Wealth Management subsidiaries.
- Fine-tune the leadership skills of managers using best management practices.

Segment Results – Wealth Management

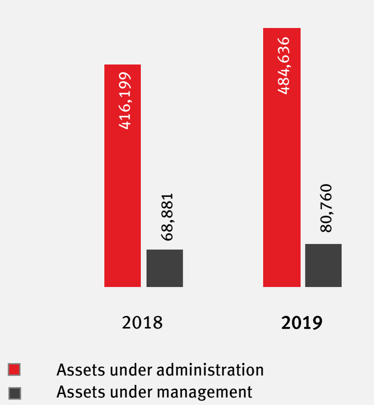
Year ended October 31 (taxable equivalent basis)[1] (millions of Canadian dollars)	2019	2018[2]	% change
Net interest income on a taxable equivalent basis	470	446	5
Fee-based revenues	1,013	983	3
Transaction and other revenues	260	260	–
Total revenues on a taxable equivalent basis	1,743	1,689	3
Non-interest expenses	1,067	1,058	1
Contribution on a taxable equivalent basis	676	631	7
Provisions for credit losses	–	1	
Income before income taxes on a taxable equivalent basis	676	630	7
Income taxes on a taxable equivalent basis	177	166	7
Net income	**499**	464	**8**
Average assets	6,219	6,167	1
Average loans and acceptances	4,855	4,720	3
Net impaired loans[3]	3	3	–
Average deposits	32,321	31,261	3
Efficiency ratio on a taxable equivalent basis[1]	61.2 %	62.6 %	

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(2) For the year ended October 31, 2018, certain amounts have been reclassified, mainly amounts related to advisor banking service activities, which have been transferred from the Wealth Management segment to the Personal and Commercial segment.
(3) Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn.

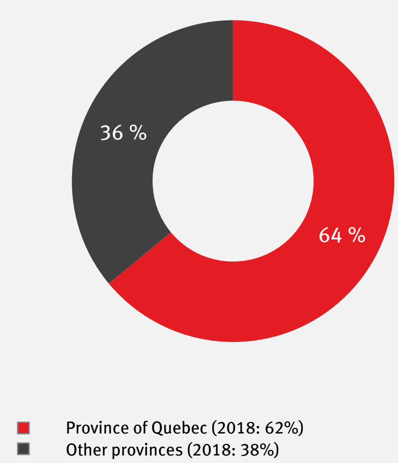
Assets Under Administration and Under Management – Wealth Management

As at October 31 (millions of Canadian dollars)	2019	2018	% change
Assets under administration	484,636	416,199	16
Assets under management			
Individual	43,941	37,007	19
Mutual funds	36,819	31,874	16
	80,760	68,881	17
Assets under administration and under management	565,396	485,080	17

Assets Under Administration and Under Management
Year ended October 31
(millions of Canadian dollars)



Total Revenues by Geographic Distribution
Year ended October 31, 2019
(on a taxable equivalent basis)[1]



(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Financial Results

In the Wealth Management segment, net income totalled $499 million in fiscal 2019, up $35 million or 8% from $464 million in fiscal 2018. The segment's total revenues on a taxable equivalent basis[1] amounted to $1,743 million in fiscal 2019, up $54 million from $1,689 million in fiscal 2018. This increase stems mainly from a 5% increase in net interest income on a taxable equivalent basis[1] owing to growth in the segment's loan and deposit volumes. The fiscal 2019 fee-based revenues were up 3% year over year given growth in assets under administration and under management generated by net inflows into various solutions and due to stronger stock market performance in fiscal 2019. As for the transaction-based and other revenues category, it remained stable when compared to fiscal 2018.

The segment's non-interest expenses stood at $1,067 million in fiscal 2019, a $9 million year-over-year increase attributable mainly to higher compensation and employee benefits as well as to higher operations support charges related to the segment's initiatives. The 2019 efficiency ratio on a taxable equivalent basis[1] was 61.2% in fiscal 2019, an improvement of 1.4 percentage points from 62.6% in 2018.

The segment's provisions for credit losses were negligible in fiscal years 2019 and 2018.

Assets Under Administration and Under Management

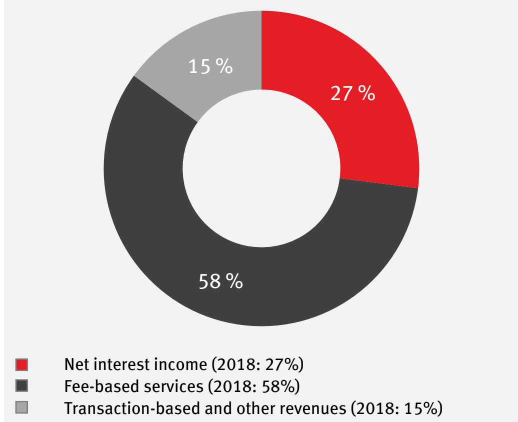
As at October 31, 2019, assets under administration and under management totalled $565.4 billion, rising $80.3 billion or 17% from October 31, 2018 due to net inflows into various solutions and to stronger stock market performance in fiscal 2019.

Assets under administration totalled $484.6 billion as at October 31, 2019, up $68.4 billion compared to October 31, 2018. This increase came from net inflows into various solutions and to stronger stock market performance in fiscal 2019.

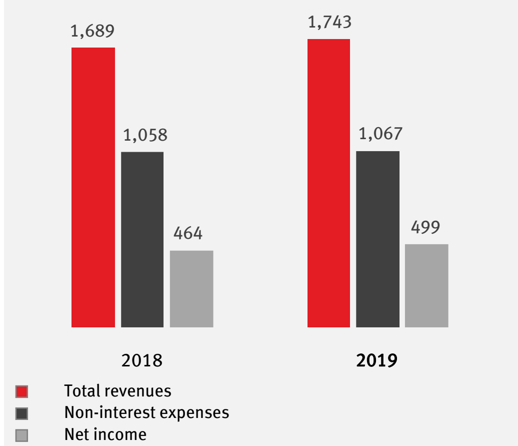
In the individuals category, assets under management amounted to $43.9 billion as at October 31, 2019 compared to $37.0 billion as at October 31, 2018. The mutual funds category totalled $36.8 billion as at October 31, 2019, rising 16% from October 31, 2018.

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Total Revenues by Category
Year ended October 31, 2019
(on a taxable equivalent basis)[1]



Operating Results
Year ended October 31
(on a taxable equivalent basis)[1]
(millions of Canadian dollars)



Business Segment Analysis | Financial Markets

The Financial Markets segment offers a complete suite of products and services to corporations, institutional clients, and public-sector entities. Whether providing comprehensive advisory services and research or capital markets products and services, its focus is on client relationships and their growth. Over 800 professionals serve client needs through offices in North America, Europe, the U.K. and Asia.

Business Units

The Financial Markets segment operates two main business lines: Global Markets and Corporate and Investment Banking.

Global Markets
Financial Markets is a Canadian leader in risk management solutions and structured products and is the largest market-maker in exchange-traded funds (ETFs) in Canada by volume. The segment offers solutions covering fixed income securities, currencies, equities and commodities in order to mitigate the financial and business risks of clients. It also provides new product development expertise to asset managers and fund companies and supports their success by providing liquidity, research, and counterparty services. Financial Markets also provides tailored investment products across all asset classes to institutional and retail distribution channels.

Corporate and Investment Banking
Financial Markets provides services in corporate banking, advisory and capital markets. It offers loan origination and syndication to corporations for project financing, merger and acquisition transactions, and corporate financing solutions. The segment is also an investment banking leader in Quebec and across Canada. Its comprehensive services include strategic advisory for financing and mergers and acquisitions as well as for debt and equity underwriting. It is the Canadian leader in government and corporate high-yield debt underwriting. Dominant in Quebec, it leads deals for provincial and municipal governments across Canada while growing its national position in infrastructure and project financing. Financial Markets is active in securitization financing, mainly Government-of-Canada-insured mortgages and mortgage-backed securities.

Economic and Market Review

In 2019, global uncertainties dominated financial headlines. Trade negotiations between the United States and China oscillated between detente and escalation before taking a turn for the better at the end of October with the announcement of significant progress for a truce between the two countries. Given the growing uncertainty and the slowing global economy, a majority of central banks have opted to ease their monetary policy in the third quarter, a record high since the global recession of 2008-2009. The Bank of Canada did not deem it necessary to add stimulus as labour market strength contributed to a housing market rebound. Steady growth is expected in the coming quarters, as financial conditions have improved and some fiscal stimulus is expected next year.

The economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Review and Outlook section on page 20.

Key Success Factors

- Pan-Canadian franchise with established leadership in government debt underwriting, ETF market-making, and securities lending and recognized capabilities in risk management solutions, structured products and equity derivatives.
- Integrated approach, teamwork, and alignment among all groups.
- Focused on client relationships and diversified client activity and revenue mix.
- Sound risk management.
- Flexible approach to capital allocation and proven ability to adapt to evolving capital market conditions and deliver consistent financial performance.

Objectives and Strategies

Strategic Priorities	2019 Achievements and Highlights
Maintain leadership in Canadian debt underwriting	Ranked first in government debt underwriting: > Lead and joint lead on Canada Mortgage Bond issuances aggregating $30.25 billion. > Lead on multiple deals for the Province of Quebec aggregating $9.5 billion. > Inaugural joint lead for the Government of Canada on a US$3.0 billion 3-year offering. > Inaugural lead for the Province of Newfoundland and Labrador on a $300 million 10-year offering. > Lead on the First Nations Finance Authority's $163 million 9-year offering. > Joint lead for South Coast British Columbia Transportation Authority's (TransLink) $200 million 31-year Green Bond offering. > Joint lead for the City of Toronto's $200 million 20-year Green Bond offering. Lead in corporate debt underwriting: > Joint bookrunner on a $300 million senior unsecured note offering for Parkland Fuel Corporation. > Joint bookrunner on a $350 million 2.25-year senior unsecured debenture offering for SmartCentres REIT. > Joint bookrunner on an inaugural $125 million senior unsecured note offering for Kruger Packaging Holdings L.P. > Joint bookrunner on a $200 million 5-year senior unsecured note offering for Cominar REIT. > Sole lead placement agent on a $325 million private placement transaction for Capital Power Corporation. > Joint bookrunner on two U.S.-dollar high-yield transactions for Fairstone Financial Inc., raising US$425 million for the company. > Joint bookrunner on a $450 million dual tranche offering for EPCOR Utilities. > Joint bookrunner on a $350 million senior unsecured debenture offering for CI Financial Corporation. > Joint bookrunner on a $700 million dual-tranche offering for Enbridge Gas Inc. > Joint bookrunner on a US$750 million inaugural U.S.-dollar bail-in and first sustainable note offering for National Bank of Canada.
Maintain leadership in investment products	Strengthened our relationships with international networks by issuing more than $1 billion of notes outside of Canada, which contributed to the diversification of the Bank's deposit base. Ranked first in ETF market-making in Canada: > Increased our market share relative to last year, capturing 42% of total buy and sell volume, despite market conditions. > Selected as designated broker 64 times, which represents a 48% increase year over year. Pioneer in overnight offerings, which continue to be a successful means for asset managers to raise capital: > Led another $500 million of overnight offerings as a combination of split-share and single-trust unit funds. > Launched the first ever Canadian at-the-market (ATM) issuance programs for two listed investment funds. > Awarded *Deal of the Year* in rate structures by mtn-i, a global news, data and analytics platform covering the private debt market. > Awarded *Most Impressive Financial Institutional Structured MTN Issuer* by GlobalCapital, a global service provider of capital markets information whose methodology relies on the views of market participants.

Strategic Priorities	2019 Achievements and Highlights
Expand our client coverage to increase our presence in advisory services	Awarded the *Greenwich Quality Leader in Canadian FX Service* by Greenwich Associates, a leading global provider of data, analytics and insights to the financial services industry. Overall, National Bank Financial leads in the ability to understand client needs and deliver intensive sales coverage. Involved in significant mandates including: > Acted as financial advisor to the Special Committee of Dream Global REIT in relation to its acquisition by Blackstone Group Inc. > Advisor to Pipestone Oil Corp. in their $650 million reverse takeover of Blackbird Energy Inc. to form Pipestone Energy Corp. (TSX-V: PIPE) as well as underwriting and currently acting as administrative agent, lead arranger and sole bookrunner with respect to Pipestone's $198.5 million senior secured credit facilities. > Financial advisor to Atlantic Gold Corp. on its sale to Australian-based St Barbara Limited, for a total consideration of $802 million. Also acted as sole lead arranger and bookrunner for Atlantic Gold Corporation's $150 million revolving credit facility and underwrote the change of control provision for St Barbara in conjunction with the transaction. > Exclusive financial advisor to Osisko Gold Royalties Ltd. on: (i) its acquisition of Barkervillle Gold Mines Ltd. in a transaction valued at $338 million and (ii) its $175 million asset swap transaction with Orion Resource Partners. Also acted as sole lead arranger and bookrunner for Osisko's $400 million revolving credit facility. > Sole financial advisor to Bombardier Inc. on a US$300 million disposal of the Q Series program and the underlying aftermarket business to Longview Aviation Capital Corp. > Sole financial advisor to Bombardier Inc. on a US$800 million disposal of its Business Aircraft Training activities, including a US$155 million monetization of royalties that were payable by CAE Inc. > Sole financial advisor to Transat A.T. Inc. in its review of strategic alternatives and $720 million disposal to Air Canada.
Leverage leadership in equity distribution to increase lead and co-lead positions	> Joint bookrunner on Lightspeed POS Inc.'s $276 million initial public offering and $217 million follow-on offering. > Co-bookrunner on $144 million equity offering for Park Lawn Corporation. > Co-lead on Northland Power Inc.'s $347 million subscription receipt equity financing. > Co-financial advisor for Crescent Point Energy Corp. on the sale of certain oil & gas assets in southeast Saskatchewan and Manitoba for $219 million. > Co-bookrunner and co-lead on an equity financing and administrative agent for Allied Energy Corp. as well co-lead arranger and joint bookrunner on a $75 million senior secured credit facility to finance the acquisition of certain assets from Crescent Point Energy Corp.

Priorities and Outlook for 2020

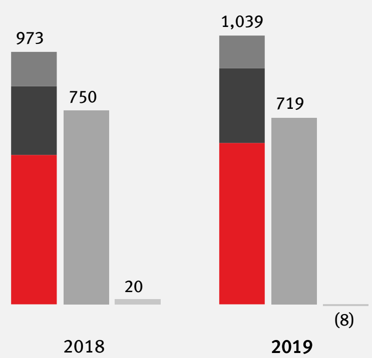
- Continue to expand our activities in areas of expertise with a constant focus on Canadian clients.
- Continue to be a strategic partner for our clients.
- Increase market share among corporations for all fee-based products.
- Continue to automate processes, use artificial intelligence, and increase data-sharing across the Financial Markets segment.
- Maintain tight cost control and an industry-leading efficiency ratio.

Segment Results – Financial Markets

Year ended October 31 (taxable equivalent basis)[1] (millions of Canadian dollars)	2019	2018[2]	% change
Global markets			
Equities	624	576	8
Fixed-income	289	267	8
Commodities and foreign exchange	126	130	(3)
	1,039	973	7
Corporate and investment banking	719	750	(4)
Gains on investments and other	(8)	20	
Total revenues on a taxable equivalent basis	1,750	1,743	–
Non-interest expenses	743	697	7
Contribution on a taxable equivalent basis	1,007	1,046	(4)
Provisions for credit losses	30	4	
Income before income taxes on a taxable equivalent basis	977	1,042	(6)
Income taxes on a taxable equivalent basis	260	278	(6)
Net income	717	764	(6)
Average assets	112,493	100,721	12
Average loans and acceptances	16,575	15,116	10
Net impaired loans[3]	23	–	
Average deposits	30,311	23,510	29
Efficiency ratio on a taxable equivalent basis[1]	42.5 %	40.0 %	

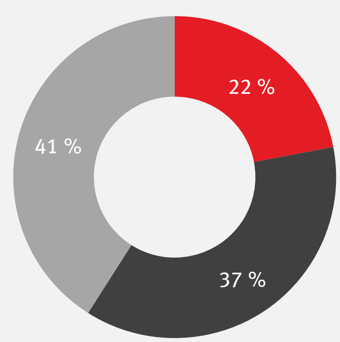
(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(2) For the year ended October 31, 2018, certain amounts have been reclassified.
(3) Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn.

Total Revenues by Category
Year ended October 31
(taxable equivalent basis)[1]
(millions of Canadian dollars)



- Global markets - Equities
- Global markets - Fixed-income
- Global markets - Commodities and foreign exchange
- Corporate and investment banking
- Gains on investments and other

Total Revenues by Geographic Distribution
Year ended October 31, 2019
(taxable equivalent basis)[1]



- Province of Quebec (2018: 31%)
- Other provinces (2018: 42%)
- Outside of Canada (2018: 27%)

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

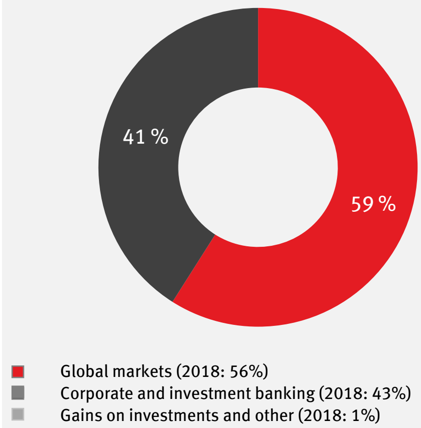
Financial Results

In the Financial Markets segment, net income totalled $717 million in fiscal 2019, down 6% year over year. The segment's fiscal 2019 total revenues on a taxable equivalent basis[1] amounted to $1,750 million, up $7 million from $1,743 million in fiscal 2018. Revenues from the Global Markets category posted year-over-year growth of 7%, with revenues from equity securities and from fixed-income securities each rising 8%, tempered by a 3% decrease in revenues from commodities and foreign exchange activities. As for corporate and investment banking revenues, they were down 4% year over year, mainly due to a slowdown in capital markets activity as well as to a decrease in merger and acquisition activities in fiscal 2019. This decrease was partly offset by higher banking services revenues in fiscal 2019. Lastly, higher gains on investments and other revenues were recorded in fiscal 2018.

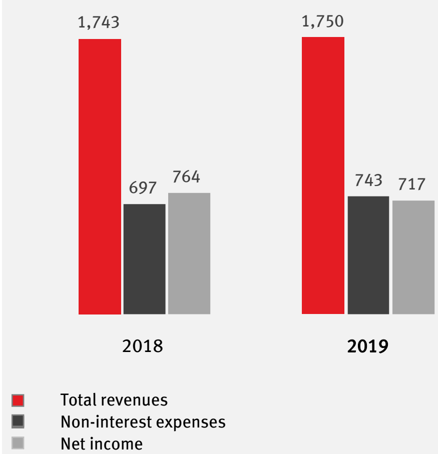
For the year ended October 31, 2019, the segment's non-interest expenses rose 7% year over year, mainly due to increases in compensation and employee benefits, in expenses related to technological investments, in business development expenses, and in operations support charges. The segment's fiscal 2019 efficiency ratio on a taxable equivalent basis[1] was 42.5% in fiscal 2019 versus 40.0% in 2018.

Financial Markets recorded $30 million in provisions for credit losses during fiscal 2019 compared to $4 million in fiscal 2018, an increase that stems mainly from credit loss provisions on impaired loans.

Total Revenues by Category
Year ended October 31, 2019
(taxable equivalent basis)[1]



Operating Results
Year ended October 31
(taxable equivalent basis)[1]
(millions of Canadian dollars)



(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Business Segment Analysis | U.S. Specialty Finance and International

The Bank complements its Canadian growth with a targeted, disciplined international strategy that aims for superior returns. The Bank is currently focused on specialty finance in the U.S. through Credigy and on personal and commercial banking in Cambodia through ABA Bank. The Bank also holds minority positions in financial groups operating in French-speaking Africa and Africa-Asia. The Bank has a moratorium in effect on any new significant investments in emerging markets. During fiscal 2019, the U.S. Specialty Finance and International (USSF&I) segment generated 10% of the Bank's consolidated total revenue and 12% of its net income.

U.S. Specialty Finance – Credigy

Founded in 2001, Credigy is a specialty finance company with flexibility across its capital structure to acquire or finance a diverse range of assets. Based in Atlanta, Georgia, Credigy is primarily active in performing assets covering a broad range of asset classes, mostly consumer receivables in the U.S. market. The Bank holds an 80% ownership interest in Credigy.

Economic and Market Review

Despite global uncertainty negatively affecting exports and business investment, the U.S. economy posted steady growth in 2019 thanks to resilience in consumption. Consumer confidence in the U.S. is flying high given a still-hot labour market that is fuelling household income. Lower interest rates and low leverage suggest upside potential for household credit in the U.S.

The economic environment in 2019 and the outlook for 2020 are discussed in more detail in the Economic Review and Outlook section on page 20.

Key Success Factors

- Ability to seize opportunities in rapidly changing market conditions through a disciplined yet adaptable investment strategy.
- Diversification across several classes of performing assets.
- Market credibility achieved through over 300 transactions life-to-date, representing over US$13 billion in total investments supported by the Bank.
- Rigorous pricing approach strengthened by continuous refinement of modelling and analytics capabilities and deep expertise in specific asset classes.
- Proven expertise in the successful management and servicing of consumer assets.

Objectives and Strategies

Credigy aims to provide customized solutions for the consumer receivables market in pursuit of the best risk-adjusted returns and a return on assets (ROA) of at least 2.5%.

Strategic Priorities	2019 Achievements and Highlights
Sustain deal flow by being a partner of choice for bank and non-bank institutions facing complex challenges and strategic changes	> Maintained average assets of approximately $7 billion.
Maintain a diversified mix of performing assets	> Performing assets accounted for 96% of assets. > Continued diversification in asset classes focusing on both secured and unsecured consumer assets.
Achieve best risk-adjusted returns	> Credit model monitoring and refinement helped Credigy focus on the best risk/reward investments. > Maintained a disciplined approach to ensure a risk-return balance and an ROA of at least 2.5%.

Priorities and Outlook for 2020

- Deliver growth by leveraging relationships with current and prospective partners.
- Leverage committed funding agreements to support asset growth.
- Capitalize on changing market conditions that have potential for large investment opportunities.
- Maintain focus on asset diversification and a balanced risk/return investment profile.

International – ABA Bank

Established in 1996, ABA Bank provides financial services to individuals and businesses in Cambodia. It is the third largest and fastest-growing commercial bank in the country with an ROE of approximately 30%. It offers a full spectrum of financial services to micro, small and medium enterprises (MSMEs) as well as to individuals through 70 branches, 541 ATM and cash deposit machines, and advanced online banking and mobile banking platforms. For the fifth and sixth straight years respectively, ABA Bank has been selected as the Best Bank in Cambodia by *Global Finance* and *Euromoney* magazines. In fiscal 2019, the Bank became 100% shareholder of ABA Bank after acquiring the remaining 10% ownership interest.

Economic and Market Review

The Cambodian economy is rapidly growing, with GDP growth nearing 7% in the past decade. It is a well-diversified economy, largely based on the U.S. dollar. The strong GDP growth is supported by its membership in the Association of Southeast Asian Nations (ASEAN) trade association and an expansionary fiscal policy. The Cambodian market is highly underbanked, with approximately 8% of the population having a credit account and 40% having a deposit account. Mobile technology and social media are widely adopted and used in the country, and over 70% of the population of 16.5 million is under 35 years of age.

Key Success Factors

- Loan strategy targeting MSMEs with simple products.
- Strong risk management driving high credit quality.
- Ability to fund loan growth through the deposit strategy.
- Deposit strategy leveraging state-of-the art technology, leading to an expanding transactional banking ecosystem.
- Experienced leadership team, and educated workforce supported by robust training programs.
- Governance structure based on high Canadian standards while providing local management with the autonomy to pursue strategic priorities and business objectives.
- Leveraging National Bank's reputation as a world-class financial institution.

Objectives and Strategies

ABA Bank wishes to pursue omnichannel banking strategy focused on being the lending partner of choice to MSMEs while increasing market penetration in deposits and transactional services for retail and business clients.

Strategic Priorities	2019 Achievements and Highlights
Grow market share in MSME lending while contributing to the economy and maintaining credit quality	> Achieved 52% growth in loan volumes, with 100% of loans collateralized. > At 0.7% in 2019, non-performing loans below market average. > Increased market penetration with the opening of 7 new branches for a total of 70 branches country-wide. > Improved from fourth to third largest bank in Cambodia by assets.
Sustain growth in deposits and transactional services	> Deposits increased 82% compared to 2018. > Continued to make enhancements to self-banking capabilities, including the first full-scale mobile banking application in Cambodia. > ABA's online payment gateway (PayWay) was optimized, adding new functions that facilitate merchant operations and that transform the Cambodian eCommerce landscape. > Self-banking transactions made up 94% of all transactions, compared to 90% in 2018.
Retain international recognition of ABA Bank's progress	> *Global Finance* magazine named ABA Bank as the "Best Bank in Cambodia" for the fifth consecutive year. > *Euromoney* magazine named ABA Bank as the "Best Bank in Cambodia" for the sixth consecutive year.

Priorities and Outlook for 2020

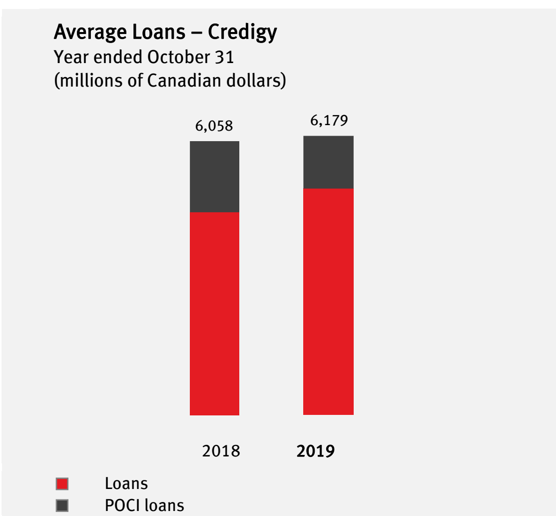
Leverage positive economic outlook by staying focused on core target markets
- Continue to offer simple and efficient banking solutions aligned with domestic needs in the underbanked Cambodian market.
- Focus on MSME clients to achieve loan growth.
- Increase deposit base by offering convenience to retail customers through an advanced digital and self-banking infrastructure and an expanding branch network.

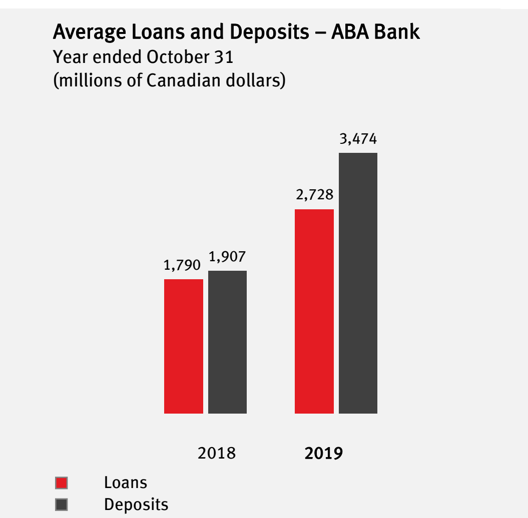
Ensure solid foundation for sustainable long-term growth
- Open 10 to 12 additional branches in 2020 to extend its reach in Cambodia and gain direct access to a larger pool of MSME customers and retail deposits.
- Focus on sound business processes as well as on strong governance and risk management.

Segment Results – USSF&I

Year ended October 31 (millions of Canadian dollars)	2019	2018	% change
Total revenues			
Credigy	402	446	(10)
ABA Bank	303	192	58
International	10	1	
	715	639	12
Non-interest expenses			
Credigy	152	156	(3)
ABA Bank	131	93	41
International	2	2	
	285	251	14
Contribution	430	388	11
Provisions for credit losses			
Credigy	68	81	(16)
ABA Bank	12	13	(8)
	80	94	(15)
Income before income taxes	350	294	19
Income taxes	71	72	(1)
Net income	279	222	26
Non-controlling interests	40	38	5
Net income attributable to the Bank's shareholders	239	184	30
Average assets	10,985	9,270	19
Average loans and receivables	8,907	7,853	13
Net impaired loans – Stage 3[(1)]	15	15	–
Purchased or originated credit-impaired (POCI) loans	1,166	1,576	(26)
Average deposits	3,474	1,907	82
Efficiency ratio	39.9 %	39.3 %	

(1) Net impaired loans – Stage 3 exclude POCI loans and are presented net of allowances for credit losses on Stage 3 loan amounts drawn.





Financial Results

In the USSF&I segment, the fiscal 2019 net income totalled $279 million compared to $222 million in fiscal 2018. The segment's fiscal 2019 total revenues amounted to $715 million versus $639 million in fiscal 2018, representing year-over-year growth of 12% that came mainly from a $111 million increase in the revenues of the ABA Bank subsidiary owing to sustained growth in loan and deposit volumes. At the Credigy subsidiary, revenues were down $44 million as a result of changes in the loan portfolio mix.

The segment's non-interest expenses stood at $285 million in fiscal 2019, a $34 million year-over-year increase essentially attributable to all of ABA Bank's non-interest expenses and related to its growing banking network. At the Credigy subsidiary, non-interest expenses were down slightly year over year.

In fiscal 2019, the segment recorded $80 million in provisions for credit losses, consisting essentially of Credigy's credit loss provisions.

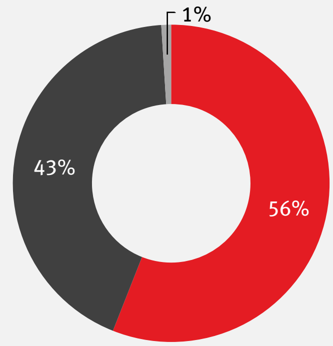
Credigy

For fiscal 2019, Credigy's net income totalled $144 million, down $10 million from fiscal 2018. The subsidiary's total revenues amounted to $402 million compared to $446 million in fiscal 2018, a $44 million or 10% decrease attributable mainly to lower net interest income arising from changes in the loan portfolio mix. Credigy's fiscal 2019 non-interest expenses stood at $152 million versus $156 million in fiscal 2018, with the decrease being attributable to the variable compensation associated with the subsidiary's revenues. Credigy recorded $68 million in provisions for credit losses for fiscal 2019 versus $81 million in fiscal 2018, a decrease that is attributable to credit loss provisions on impaired and non-impaired loans following repayments and maturities of certain loan portfolios, whereas credit loss provisions on POCI loans were up compared to fiscal 2018.

ABA Bank

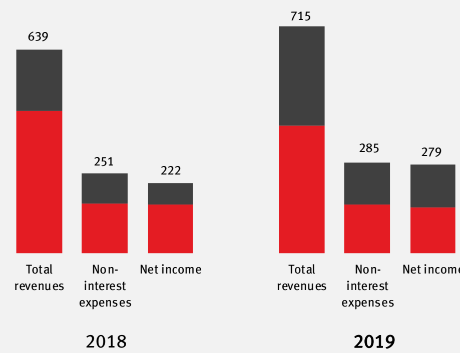
For fiscal 2019, ABA Bank's net income totalled $128 million, up $59 million or 86% from fiscal 2018. The subsidiary's total revenues amounted to $303 million compared to $192 million in fiscal 2018, a $111 million or 58% increase driven mainly by higher net interest income owing to sustained growth in loan volumes and deposit volumes, which rose 52% and 82%, respectively. The subsidiary's fiscal 2019 non-interest expenses stood at $131 million compared to $93 million in fiscal 2018. This increase was attributable to the expansion of the subsidiary's banking network, including compensation and employee benefits as well as occupancy expenses. For fiscal 2019, ABA Bank recorded $12 million in provisions for credit losses, stable when compared to $13 million in fiscal 2018.

Total Revenues by Category
Year ended October 31, 2019



- Credigy (2018: 70%)
- ABA Bank (2018: 30%)
- International (2018: negligible)

Operating Results
Year ended October 31
(millions of Canadian dollars)



- Credigy
- ABA Bank and International

Business Segment Analysis | Other

The *Other* heading reports on Treasury operations, liquidity management, Bank funding, asset and liability management, certain non-recurring items, and the unallocated portion of corporate units. Corporate units include Information Technology, Risk Management, Employee Experience, Operations, and Finance. These units provide advice and guidance throughout the Bank and to its business segments in addition to expertise and support in their respective fields.

Segment Results – Other

Year ended October 31 (taxable equivalent basis)(1) (millions of Canadian dollars)	2019	2018(2)
Net interest income on a taxable equivalent basis	(192)	(189)
Non-interest income on a taxable equivalent basis	294	220
Total revenues on a taxable equivalent basis	102	31
Non-interest expenses	390	275
Contribution on a taxable equivalent basis	(288)	(244)
Provisions for credit losses	–	–
Income before income taxes on a taxable equivalent basis	(288)	(244)
Income taxes (recovery) on a taxable equivalent basis	(88)	(74)
Net loss	(200)	(170)
Non-controlling interests	26	49
Net loss attributable to the Bank's shareholders	(226)	(219)
Specified items after income taxes(1)	6	–
Net loss excluding specified items(1)	(194)	(170)
Average assets	43,667	42,925

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(2) For the year ended October 31, 2018, certain amounts have been reclassified.

Financial Results

For the *Other* heading of segment results, there was a net loss of $200 million in fiscal 2019 compared to a net loss of $170 million in fiscal 2018. This change in net loss was essentially due to a lower contribution from treasury activities during fiscal 2019 arising in part from the impact of market volatility on the Bank's asset/liability management portfolio during the first quarter of 2019. The specified items recorded for fiscal 2019 had a $6 million unfavourable impact on the net income recorded in the *Other* heading. Net loss excluding specified items stood at $194 million for fiscal 2019 compared to a $170 million net loss in fiscal 2018.

Total revenues on a taxable equivalent basis were up, mainly due to the specified items recorded for fiscal 2019, which include a $79 million gain on disposal of Fiera Capital shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss arising from the fair value remeasurement of the Bank's investment in NSIA. The fiscal 2019 non-interest expenses were also up as a result of the following specified items: $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, an $11 million charge related to Maple, and $10 million in severance pay.

Quarterly Financial Information

Several trends and factors have an impact on the Bank's quarterly net income, revenues, non-interest expenses and provisions for credit losses. For example, the second quarter of the fiscal year has fewer days than the other quarters, which can result in reductions to total revenues and certain non-interest expense items. The following table presents a summary of results for the past eight quarters. Furthermore, a summary of results for the past 12 quarters is provided in Table 1 on pages 102 and 103.

Quarterly Results Summary(1)

(millions of Canadian dollars)				2019				2018
	Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1
Statement of income data								
Net interest income	936	855	942	863	826	837	885	834
Non-interest income	979	1,093	828	936	988	955	869	972
Total revenues	1,915	1,948	1,770	1,799	1,814	1,792	1,754	1,806
Provisions for credit losses	89	86	84	88	73	76	91	87
Non-interest expenses	1,095	1,154	1,026	1,026	1,036	1,011	992	1,024
Income taxes	127	100	102	133	139	136	124	145
Net income	604	608	558	552	566	569	547	550

(1) For additional information about the 2019 fourth quarter results, visit the Bank's website at nbc.ca or the SEDAR website at sedar.com to consult the Bank's *Press Release for the Fourth Quarter of 2019,* published on December 4, 2019.

The above analysis of the past eight quarters reflects the sustained performance of all the business segments and helps readers identify the items that have favourably or unfavourably affected results. Thanks to net income growth across most of the Bank's main business segments, the net income for each quarter of 2019 was up year over year. However, the year-over-year growth in net income for the first and second quarters of 2019 was tempered somewhat by a slowdown in the activities of the Financial Markets segment.

Net interest income posted year-over-year growth in every quarter of 2019. These increases were mainly driven by growth in personal and commercial loan and deposit volumes, net interest income growth at Wealth Management (notably due to loan and deposit growth) and to growth in the net interest income of the ABA Bank subsidiary. The year-over-year increases in net interest income for the first and third quarters of 2019 were tempered somewhat by lower net interest income in the Financial Markets segment. Furthermore, the Credigy subsidiary posted less net interest income in the first, second, and third quarters of 2019 as a result of changes in the loan portfolio mix.

The non-interest income results for the first, second and fourth quarters of 2019 were down year over year. Non-interest income in the first and second quarters of 2019 was down year over year given a slowdown in the activities of the Financial Markets segment. The 2019 third-quarter non-interest income included a revision to actuarial reserves and the following specified items: a $79 million gain on disposal of Fiera Capital shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss arising from the remeasurement at fair value of the Bank's investment in NSIA.

The provisions for credit losses posted year-over-year increases in almost every quarter of 2019. Higher credit loss provisions were recorded in the third and fourth quarters of 2019 as a result of provisions on personal loans, credit card receivables, and Financial Markets loans. For the second quarter of 2019, provisions for credit losses saw a year-over-year decrease, mainly due to provisions recorded on loans at the Credigy subsidiary.

The non-interest expense results for every quarter of 2019 were up year over year. Explaining these increases were compensation and employee benefits (including the variable compensation associated with revenue growth in the business segments), technology investment expenses made as part of the Bank's transformation plan and for business development activities, and expenses related to the expansion of ABA Bank's banking network. In addition, non-interest expenses for the third quarter of 2019 included $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, and $10 million in severance pay. For the fourth quarter of 2019, non-interest expenses included an $11 million charge related to Maple.

The effective income tax rate for every quarter of 2019 was down year over year. These changes in effective tax rate between the quarters of 2019 and 2018 were created mainly by a realization of capital gains taxed at a lower rate, by higher income from lower tax rate jurisdictions, and by lower tax-exempt dividend income. In addition, the U.S. tax reform had an impact on the effective tax rate of the first quarter of 2019 compared to the first quarter of 2018.

Analysis of the Consolidated Balance Sheet

Consolidated Balance Sheet Summary

As at October 31 (millions of Canadian dollars)	2019	2018	% change
Assets			
Cash and deposits with financial institutions	13,698	12,756	7
Securities	82,226	69,783	18
Securities purchased under reverse repurchase agreements and securities borrowed	17,723	18,159	(2)
Loans and acceptances, net of allowances	153,251	146,082	5
Other	14,560	15,691	(7)
	281,458	262,471	7
Liabilities and equity			
Deposits	189,566	170,830	11
Other	75,983	76,539	(1)
Subordinated debt	773	747	3
Equity attributable to the Bank's shareholders	14,778	13,976	6
Non-controlling interests	358	379	(6)
	281,458	262,471	7

As at October 31, 2019, the Bank's total assets amounted to $281.5 billion compared to $262.5 billion at year-end 2018, a $19.0 billion or 7% increase owing mainly to a $12.4 billion increase in securities and a $7.2 billion increase in loans and acceptances, net of allowances.

Cash and Deposits With Financial Institutions

At $13.7 billion as at October 31, 2019, cash and deposits with financial institutions rose $0.9 billion or 7% since the same date last year, mainly due to deposits with financial institutions made by the ABA Bank subsidiary. The Bank's liquidity and funding risk management practices are described on pages 82 to 89 of this MD&A.

Securities

As at October 31, 2019, securities totalled $82.2 billion (29% of total assets). During fiscal 2019, they grew $12.4 billion from $69.8 billion as at October 31, 2018. This growth was partly due to a $6.0 billion increase in securities at fair value through profit or loss attributable to a $13.5 billion increase in equity securities and to a $1.3 billion increase in securities issued or guaranteed by U.S. Treasury, other U.S. agencies and other foreign governments. These increases were tempered by a $4.2 billion decrease in securities issued or guaranteed by the Canadian government and a $3.9 billion decrease in securities issued or guaranteed by Canadian provincial and municipal governments. Securities other than those measured at fair value through profit or loss were up $6.4 billion, essentially due to a $2.1 billion increase in securities issued or guaranteed by the Canadian government, to a $3.5 billion increase in securities issued or guaranteed by U.S. Treasury, other U.S. agencies, and other foreign governments, and to a $0.8 billion increase in other debt securities. Securities purchased under reverse repurchase agreements and securities borrowed totalled $17.7 billion as at October 31, 2019, a 2% decrease since year-end 2018 that is mainly related to activities in the Financial Markets segment. The Bank's market risk management policies are described on pages 75 to 81 of this MD&A.

Loans and Acceptances

As at October 31, 2019, loans and acceptances, net of allowances for credit losses, totalled $153.3 billion, up $7.2 billion or 5% from October 31, 2018, and accounted for 54% of total assets.

Residential mortgage loans outstanding totalled $57.2 billion as at October 31, 2019, rising $3.5 billion or 7% since year-end 2018. This growth was driven by sustained demand for mortgage credit as well as by business growth at the ABA Bank subsidiary. Personal loans totalled $36.9 billion at year-end 2019, declining $0.5 billion from $37.4 billion at year-end 2018 due in part to changes in the loan portfolio mix of the Credigy subsidiary. As for credit card receivables, they totalled $2.3 billion, remaining stable when compared to October 31, 2018.

At $57.5 billion as at October 31, 2019, loans and acceptances to businesses and government increased $4.1 billion or 8% since October 31, 2018. This increase was driven mainly by Commercial Banking and Credigy subsidiary activities.

Table 9 (page 109) shows gross loans and acceptances by borrower category as at October 31, 2019. At $74.4 billion, residential mortgages (including home equity lines of credit) have posted strong growth since 2015 and account for 48% of total loans and acceptances. This growth in residential mortgages was driven by sustained demand for mortgage credit as well as by growth in business activity at the ABA Bank subsidiary. As for retail loans, they totalled $15.7 billion as at October 31, 2019. With respect to commercial loans, there was year-over-year growth in the agriculture category, utilities category, and manufacturing category. As at October 31, 2019, certain categories posted year-over-year decreases, notably the mining category, the finance and insurance category, and the government category. Furthermore, the Credigy subsidiary's POCI loans were down from October 31, 2018 due to maturities and repayments in certain portfolios.

Impaired Loans

Impaired loans include loans classified in Stage 3 of the expected credit loss model and the purchased or originated credit-impaired (POCI) loans of the Credigy subsidiary.

As at October 31, 2019, gross impaired loans excluding POCI loans stood at $684 million compared to $630 million as at October 31, 2018 (Table 10, page 109). Net impaired loans excluding POCI loans totalled $450 million as at October 31, 2019 compared to $404 million as at October 31, 2018, a $46 million increase related to net impaired loans in the Commercial Banking portfolio and the Financial Markets segment. Gross POCI loans stood at $1,166 million as at October 31, 2019, down from $1,576 million as at October 31, 2018 as a result of maturities and repayments of certain portfolios.

A detailed description of the Bank's credit risk management practices is provided on pages 67 to 74 of this MD&A as well as in Note 7 to the consolidated financial statements.

Other Assets

As at October 31, 2019, other assets totalled $14.6 billion compared to $15.7 billion as at October 31, 2018. This $1.1 billion decrease in other assets can essentially be traced to a $0.5 billion decrease in derivative financial instruments and to a $0.4 billion decrease in other assets. Investments in associates and joint ventures declined due to the disposal of a portion of the Bank's interest in Fiera Capital as well as to a conclusion to stop recognizing the equity stake in NSIA as an investment in an associate following a loss of significant influence. Premises and equipment also decreased due to the sale of the land and head office building occupied by the Bank.

Deposit Liability

At $189.6 billion as at October 31, 2019, deposits increased by $18.8 billion or 11% since year-end 2018. At $60.1 billion, personal deposits, as presented in Table 12 (page 110), increased $4.4 billion since October 31, 2018 and accounted for 32% of all deposits. This increase was driven by Bank initiatives designed to grow this type of deposit as well as by business growth at the ABA Bank subsidiary. A summary of total personal savings is provided in the table below.

As shown in Table 12, business and government deposits totalled $125.3 billion, up $15.0 billion from $110.3 billion at year-end 2018. This increase came from business growth at Commercial Banking and from treasury funding activities, including $3.5 billion in deposits subject to bank recapitalization (bail-in) conversion regulations, from corporate financing activities and from issuances of structured notes. Deposits from deposit-taking institutions were down $0.6 billion from the same date last year.

As at October 31, 2019, total personal savings amounted to $233.0 billion, up from $211.5 billion as at October 31, 2018. Overall, off-balance-sheet personal savings stood at $172.9 billion as at October 31, 2019 compared to $155.8 billion a year ago given net inflows in brokerage operations and stronger stock market performance.

Total Personal Savings

As at October 31

(millions of Canadian dollars)	2019	2018	% change
Balance sheet			
Deposits	60,065	55,688	8
Off-balance-sheet			
Brokerage	135,768	123,458	10
Mutual funds	36,819	31,874	16
Other	319	440	(28)
	172,906	155,772	11
Total	232,971	211,460	10

Other Liabilities

As at October 31, 2019, other liabilities stood at $76.0 billion, declining $0.5 billion since October 31, 2018, essentially due to a $5.0 billion decrease in obligations related to securities sold short, partly offset by a $1.9 billion increase in obligations related to securities sold under repurchase agreements and securities loaned, a $0.9 billion increase in derivative financial instruments, and a $1.2 billion increase in liabilities related to transferred receivables.

Subordinated Debt and Other Contractual Obligations

Subordinated debt has remained relatively stable since October 31, 2018. The contractual obligations are presented in detail in Note 29 to the consolidated financial statements.

Equity
As at October 31, 2019, equity attributable to the Bank's shareholders was $14.8 billion, rising $0.8 billion from $14.0 billion since October 31, 2018. This increase came from net income net of dividends, tempered by remeasurements of pension plans and other post-employment benefit plans, by a net change in gains (losses) on cash flow hedges, and by repurchases of common shares for cancellation, factors which themselves were partly offset by issuances of common shares under the Stock Option Plan and the impact of shares purchased or sold for trading. The Consolidated Statements of Changes in Equity on page 118 of this Annual Report present the items of equity. In addition, an analysis of the Bank's regulatory capital is presented in the Capital Management section of this MD&A.

Acquisition

On September 27, 2019, the Bank acquired the entire remaining non-controlling interest in the Cambodian subsidiary Advanced Bank of Asia Limited (ABA Bank) for $84 million. Following this transaction, ABA Bank became a wholly owned subsidiary of the Bank.

Exposures to Certain Activities

In 2012, the Financial Stability Board (FSB) formed a working group, the Enhanced Disclosure Task Force (EDTF), that was mandated to develop principles for enhancing the risk disclosures of major banks. The EDTF published a report containing 32 recommendations. The risk disclosures required by the EDTF are provided in this Annual Report and in the documents entitled *Supplementary Regulatory Capital and Pillar 3 Disclosure* and *Supplementary Financial Information*, which are available on the Bank's website at nbc.ca. In addition, on page 12 of this Annual Report is a table of contents that readers can use to locate information relative to the 32 recommendations.

The FSB recommendations seek to enhance the transparency and measurement of certain exposures, in particular structured entities, subprime and Alt-A exposures, collateralized debt obligations, residential and commercial mortgage-backed securities, and leveraged financing structures. The Bank does not market any specific mortgage financing program to subprime or Alt-A clients. Alt-A loans are granted to borrowers who cannot provide standard proof of income. The Bank's Alt-A loan volume was $402 million as at October 31, 2019 ($425 million as at October 31, 2018). The Bank does not have any significant direct position in residential and commercial mortgage-backed securities that are not insured by the CMHC. Credit derivative positions are presented in the *Supplementary Regulatory Capital and Pillar 3 Disclosure* report, which is available on the Bank's website at nbc.ca.

Leveraged finance is commonly employed to achieve a specific objective, for example, to make an acquisition, complete a buy-out or repurchase shares. Leveraged finance risk exposure takes the form of both funded and unfunded commitments. As at October 31, 2019, total commitments for this type of loan stood at $3,559 million ($2,967 million as at October 31, 2018). Details about other exposures are provided in the table concerning structured entities in Note 27 to the consolidated financial statements.

Related Party Transactions

In the normal course of business, the Bank provides various banking services and enters into contractual agreements and other transactions with associates, joint ventures, directors, key officers and other related parties. These agreements and transactions are entered into under conditions similar to those offered to non-related third parties.

In accordance with the *Bank Act* (Canada), the aggregate of loans granted to key officers of the Bank, excluding mortgage loans granted on their principal residence, cannot exceed twice the officer's annual salary.

Loans to eligible key officers are granted under the same conditions as those granted to any other employee of the Bank. The main conditions are as follows:

- the employee must meet the same credit requirements as a client;
- mortgage loans are offered at the preferential employee rate;
- home equity lines of credit bear interest at Canadian prime less 0.5%, but never lower than Canadian prime divided by two;
- personal loans bear interest at a risk-based regular client rate;
- credit card advances bear interest at a prescribed fixed rate in accordance with Bank policy;
- personal lines of credit bear interest at Canadian prime less 0.5%, but never lower than Canadian prime divided by two.

The Bank also offers a deferred stock unit plan to directors who are not Bank employees. For additional information, see Note 22 to the consolidated financial statements. Additional information on related parties is presented in Notes 9, 27 and 28 to the consolidated financial statements.

Income Taxes

In June 2019, the Bank was reassessed by the Canada Revenue Agency (CRA) for additional income tax and interest of approximately $150 million (including estimated provincial tax and interest) in respect of certain Canadian dividends received by the Bank during 2014.

In prior fiscal years, the Bank was reassessed for additional income tax and interest of approximately $220 million (including provincial tax and interest) in respect of certain Canadian dividends received by the Bank during the 2013 and 2012 taxation years.

The transactions to which the above-mentioned reassessments relate are similar to those prospectively addressed by income tax legislation enacted as a result of the 2015 Canadian federal budget.

The CRA may issue reassessments to the Bank for taxation years subsequent to 2014 in regard to activities similar to those that were the subject of the above-mentioned reassessments. The Bank remains confident that its tax position was appropriate and intends to vigorously defend its position. As a result, no amount has been recognized in the consolidated financial statements as at October 31, 2019.

Event After the Consolidated Balance Sheet

On November 19, 2019, the Bank paid 7.7 million euros to the German tax authorities in relation to the Maple case. This payment was made upon a final tax claim of the tax authorities against the insolvency administrator that was approved by the Maple GmbH creditor assembly. As at October 31, 2019, a provision of $11 million was recorded to reflect this adjusting event after the Consolidated Balance Sheet date. For additional information, see Note 26 to the consolidated financial statements.

Securitization and Off-Balance-Sheet Arrangements

In the normal course of business, the Bank is party to various financial arrangements that, under IFRS, are not required to be recorded on the Consolidated Balance Sheet or are recorded under amounts other than their notional or contractual values. These arrangements include, among others, transactions with structured entities, derivative financial instruments, the issuance of guarantees, credit instruments, and financial assets received as collateral.

Structured Entities

The Bank uses structured entities, among other means, to diversify its funding sources and to offer services to clients, in particular to help them securitize their financial assets or provide them with investment opportunities. Under IFRS, a structured entity must be consolidated if the Bank controls the entity. Note 1 to the consolidated financial statements describes the accounting policy and criteria used for consolidating structured entities. Additional information on consolidated and non-consolidated structured entities is provided in Note 27 to the consolidated financial statements.

Securitization of the Bank's Financial Assets

Mortgage Loans

The Bank participates in two Canada Mortgage and Housing Corporation (CMHC) securitization programs: the Mortgage-Backed Securities Program under the *National Housing Act* (Canada) (NHA) and the Canada Mortgage Bond (CMB) Program. Under the first program, the Bank issues NHA securities backed by insured residential mortgage loans and, under the second, the Bank sells NHA securities to Canada Housing Trust (CHT), which finances the purchase through the issuance of mortgage bonds insured by CMHC. Moreover, these mortgage bonds feature an interest rate swap agreement under which a CMHC-certified counterparty pays CHT the interest due to investors and receives the interest on the NHA securities. As at October 31, 2019, the outstanding amount of NHA securities issued by the Bank and sold to CHT was $19.2 billion. The mortgage loans sold consist of fixed- or variable-rate residential loans that are insured against potential losses by a loan insurer. In accordance with the NHA-MBS Program, the Bank advances the funds required to cover late payments and, if necessary, obtains reimbursement from the insurer that insured the loan. The NHA-MBS and CMB programs do not use liquidity guarantee arrangements. The Bank uses these securitization programs mainly to diversify its funding sources. In accordance with IFRS, because the Bank retains substantially all of the risks and rewards of ownership of the mortgage loans transferred to CHT, the derecognition criteria are not met. Therefore, the insured mortgage loans securitized under the CMB Program continue to be recognized in *Loans* on the Bank's Consolidated Balance Sheet, and the liabilities for the considerations received from the transfer are recognized in *Liabilities related to transferred receivables* on the Consolidated Balance Sheet. For additional information, see Note 8 to the consolidated financial statements.

Credit Card Receivables

In April 2015, the Bank set up Canadian Credit Card Trust II (CCCT II) to continue its program of securitizing credit card receivables on a revolving basis. The Bank uses this entity for capital management and funding purposes. The Bank acts as the servicer of the receivables sold and maintains the client relationship. Furthermore, it administers the securitization program and ensures that all related procedures are stringently followed and that investors are paid according to the provisions of the program.

As at October 31, 2019, the credit card receivables portfolio held by CCCT II (net of the Bank Certificate held by the Bank) represented an amount outstanding of $1.6 billion. CCCT II issued investors' certificates, $0.9 billion of which is held by third parties and $0.7 billion is held by the Bank. New receivables are periodically sold to the structure on a revolving basis to replace the receivables reimbursed by clients.

The different series of certificates are rated by the Fitch and DBRS rating agencies. From this portfolio of sold receivables, the Bank retains the excess spread, i.e., the residual net interest income after all the expenses related to this structure have been paid, and thus provides first-loss protection. Furthermore, second-loss protection for issued series is provided by certificates subordinated to the senior notes, representing 5.8% of the total amount of the series issued. The Bank controls CCCT II and thus consolidates it.

Securitization of Third-Party Financial Assets

The Bank administers multi-seller conduits that purchase financial assets from clients and finance those purchases by issuing commercial paper backed by the acquired assets. Clients use these multi-seller conduits to diversify their funding sources and reduce borrowing costs while continuing to service the financial assets and providing some amount of first-loss protection. Notes issued by the conduits and held by third parties provide additional credit loss protection. The Bank acts as a financial agent and provides administrative and transaction structuring services to these conduits. The Bank provides backstop liquidity and credit enhancement facilities under the commercial paper program. These facilities are presented and described in Notes 26 and 27 to the consolidated financial statements. The Bank has concluded derivative financial instrument contracts with these conduits, the fair value of which is presented on the Bank's Consolidated Balance Sheet. The Bank is not required to consolidate these conduits, as it does not control them.

Derivative Financial Instruments

The Bank uses various types of derivative financial instruments to meet its clients' needs, generate trading activity revenues and manage its exposure to interest rate, foreign exchange and credit risk as well as other market risks. All derivative financial instruments are accounted for at fair value on the Consolidated Balance Sheet. Transactions in derivative financial instruments are expressed as notional amounts. These amounts are not presented as assets or liabilities on the Consolidated Balance Sheet. They represent the face amount of the contract to which a rate or price is applied to determine the amount of cash flows to be exchanged. Notes 1 and 16 to the consolidated financial statements provide additional information on the types of derivative financial instruments used by the Bank and their accounting basis.

Guarantees

In the normal course of business, the Bank enters into various guarantee contracts. The principal types of guarantees are letters of guarantee, backstop liquidity and credit enhancement facilities, certain securities lending activities, and certain indemnification agreements. Note 26 to the consolidated financial statements provides detailed information on these guarantees.

Credit Instruments

In the normal course of business, the Bank enters into various off-balance-sheet credit commitments. The credit instruments used to meet the financing needs of its clients represent the maximum amount of additional credit that the Bank could be required to extend if the commitments were fully drawn. For additional information on these off-balance-sheet credit instruments and other items, see Note 26 to the consolidated financial statements.

Financial Assets Received as Collateral

In the normal course of business, the Bank receives financial assets as collateral as a result of transactions involving securities purchased under reverse repurchase agreements, securities borrowing and lending agreements, and derivative financial instrument transactions. For additional information regarding financial assets received as collateral, see Note 26 to the consolidated financial statements.

Capital Management

Capital management has a dual role of ensuring a competitive return to the Bank's shareholders while maintaining a solid capital foundation that covers risks inherent to the Bank's business, supports its business segments, and protects its clients.

Capital Management Framework

The Bank's capital management policy defines guiding principles as well as the roles and responsibilities of its internal capital adequacy assessment process. This process aims to determine the capital that the Bank needs to pursue its business activities and accommodate unexpected losses arising from extremely adverse economic and operational conditions. The Bank has implemented a rigorous internal capital adequacy assessment process that comprises the following procedures:

- conducting an overall risk assessment;
- measuring significant risks and the capital requirements related to the Bank's financial budget for the next fiscal year and current and prospective risk profiles;
- integrating stress tests across the organization and executing sensitivity analyses to determine the capital buffer above minimum regulatory levels (for additional information on enterprise-wide stress testing, see the Risk Management section of this MD&A);
- aggregating capital and monitoring the reasonableness of internal capital compared with regulatory capital;
- comparing projected internal capital with regulatory capital levels, internal operating targets, and competing banks;
- attesting to the adequacy of the Bank's capital levels.

Assessing capital adequacy is an integral part of capital planning and strategy. The Bank sets internal capital ratio targets that include a discretionary cushion in excess of the regulatory requirements, which provides a solid financial structure and sufficient capital to meet management's business needs in accordance with its risk appetite, along with competitive returns to shareholders, under both normal market conditions and a range of severe but plausible stress testing scenarios. The internal capital adequacy assessment process is a key tool in establishing the Bank's capital strategy and is subject to quarterly reviews and periodic amendments.

Risk-adjusted return on capital (RAROC) and shareholder value added (SVA), which are obtained from an assessment of required economic capital, are calculated quarterly for each of the Bank's business segments. The results are then used to guide management in allocating capital among the different business segments.

Structure and Governance

Along with its partners from Risk Management, Global Funding and Treasury Group, and Finance, the Capital Management team is responsible for maintaining integrated control methods and processes so that an overall assessment of capital adequacy may be performed.

The Board oversees the structure and development of the Bank's capital management policy and ensures that the Bank maintains sufficient capital in accordance with regulatory requirements and in consideration of market conditions. The Board delegates certain responsibilities to the Risk Management Committee (RMC), which in turn recommends capital management policies and oversees their application. However, the Board, on the recommendation of the RMC, assumes the following responsibilities:

- reviewing and approving the capital management policy;
- reviewing and approving the Bank's risk appetite, including the main capital and risk targets and the corresponding limits;
- reviewing and approving the capital plan and strategy on an annual basis, including the Bank's internal capital adequacy assessment process;
- reviewing and approving the implementation of significant measures respecting capital, including contingency measures;
- reviewing significant capital disclosures, including Basel capital adequacy ratios;
- ensuring the appropriateness of the regulatory capital adequacy assessment.

The Office of the President is responsible for defining the Bank's strategy and plays a key role in guiding measures and decisions regarding capital. The Enterprise-Wide Risk Management Committee oversees capital management, which consists of reviewing the capital plan and strategy and implementing significant measures respecting capital, including contingency measures, and making recommendations with respect to these measures.

Basel Accord and Regulatory Environment

Basel Accord

The Basel Accord proposes a range of approaches of varying complexity, the choice of which determines the sensitivity of capital to risks. A less complex approach, such as the Standardized Approach, uses regulatory weightings, while a more complex approach uses the Bank's internal estimates of risk components to establish risk-weighted assets and calculate regulatory capital.

As required under Basel, risk-weighted assets (RWA) are calculated for each credit risk, market risk, and operational risk. The Bank uses the Advanced Internal Rating-Based (AIRB) Approach for credit risk to determine minimum regulatory capital requirements for a majority of its portfolios. The credit risk of certain portfolios considered to be less significant is weighted according to the Basel Standardized Approach. The simple risk-weighted method is used to calculate the charge related to banking book equity securities. This method requires proactive management of the capital allocated to portfolios with banking book equity securities since, beyond a certain investment threshold, the cost of regulatory capital becomes prohibitive. As for operational risk, the Bank uses the Standardized Approach. Market risk-weighted assets are primarily determined using the Internal Model-Based Approach, but the Standardized Approach is used to assess interest-rate specific risk.

With respect to the risk related to securitization operations, the capital treatment depends on the type of underlying exposures and on the information available about the exposures. The Bank must use the Securitization Internal Rating-Based Approach (SEC-IRBA) if it is able to apply an approved internal ratings-based model and has sufficient information to calculate the capital requirements for all underlying exposures in the securitization pool. Under this approach, the RWA is derived from a combination of supervisory inputs and inputs specific to the securitization exposure such as the implicit capital charge related to the underlying exposures, the credit enhancement level, the effective maturity, the number of exposures, and the weighted average loss given default (LGD).

If the Bank cannot use the SEC-IRBA, it must use the Securitization External Rating-Based Approach (SEC-ERBA) for the securitization exposures that are externally rated. This approach assigns risk weights to exposures using external ratings. The Bank uses the ratings assigned by Moody's, Standard & Poor's (S&P), Fitch, DBRS or a combination of these ratings. The Bank uses the Internal Assessment Approach (IAA) for unrated securitization exposures relating to the asset-backed commercial paper conduits it sponsors. If the Bank cannot apply the SEC-ERBA or the IAA, it must use the supervisory formula under the Securitization Standardized Approach (SEC-SA). Under this approach, RWA is derived from inputs specific to the securitization exposure such as the implicit capital charge related to the underlying exposures calculated under the standardized credit risk approach as well as credit enhancement and delinquency levels.

If none of the above approaches can be used, the securitization exposure must be assigned a risk weight of 1,250%. The Bank can apply a reduced capital charge for securitization exposures that meet the criteria of the Simple, Transparent and Comparable (STC) framework. To mitigate the impact of the revised securitization framework, which took effect on November 1, 2018, OSFI has permitted grandfathering of the current capital treatment for one year through a negative adjustment to RWA that eliminates the initial increase in risk weights. OSFI has also provided transitional arrangements for all securitization transactions completed by December 31, 2018 for a maximum of two years.

Capital ratios are calculated by dividing capital by risk-weighted assets. Credit, market, and operational risks are factored into the risk-weighted assets calculation for regulatory purposes. Basel rules apply at the consolidated level of the Bank. Assets of non-consolidated entities for regulatory purposes are therefore excluded from the risk-weighted assets calculation.

The definition adopted by the Basel Committee on Banking Supervision (BCBS) distinguishes between three types of capital. Common Equity Tier 1 (CET1) capital consists of common shareholders' equity less goodwill, intangible assets, and other capital deductions. The Additional Tier 1 instruments comprise eligible non-cumulative preferred shares and the eligible amount of innovative instruments. The sum of CET1 and Additional Tier 1 capital forms what is known as Tier 1 capital. Tier 2 capital consists of eligible subordinated debt and certain allowances for credit losses. Total regulatory capital is the sum of Tier 1 and Tier 2 capital.

OSFI is responsible for applying the Basel Accord in Canada. As required under the Basel Accord, OSFI requires that regulatory capital instruments other than common equity have a non-viability contingent capital (NVCC) clause to ensure that investors bear losses before taxpayers should the government determine that it is in the public interest to rescue a non-viable financial institution. Instruments issued before January 1, 2013 that would be Basel III compliant if it were not for the absence of the NVCC clause are grandfathered and will be phased out over a period of ten years. The Bank expects to phase out all of its non-NVCC instruments without resorting to any regulatory event redemption. Furthermore, in the regulations of the *Canadian Deposit Insurance Corporation (CDIC) Act* and the *Bank Act* (Canada), the Government of Canada has provided detailed information on conversion, issuance, and compensation regimes for bail-in instruments issued by D-SIBs. Pursuant to the *CDIC Act,* in circumstances where OSFI has determined that the Bank has ceased, or is about to cease, to be viable, the Governor in Council may, upon a Minister of Finance recommendation indicating that he or she believes that it is in the public interest to do so, grant an order directing CDIC to convert all or a portion of certain shares and liabilities of the Bank into common shares of the Bank (a "Bail-In Conversion"). The Bail-in Regulations governing the conversion and issuance of bail-in instruments came into force on September 23, 2018, and those governing compensation for holders of converted instruments came into force on March 27, 2018. Any shares and liabilities issued before the date that the Bail-In Regulations come into force are not subject to a Bail-In Conversion, unless, in the case of a liability, the terms of such liability are, on or after that day, amended to increase its principal amount or to extend its term to maturity, and the liability, as amended, meets the requirements to be subject to a Bail-In Conversion. The Bail-in Regulations did not have a material impact on the Bank's funding plan.

The Bank and all other major Canadian banks have to maintain minimum capital ratios established by OSFI: a CET1 capital ratio of at least 10.0%, a Tier 1 capital ratio of at least 11.5%, and a Total capital ratio of at least 13.5%. All of these ratios are to include a capital conservation buffer of 2.5%, a 1% surcharge applicable solely to D-SIBs, and a 2.0% domestic stability buffer. The domestic stability buffer, which can vary from 0% to 2.5% of risk-weighted assets, consists exclusively of CET1 capital. A D-SIB that fails to meet this buffer requirement will not be subject to automatic constraints to reduce capital distributions but will have to provide a remediation plan to OSFI. The banks also have to meet the capital floor that sets the regulatory capital level according to the Basel II standardized approach. If the capital requirement under Basel III is less than 75% of the capital requirements as calculated under Basel II, the difference is added to risk-weighted assets. OSFI requires Canadian banks to meet a Basel III leverage ratio of at least 3.0%. The leverage ratio is a measure independent of risk that is calculated by dividing the amount of Tier 1 capital by total exposure. Total exposure is defined as the sum of on-balance-sheet assets (including derivative exposures and securities financing transaction exposures) and off-balance-sheet items. The assets deducted from Tier 1 capital are also deducted from total exposure.

OSFI's *Total Loss Absorbing Capacity* (TLAC) guideline, which applies to all D-SIBs under the federal government's bail-in regulations, came into effect on September 23, 2018. The purpose of the TLAC guideline is to ensure that a D-SIB has sufficient loss-absorbing capacity to support its recapitalization in the unlikely event it becomes non-viable. OSFI is requiring D-SIBs to maintain a minimum risk-based TLAC ratio of 23.25% (including the domestic stability buffer) of risk-weighted assets and a minimum TLAC leverage ratio of 6.75% by November 1, 2021. During the quarter ended April 30, 2019, the Bank started to issue qualifying bail-in debt and expects its TLAC ratios to improve through the normal refinancing of its maturing unsecured term debt. The Bank does not anticipate any challenges in meeting these TLAC requirements.

Requirements – Regulatory Ratios Under Basel III

							As at October 31, 2019
	Minimum	Capital conservation buffer	Minimum set by BCBS	D-SIB surcharge	Minimum set by OSFI[1]	Domestic stability buffer[2]	Minimum set by OSFI[1], including the buffer
Capital ratios							
CET1	4.5 %	2.5 %	7.0 %	1.0 %	8.0 %	2.0 %	10.0 %
Tier 1	6.0 %	2.5 %	8.5 %	1.0 %	9.5 %	2.0 %	11.5 %
Total	8.0 %	2.5 %	10.5 %	1.0 %	11.5 %	2.0 %	13.5 %
Leverage ratio	3.0 %	n.a.	n.a.	n.a.	3.0 %	n.a.	3.0 %

n.a. Not applicable
(1) The capital ratios include the capital conservation buffer and the D-SIB surcharge.
(2) For D-SIBs, the buffer level varies between 0% and 2.5% of risk-weighted assets and is set by OSFI.

The Bank ensures that its capital levels are always above the minimum capital requirements set by OSFI, including the buffer. By maintaining a strong capital structure, the Bank can cover the risks inherent to its business activities, support its business segments, and protect its clients.

Other disclosure requirements pursuant to Pillar 3 of the Basel Accord and a set of recommendations defined by the EDTF are presented in the *Supplementary Regulatory Capital and Pillar 3 Disclosure* report published quarterly and available on the Bank's website at nbc.ca. Furthermore, a complete list of capital instruments and their main features is also available on the Bank's website.

Regulatory Context
The Bank closely monitors regulatory developments and participates actively in various consultative processes. Presented below are brief descriptions of ongoing regulatory projects. As had been planned, the Bank applied several new regulatory requirements in 2019, in particular the SA-CCR (Standardized Approach for Measuring Counterparty Credit Risk) rules and the revised securitization framework (described above).

Basel III Reform
In December 2017, the Group of Central Bank Governors and Heads of Supervision (GHOS), which oversees the BCBS, endorsed the outstanding Basel III post-crisis regulatory reforms. The purpose of the approved reforms, set out in *Basel III: Finalising Post-Crisis Reforms,* is to reduce excessive variability in risk-weighted assets and improve comparability and transparency among bank capital ratios. The reforms must be implemented starting in 2022 and include the following: revisions to the standardized approaches for calculating credit risk and operational risk; a constraint on using the internal ratings-based approach for calculating credit risk; and revisions to the leverage ratio, the CVA, and the calculation of the output capital floor. In February 2018, the BCBS issued *Pillar 3 Disclosure Requirements – Updated Framework,* a consultative document that presents the additional disclosure requirements that will apply when the outstanding Basel III regulatory reforms take effect as of 2022, and these requirements will form a single Pillar 3 disclosure framework. In January 2019, the BCBS also issued a newly revised version of the document entitled *Revisions to the Minimum Capital Requirements for Market Risk* (initially issued in March 2018), which will have to be applied as of 2022.

In July 2018, OSFI issued a discussion paper, *Implementation of the Final Basel III Reforms in Canada,* which sets out OSFI's preliminary views on the scope and timelines for implementing the final Basel III reforms in Canada.

Other Projects
On April 10, 2019, OSFI released the final version of its B-2 guideline, *Large Exposure Limits for Domestic Systemically Important Banks*. Large exposure limits help to restrict the maximum loss that an institution could face in the event of a sudden failure of a counterparty. This new version of the B-2 guideline tightens the exposure limits applicable to Global Systemically Important Banks (G-SIBs) and to other Canadian D-SIBs. It recognizes eligible credit risk mitigation techniques by measuring exposures on a net basis rather than a gross basis, and it reduces the eligible capital base by replacing Total capital with Tier 1 capital. All D-SIBs are expected to comply with the B-2 guideline for the period beginning November 1, 2019.

On May 30, 2019, OSFI released a revised version of its B-12 guideline, *Interest Rate Risk Management*. This guideline outlines OSFI's expectations regarding the management of Interest Rate Risk in the Banking Book (IRRBB) in areas such as governance processes, risk measurement, development of stress test scenarios as well as key behavioural and modelling assumptions. D-SIBs will have to apply this revised guideline as of January 1, 2020.

On June 26, 2019, the BCBS finalized revisions to the leverage ratio's treatment of client-cleared derivatives and to disclosure requirements in order to address concerns about balance sheet window-dressing. The treatment of client-cleared derivatives was revised to align the leverage ratio measurement with the measurement determined by the SA-CCR rules as used for risk-based capital requirements. The revision to *Revisions to Leverage Ratio Disclosure Requirements* aims to alleviate leverage ratio balance sheet window-dressing concerns. Internationally active banks will be required to disclose their leverage ratios based on quarter-end values and on an average of daily values for securities financing transactions. These revisions will come into effect on January 1, 2022.

Capital Management in 2019

Management Activities
During the fiscal year ended October 31, 2019, the Bank repurchased 4,547,200 common shares for $281 million, which reduced *Common share* capital by $40 million and *Retained earnings* by $241 million. The repurchase of 2,347,200 common shares was part of the normal course issuer bid to repurchase for cancellation program that the Bank had launched on June 6, 2018 and that ended on June 5, 2019; under this program, the Bank repurchased a total of 6,847,200 common shares. On June 10, 2019, the Bank began a new normal course issuer bid to repurchase for cancellation up to 6,000,000 common shares over the 12-month period ending no later than June 9, 2020. During the year ended October 31, 2019, the Bank repurchased 2,200,000 common shares under the new program.

As at October 31, 2019, the Bank had 334,172,411 issued and outstanding common shares compared to 335,070,642 a year earlier as well as 98,000,000 issued and outstanding preferred shares, unchanged from October 31, 2018. For additional information on capital instruments, see Notes 15, 18 and 19 to the consolidated financial statements.

Dividends
The Bank's strategy for common share dividends is to aim for a dividend payout ratio of between 40% and 50% of net income attributable to common shareholders excluding specified items, taking into account such factors as financial position, cash needs, regulatory requirements and any other factor deemed relevant by the Board.

For fiscal 2019, the Bank declared $892 million in dividends to common shareholders, which represents 42% of net income attributable to common shareholders (2018: 41%). The declared dividends are within the target payout range. The Bank has taken a prudent approach to managing regulatory capital and remains confident in its ability to increase earnings going forward.

Shares and Stock Options

	As at October 31, 2019	
	Number of shares	$ million
First preferred shares		
Series 30	14,000,000	350
Series 32	12,000,000	300
Series 34	16,000,000	400
Series 36	16,000,000	400
Series 38	16,000,000	400
Series 40	12,000,000	300
Series 42	12,000,000	300
	98,000,000	2,450
Common shares	334,172,411	2,949
Stock options	12,103,626	

As at November 29, 2019, there were 334,201,015 common shares and 12,076,868 stock options outstanding. NVCC provisions require the conversion of capital instruments into a variable number of common shares should OSFI deem a bank to be non-viable or should the government publicly announce that a bank has accepted or agreed to accept an injection of capital. If an NVCC trigger event were to occur, all of the Bank's preferred shares and medium-term notes maturing on February 1, 2028, which are NVCC capital instruments, would be converted into common shares of the Bank according to an automatic conversion formula at a conversion price corresponding to the greater of the following amounts: (i) a $5.00 contractual floor price; or (ii) the market price of the Bank's common shares on the date of the trigger event (10-day weighted average price). Based on a $5.00 floor price and including an estimate for accrued dividends and interest, these NVCC capital instruments would be converted into a maximum of 723 million Bank common shares, which would have a 68.4% dilutive effect based on the number of Bank common shares outstanding as at October 31, 2019.

Regulatory Capital Ratios

As at October 31, 2019, the Bank's CET1, Tier 1 and Total capital ratios were, respectively, 11.7%, 15.0% and 16.1%, i.e., above the regulatory requirements, compared to ratios of, respectively, 11.7%, 15.5% and 16.8% as at October 31, 2018. The CET1 capital ratio remained stable. Net income net of dividends, and common share issuances under the Stock Option Plan offset the application of the SA-CCR rules for measuring counterparty credit risk, growth in risk-weighted assets, the common share repurchases during the year ended October 31, 2019, and remeasurements of pension plans and other post-employment benefit plans. The decreases in the Tier 1 capital ratio and the Total capital ratio were essentially due to growth in risk-weighted assets. As at October 31, 2019, the leverage ratio was 4.0%, stable compared to October 31, 2018. The growth in Tier 1 capital was offset by growth in total leverage exposure.

Regulatory Capital and Ratios Under Basel III

As at October 31 (millions of Canadian dollars)	2019	2018
Capital		
CET1	9,692	8,608
Tier 1	12,492	11,410
Total	13,366	12,352
Risk-weighted assets		
CET1 capital	83,039	73,654
Tier 1 capital	83,039	73,670
Total capital	83,039	73,685
Total exposure	308,902	284,337
Capital ratios		
CET1	11.7 %	11.7 %
Tier 1	15.0 %	15.5 %
Total	16.1 %	16.8 %
Leverage ratio	4.0 %	4.0 %

Movement in Regulatory Capital

Year ended October 31 (millions of Canadian dollars)	2019	2018
Common Equity Tier 1 (CET1) capital		
Balance at beginning	8,608	7,856
Issuance of common shares (including Stock Option Plan)	107	113
Impact of shares purchased or sold for trading	45	(10)
Repurchase of common shares	(281)	(467)
Other contributed surplus	9	14
Dividends on preferred and common shares	(1,008)	(934)
Net income attributable to the Bank's shareholders	2,256	2,145
Common share capital issued by subsidiaries and held by third parties	(13)	5
Removal of own credit spread net of income taxes	(8)	(24)
Impact of adopting IFRS 15 on November 1, 2018 (IFRS 9 on November 1, 2017)	(4)	(122)
Other	(163)	97
Movements in accumulated other comprehensive income		
Translation adjustments	(6)	27
Debt securities at fair value through other comprehensive income	1	(16)
Impact of adopting IFRS 9 on November 1, 2017		(10)
Other	3	1
Change in goodwill and intangible assets (net of related tax liability)	134	(57)
Other, including regulatory adjustments and transitional arrangements		
Change in defined benefit pension plan asset (net of related tax liability)	3	(7)
Change in amount exceeding 15% threshold		
Deferred tax assets	–	–
Significant investment in common shares of financial institutions	–	–
Change in other regulatory adjustments[1]	9	(3)
Balance at end	9,692	8,608
Additional Tier 1 capital		
Balance at beginning	2,802	2,601
New Tier 1 eligible capital issuances	–	600
Redeemed capital	–	(400)
Change in non-qualifying Additional Tier 1 subject to phase-out	–	–
Other, including regulatory adjustments and transitional arrangements	(2)	1
Balance at end	2,800	2,802
Total Tier 1 capital	12,492	11,410
Tier 2 capital		
Balance at beginning	942	204
New Tier 2 eligible capital issuances	–	750
Redeemed capital	–	–
Change in non-qualifying Tier 2 subject to phase-out	–	–
Tier 2 instruments issued by subsidiaries and held by third parties	(4)	2
Change in certain allowances for credit losses	10	(14)
Other, including regulatory adjustments and transitional arrangements	(74)	–
Balance at end	874	942
Total regulatory capital	13,366	12,352

(1) Represents the change in investments in the Bank's own CET1.

RWA by Key Risk Drivers

CET1 RWA amounted to $83.0 billion as at October 31, 2019, rising $9.4 billion from $73.7 billion as at October 31, 2018. This increase resulted mainly from organic growth in RWA and from a change in the method used to measure counterparty credit risk (SA-CCR). The changes in the Bank's risk-weighted assets by risk type are presented in the following table.

Risk-Weighted Assets Movement by Key Drivers

Quarter ended (millions of Canadian dollars)	October 31, 2019	July 31, 2019	April 30, 2019	January 31, 2019	October 31, 2018
	Total	Total	Total	Total	Total
Credit risk – Risk-weighted assets at beginning	65,693	64,124	62,162	59,476	57,974
Book size	1,979	1,588	1,589	1,273	1,629
Book quality	11	(155)	56	(198)	(203)
Model updates	(46)	416	33	–	(72)
Methodology and policy	(362)	–	–	1,634	–
Acquisitions and disposals	–	–	–	–	–
Foreign exchange movements	(21)	(280)	284	(23)	148
Credit risk – Risk-weighted assets at end	67,254	65,693	64,124	62,162	59,476
Market risk – Risk-weighted assets at beginning	3,972	3,788	3,964	3,435	4,755
Movement in risk levels(1)	304	184	(176)	529	(406)
Model updates	–	–	–	–	(914)
Methodology and policy	–	–	–	–	–
Acquisitions and disposals	–	–	–	–	–
Market risk – Risk-weighted assets at end	4,276	3,972	3,788	3,964	3,435
Operational risk – Risk-weighted assets at beginning	11,319	11,096	10,910	10,743	10,539
Movement in risk levels	190	223	186	167	204
Acquisitions and disposals	–	–	–	–	–
Operational risk – Risk-weighted assets at end	11,509	11,319	11,096	10,910	10,743
Risk-weighted assets at end	83,039	80,984	79,008	77,036	73,654

(1) Also includes foreign exchange rate movements that are not considered material.

The table above provides the risk-weighted assets movements by key drivers underlying the different risk categories.

The "Book size" item reflects organic changes in book size and composition (including new loans and maturing loans). RWA movements attributable to book size include increases or decreases in exposures, measured by exposure at default, assuming a stable risk profile.

The "Book quality" item is the Bank's best estimate of changes in book quality related to experience, such as underlying customer behaviour or demographics, including changes resulting from model recalibrations or realignments and also including risk mitigation factors.

The "Model updates" item is used to reflect implementations of new models, changes in model scope, and any other change applied to address model malfunctions. During the quarter ended July 31, 2019, the Bank updated its models for credit card portfolios and energy sector loans.

The "Methodology and policy" item presents the impact of changes in calculation methods resulting from changes in regulatory policies as a result, for example, of new regulations. During the quarter ended January 31, 2019, the Bank implemented the SA-CCR rules for measuring counterparty credit risk under the standardized approach, as required by the BCBS. During the quarter ended October 31, 2019, the Bank refined the risk-weight calculation method for derivative financial instruments.

Allocation of Economic Capital and Regulatory RWA

Economic capital is an internal measure that the Bank uses to determine the capital it needs to remain solvent and to pursue its business operations. Economic capital takes into consideration the credit, market, operational, business and other risks to which the Bank is exposed as well as the risk diversification effect among them and among the business segments. Economic capital thus helps the Bank to determine the capital required to protect itself against such risks and ensure its long-term viability. The by-segment allocation of economic capital and regulatory RWA was done on a stand-alone basis before attribution of goodwill and intangible assets. The method used to assess economic capital is reviewed regularly in order to accurately quantify these risks.

The Risk Management section of this MD&A provides comprehensive information about the main types of risk. The "Other risks" presented below include risks such as business risk and structural interest rate risk in addition to the benefit of diversification among types of risk.

Allocation of Risks by Business Segment

As at October 31, 2019
(millions of Canadian dollars)

NATIONAL BANK OF CANADA

Business segments	Personal and Commercial	Wealth Management	Financial Markets	U.S. Specialty Finance and International	Other
Major activities	Banking services Credit services Financing Investment solutions Insurance	Full-service brokerage Private banking Direct brokerage Investment solutions Administrative and trade execution services Transaction products for advisors Trust and estate services	Equities, Fixed-income, commodities and foreign exchange Corporate banking Investment banking	U.S. Specialty Finance • Credigy International • ABA Bank (Cambodia) • Minority interests in emerging markets	Treasury activities Liquidity management Bank funding Asset and liability management Corporate units

Economic capital by type of risk	Personal and Commercial	Wealth Management	Financial Markets	U.S. Specialty Finance and International	Other
Credit	1,708	105	2,199	521	63
Market	–	–	201	10	(16)
Operational	390	242	308	82	(73)
Other risks	217	414	340	42	(84)
Total	**2,315**	**761**	**3,048**	**655**	**(110)**

Risk-weighted assets	Personal and Commercial	Wealth Management	Financial Markets	U.S. Specialty Finance and International	Other
Credit	31,851	1,811	22,783	6,588	4,221
Market	–	–	4,147	–	129
Operational	4,692	2,917	3,764	1,024	(888)
Total	**36,543**	**4,728**	**30,694**	**7,612**	**3,462**

Risk Management

In this section of the MD&A, grey-shaded text and tables marked with an asterisk (*) are integral parts of the consolidated financial statements. They represent the Bank's objectives, the risk management policies and procedures, and the methods applied to measure credit risk, market risk as well as liquidity and funding risk, as required by IFRS 7 – *Financial Instruments: Disclosures.*

Risk-taking is intrinsic to a financial institution's business. The Bank views risk as an integral part of its development and the diversification of its activities. It advocates a risk management approach consistent with its business strategy. The Bank voluntarily exposes itself to certain risk categories, particularly credit and market risk, in order to generate revenue. It assumes certain risks that are inherent to its activities—to which it does not choose to expose itself—and that do not generate revenue, i.e., mainly operational risks. The purpose of sound and effective risk management is to provide reasonable assurance that incurred risks do not exceed acceptable thresholds, to control the volatility in the Bank's results, and to ensure that risk-taking contributes to the creation of shareholder value.

Risk Management Framework

Risk is rigorously managed. Risks are identified, measured and controlled to achieve an appropriate balance between the returns obtained and the risks assumed. Consequently, decision-making is supported by risk assessments and management processes that are consistent with the Bank's risk appetite and by prudent levels of capital and liquidity. Despite the exercise of stringent risk management and the mitigation measures in place, risk cannot be suppressed entirely, and residual risks may occasionally cause significant losses.

The Bank has developed guidelines that support sound and effective risk management:

- risk is everyone's business: business units, risk management and oversight functions as well as Internal Audit play an important role in ensuring a risk management framework is in place;
- client-centric: having quality information is key to understanding clients, effectively managing risk, and delivering excellent client service;
- enterprise-wide: an integrated view of risk is the basis for sound and effective risk management and decision-making by management;
- human capital: the Bank's employees are engaged, experienced and have a high level of expertise; their curiosity supports continuous development and their rigour ensures that risk management is built into the corporate culture;
- fact-based: good risk management relies heavily on common sense and good judgment and on advanced systems and models.

Risk Appetite

Risk appetite represents how much risk an organization is willing to assume to achieve its business strategy. The Bank defines its risk appetite by setting tolerance thresholds, by aligning those thresholds with its business strategy, and by integrating risk management throughout its corporate culture. Risk appetite is built into decision-making processes as well as into strategic, financial and capital planning.

The Bank's risk appetite framework consists of principles, statements, metrics as well as targets and is reinforced by policies and limits. When setting its risk appetite targets, the Bank considers regulatory constraints and the expectations of stakeholders, in particular customers, employees, the community, shareholders, regulatory agencies, governments, and rating agencies.

The risk appetite framework is defined by the following principles and statements:

The Bank's brand, reputation and long-term viability are at the centre of our decisions, which demand:

- a strong credit rating to be maintained;
- a strong capital and cash position;
- rigorous management of regulatory compliance risk, including sales practices;
- zero tolerance for negligence in information security.

The Bank understands the risks taken; they are aligned with our business strategy and translate into:

- a risk-reward balance;
- a stable risk profile;
- a strategic level of concentration aligned with approved targets.

The Bank's transformation and simplification plan is being carried out without compromising rigorous risk management, which is reflected in:

- a low tolerance to operational and reputation risk;
- operational and information systems stability, both under normal circumstances and in times of crisis.

The Bank's management and business units are involved in the process for setting the risk appetite and are responsible for adequately monitoring the chosen risk indicators. These needs are assessed by means of the enterprise strategic planning process. The risk indicators are reported on a regular basis to ensure an effective alignment of the Bank's risk profile to its risk appetite; otherwise, appropriate actions could be taken. Additional information on the key credit, market and liquidity risk indicators monitored by the Bank's management is presented on the following pages.

Enterprise-Wide Stress Testing

As part of a more extensive process aimed at ensuring that the Bank maintains adequate capital levels commensurate with its business strategy and risk appetite, an enterprise-wide stress testing program is in place at the Bank. Stress testing can be defined as a risk management method that assesses the potential effects—on the Bank's financial position, capital and liquidity—of a series of specified changes in risk factors, corresponding to exceptional but plausible events. The program supports management's decision-making process by identifying potential vulnerabilities for the Bank as a whole that are considered in setting limits as well as in longer term business planning. The scenarios and stress test results are reviewed by a group of stress testing experts, a stress testing oversight group and the Global Risk Committee (GRC) and are approved by the Board. For additional information, see the Stress Testing and Crisis Scenarios sections of this MD&A applicable to credit risk, market risk, and liquidity risk.

Incorporation of Risk Management Into the Corporate Culture

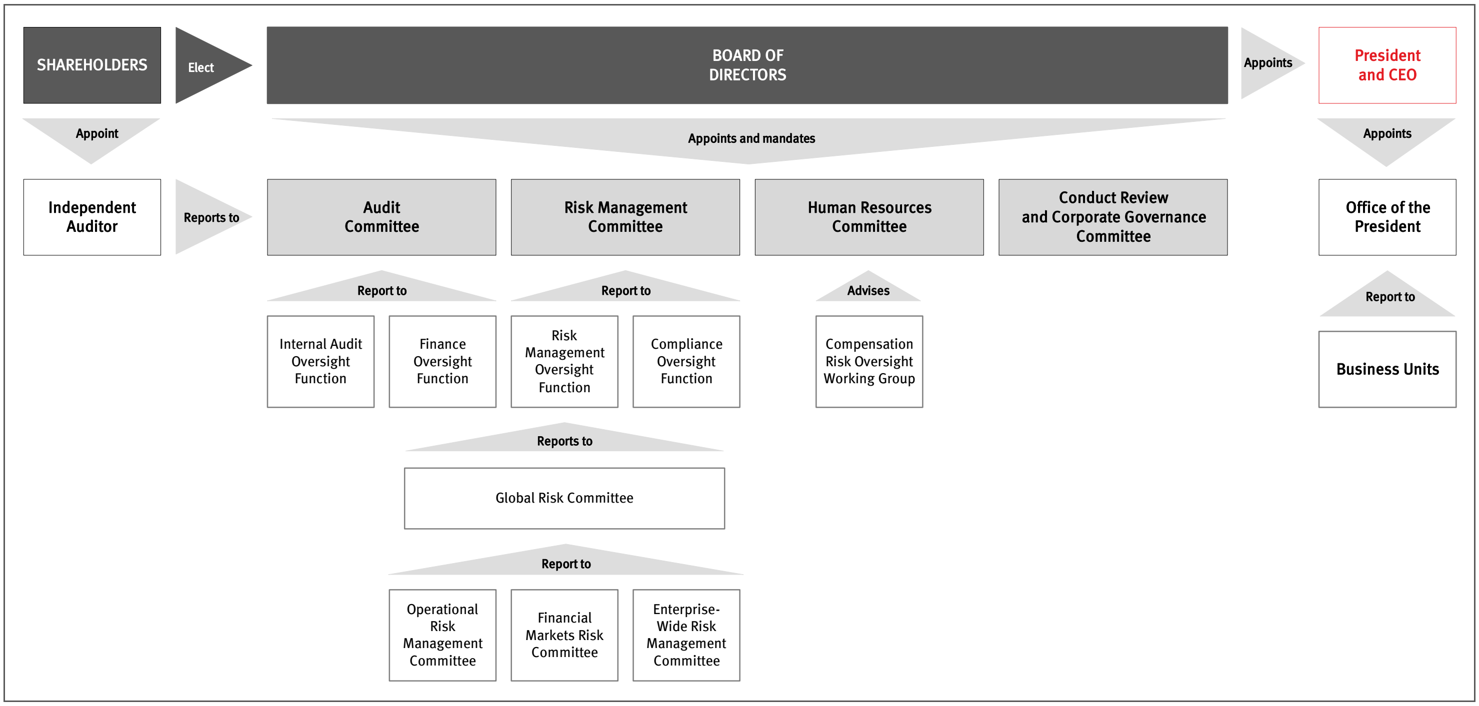
The Bank's management continually promotes risk management through internal communications. A balanced approach is advocated, whereby business development initiatives are combined with a constant focus on sound and effective risk management. In particular, risk is taken into consideration when preparing the segments' business plans, when analyzing strategic initiatives and when launching new products. The Bank's risk management is also strengthened by incentive compensation programs that are structured to reflect the Bank's risk appetite. In addition, Internal Audit carries out an evaluation of the culture through its mandates. Finally, all employees must complete mandatory annual regulatory compliance training focused on the Bank's Code of Conduct and Ethics and on anti-money laundering and anti-terrorist financing (AML/ATF) efforts. Risk management training is also offered across all segments of the Bank.

Furthermore, to ensure the effectiveness of the existing risk management framework, the Bank has defined clear roles and responsibilities by reinforcing the concept of the three lines of defence. The Governance Structure section presented on the following pages defines this concept as well as the roles and responsibilities at all levels of the organization.

First Line of Defence Risk Owner	**Second Line of Defence** Independent Oversight	**Third Line of Defence** Independent Assurance
Business Units	Risk Management and Oversight Functions	Internal Audit
• Identify, manage, assess and mitigate risks in day-to-day activities. • Ensure activities are in alignment with the Bank's risk appetite and risk management policies.	• Oversee risk management by setting policies and standards. • Provide independent oversight of management practices and an independent challenge of the first line of defence. • Promote sound risk management at the Bank. • Monitor and report on risk.	• Provide the Board and management with independent assurance as to the effectiveness and efficiency of the main governance, risk management, and internal control processes and systems. • Provide recommendations and advice to promote the Bank's long-term financial strength.

Governance Structure*

The following diagram shows the Bank's overall governance architecture and the governance relationships established for risk management.



The Board of Directors (Board)[(1)]

The Board examines and approves the Bank's overall risk philosophy and risk appetite, acknowledges and understands the main risks faced by the Bank, and makes sure appropriate systems are in place to effectively manage and control those risks. In addition, the Board ensures that the Bank operates in accordance with environmental, social and governance (ESG) practices and strategies. It performs its mandate both directly and through its committees, particularly the Audit Committee, the Risk Management Committee, the Human Resources Committee, and the Conduct Review and Corporate Governance Committee.

The Audit Committee[(1)]

The Audit Committee oversees the work of the Bank's internal auditor and independent auditor; ensures the Bank's financial strength; establishes the Bank's financial reporting framework, analysis processes and internal controls; and reviews any reports of irregularities in accounting, internal controls, and audit.

The Risk Management Committee (RMC)[(1)]

The Risk Management Committee examines the risk appetite framework and recommends it to the Board for approval. It approves the main risk management policies and risk tolerance limits. It ensures that appropriate resources, processes and procedures are in place to properly and effectively manage risk on an ongoing basis. Finally, it monitors the risk profile and risk trends of the Bank's activities and ensures alignment with the risk appetite.

The Human Resources Committee[(1)]

The Human Resources Committee examines and approves the Bank's total compensation policies and programs, taking into consideration the risk management framework, and recommends their approval to the Board. It sets annual objectives and key performance indicators for the President and Chief Executive Officer, recommends that they be approved by the Board, and evaluates the performance and achievements against these objectives and indicators. It recommends to the Board that it approves the compensation of the President and Chief Executive Officer, of the members of the Office of the President, and of the heads of the oversight functions. It also periodically reviews and examines the management succession plan.

The Conduct Review and Corporate Governance Committee[(1)]

The Conduct Review and Corporate Governance Committee ensures that the Bank maintains sound practices that comply with legislation and best practices, particularly in the area of ESG responsibilities. It must ensure that the directors are qualified by evaluating the performance and effectiveness of the Board and its members and by planning director succession and the composition of the Board. The Committee ensures that mechanisms are in place to prevent prohibited financial transactions between the Bank and related parties.

(1) Additional information about the Bank's governance architecture can be found in the Management Proxy Circular for the 2020 Annual Meeting of Holders of Common Shares, which will soon be available on the Bank's website at nbc.ca and on SEDAR's website at sedar.com. The mandates of the Board and its committees are available in their entirety at nbc.ca.

The Office of the President and the Bank's Management

Composed of the President and Chief Executive Officer and the officers responsible for the Bank's main functions and business units, the Office of the President ensures that risk management is effective and aligned with the Bank's pursuit of its objectives and strategies. The Bank's management promotes the integration of risk management into its corporate culture and manages the primary risks facing the Bank.

The Internal Audit Oversight Function

The Internal Audit Oversight Function is the third line of defence in the risk management framework. It is responsible for providing the Bank's Board and management with objective, independent assurance as well as advice on the effectiveness and efficiency of the main governance, risk management, and internal control processes and systems and for making recommendations and providing advice to promote the Bank's long-term strength.

The Finance Oversight Function

The Finance Oversight Function is responsible for optimizing management of financial resources and ensuring sound governance of financial information. It helps the business segments and support functions with their financial performance, ensures compliance with regulatory requirements, and carries out the Bank's reporting to shareholders and the external reporting of the various units, entities and subsidiaries of the Bank. It is responsible for capital management and actively participates in the activities of the Asset/Liability Management Committee.

The Risk Management Oversight Function

The Risk Management Oversight Function is responsible for identifying, assessing and monitoring—independently and using an integrated approach—the various risks to which the Bank is exposed and for promoting a risk management culture within the Bank. The Risk Management team helps the Board and management understand and monitor the main risks. The unit also develops, maintains and communicates the risk appetite framework while overseeing the integrity and reliability of risk measures.

The Compliance Oversight Function

The Compliance Oversight Function is responsible for implementing a Bank-wide regulatory compliance risk management framework by relying on an organizational structure that includes functional links to the main business segments. It also exercises independent oversight and evaluation of the compliance of the Bank and its subsidiaries with standards and policies on regulatory compliance risk.

The Compensation Risk Oversight Working Group

The working group that monitors compensation-related risks supports the Human Resources Committee in its compensation risk oversight role. It is a three-member group consisting of the Executive Vice-President, Risk Management; the Chief Financial Officer and Executive Vice-President, Finance; and the Executive Vice-President, Employee Experience. The working group helps to ensure that compensation policies and programs do not unduly encourage senior management members, officers, material risk takers or bank employees to take risks beyond the Bank's risk tolerance thresholds. As part of that role, it ensures that the Bank is adhering to the Corporate Governance Guidelines issued by OSFI and to the Principles for Sound Compensation Practices issued by the Financial Stability Board, for which the Canadian implementation and monitoring is conducted by OSFI. The Board's Risk Management Committee also reviews the reports presented by the working group to the Human Resources Committee.

The Global Risk Committee (GRC)

The Global Risk Committee defines the parameters of the policies that determine risk tolerance and the overall risk strategy, for the Bank and its subsidiaries as a whole, and sets limits as well as tolerance and intervention thresholds enabling the Bank to properly manage the main risks to which it is exposed. The committee approves and monitors all large credit facilities. It also recommends for Board approval the Bank's risk philosophy, risk appetite and risk profile management. The Operational Risk Management Committee, the Financial Markets Risk Committee, and the Enterprise-Wide Risk Management Committee presented in the governance structure diagram are the primary committees reporting to the Global Risk Committee. The Global Risk Committee also carries out its mandate through the Senior Complex Valuation Committee, the Committee on Banks, the Models Oversight Committee and the Product and Activity Review Committees.

The Business Units

As the first line of defence, the business units manage risks related to their operations within established limits and in accordance with risk management policies by identifying, analyzing and understanding the risks to which they are exposed and implementing risk mitigation mechanisms. The management of these units must ensure that employees are adhering to current policies and limits.

Risk Management Policies

The risk management policies and related standards and procedures set out responsibilities, define and describe the main activity-related risks, specify the requirements that the business units must meet in assessing and managing risk, stipulate the authorization process for risk-taking and set the risk limits to be adhered to. These policies cover the main risks in the Bank, are reviewed regularly to ensure they are still relevant given changes in the markets and in the business plans of the Bank's business units, and apply to the entire Bank and its subsidiaries. Other policies, standards, and procedures complement the main policies and cover more specific aspects of risk management such as business continuity, the launch of new products, initiatives or activities, or financial instrument measurement.

Governance of Model Risk Management

The Bank makes increasing use of models to guide enterprise-wide risk management, financial markets strategy, economic and regulatory capital allocation, global credit risk management, wealth management and profitability measures. Models have in fact become a standard in risk management. This stresses the growing importance of model risk for banks, hence the implementation of a rigorous model risk management process to ensure models can be used appropriately and efficiently to manage risks.

The key components of the Bank's model risk management governance framework are as follows: the model risk management policies and standards, the model vetting group, and the Models Oversight Committee. The policies and standards set the rules and principles applicable to developing and vetting models. The scope of models covered is wide, ranging from market risk pricing models and automated credit decision-making models to the business risk capital model, including models used for regulatory capital and stressed capital purposes, IFRS 9 models, and financial-crime models. The framework also includes more advanced artificial intelligence models.

One of the cornerstones of the Bank's policies is the general principle that all models deemed important for the Bank or used for regulatory capital purposes require heightened lifecycle monitoring and independent vetting. All models used by the Bank are therefore classified in terms of risk level (low, medium, or high). Based on this classification, the Bank applies strict guidelines regarding the requirements for model development and documentation, independent review thereof, performance monitoring thereof, and minimum review frequency. The Bank believes that the best defence against "model risk" is the implementation of a robust development and validation framework.

Independent Oversight by the Compliance Service

Compliance is an independent oversight function within the Bank. Its Senior Vice-President and Chief Compliance Officer has direct access to the RMC and to the President and Chief Executive Officer and can communicate directly with officers and directors of the Bank and of its subsidiaries and foreign centres. The Senior Vice-President, Chief Compliance Officer and Chief Anti-Money Laundering Officer regularly meets with the Chair of the RMC (with whom she has a direct reporting relationship) in the absence of management, to review matters on the relationship between the Compliance Service and the Bank's management and on access to the information required.

Business unit managers must oversee the implementation of mechanisms for the daily control of regulatory compliance risks arising from the operations under their responsibility. Compliance exercises independent oversight in order to assist managers in effectively managing these risks and to obtain reasonable assurance that the Bank is compliant with the regulatory requirements in effect where it does business, both in Canada and internationally.

Independent Assessment by Internal Audit

Internal Audit is an independent, objective function within the Bank. Through the Audit Committee, it provides assurance to management and the Board as to the Bank's level of command over its activities, advises on how to improve those activities, and contributes to the creation of added value. It helps the Bank to achieve its objectives by applying a systematic, methodical approach for assessing and improving the effectiveness of the design and operation of its main governance, risk management and internal control processes and systems and formulates recommendations to promote the Bank's long-term strength.

Whenever recommendations are issued, Internal Audit is mandated to independently evaluate the appropriateness of the measures taken by managers to resolve issues and then to ensure rigorous follow-up. The Senior Vice-President, Internal Audit reports to the Chair of the Audit Committee. Her independence is ensured through an administrative relationship with the President and Chief Executive Officer, and she may, at any time, call an unscheduled Audit Committee meeting. Internal Audit has unrestricted access to all business segments, corporate units and subsidiaries of the Bank.

Top and Emerging Risks

Top and emerging risks are risks that could have a material adverse effect on the Bank's financial results, reputation, or long-term business model and strategy. The Bank's processes are designed to detect and assess these risks as early as possible so that appropriate mitigating strategies can be applied.

Managing risk requires a solid understanding of every type of risk found across the Bank. The Bank therefore maintains an inventory of the main risks and the emerging risks to which it is exposed. Doing so makes it easier to identify and effectively manage risks. In the normal course of business, the Bank is primarily exposed to the following risks.

Credit risk	Market risk	Funding and liquidity risk	Operational risk	Regulatory compliance risk	Reputation risk	Strategic risk	Environmental risk

The Bank is also exposed to other significant and emerging risks, as defined below.

Risk	Trend	Description
Information security and cybersecurity		Technology, which is now omnipresent in our daily lives, is at the heart of banking services and has become the main driver of innovation in the financial sector. While this digital transformation meets the growing needs of customers while enhancing the operational efficiency of institutions, it nevertheless comes with information security and cybersecurity risks. The personal information and financial data of financial institution customers are prime targets for criminals. These criminals, who are increasingly well organized and employing ever more sophisticated schemes, try to use technology to steal information. Faced with a resurgence of cyberthreats and the sophistication of cybercriminals, the Bank is exposed to the risks associated with data breaches, malicious software, unauthorized access, hacking, phishing, identity theft, intellectual property theft, asset theft, industrial espionage, and possible denial of service due to activities causing network failures and service interruptions. Cyberattacks, as with system breaches or interruptions that support the Bank and its customers, could cause client attrition; financial loss; inability of clients to do their banking; non-compliance with privacy legislation or any other laws in effect; legal disputes; fines; penalties or regulatory action; reputational damage; compliance costs, corrective measures, investigative, or restoration costs; cost hikes to maintain and upgrade technological infrastructures and systems, all of which could affect the Bank's operating results or financial position. It is also possible for the Bank to be unable to prevent or implement effective preventive measures against every potential cyberthreat, as the tactics used are multiplying, change frequently, come from a wide range of sources and are increasingly sophisticated. Within this context, the Bank works to ensure the integrity and protection of its systems and information. The Bank reaffirms its commitment to continuous improvement in the area of information security, the ultimate goal being to protect its customers and maintain their trust. Along with its partners in the financial sector and with the regulatory authorities, the Bank is committed to making a sustained effort to mitigate technology risks. Measures specifically directed at anticipating this type of threat include the formation of multidisciplinary teams comprising cybersecurity and fraud prevention specialists. The Bank is also pursuing initiatives under its own cybersecurity program aimed at adapting its protection, surveillance, detection and response capabilities in response to changing threats. A governance and accountability structure has also been established to support decision-making based on sound risk management. The RMC is regularly informed of cybersecurity trends and developments and of lessons learned from operational incidents that have occurred in other large organizations in order to gain a better understanding of potential risks, particularly risks related to cybersecurity and the protection of personal information.

Risk	Trend	Description
Economic and geopolitical risk		The current economic expansion in the United States has become the longest since World War II, and this has many observers wondering whether a recession is imminent. Clearly the power struggle between China and the United States over trade has given cause for concern. The longer that this climate of uncertainty persists, the greater the likelihood that business leaders will delay investment and hiring plans as they wait for more clarity on the new rules of the game. Activity in the global manufacturing sector slowed significantly in 2019 but, fortunately, the service sector continued to perform well. Some emerging countries are particularly vulnerable to rising protectionism, given the important role played by the manufacturing sector in their economies. In addition, in recent years, U.S.-dollar debt levels in certain countries have risen sharply, and an appreciation of the U.S. dollar could compromise the creditworthiness of certain borrowers. In Europe, geopolitical risks are abound, including the possibility that the United Kingdom will leave the European Union without an agreement, political uncertainty in Italy, and a potential resurgence of the yellow vest movement in France. Given the exceptional monetary measures taken by central banks combined with mild economic growth and low inflation, long-term interest rates have remained low for a long time in the advanced economies. Such a situation may have prompted market participants to adopt excessive risk-taking strategies in search of higher returns, which may have adverse effects should the economy falter or interest rates rise. Therefore, the Bank is remaining vigilant and continuing to rely on its strong risk management framework to identify, assess, and mitigate risk and to remain within the risk appetite limits. The Canadian economy is showing encouraging signs in a gloomy global economic environment. The labour market has been resilient despite disappointing economic growth in the fourth quarter of 2018 and in the first quarter of 2019. A strong rebound in the second quarter confirmed that this weakness was only temporary, particularly in the energy sector. In the wake of the sharp drop in oil prices in 2014-2015, producers have adapted to the new environment, but if oil and gas prices were to fall even further, producers would face obstacles that would affect their repayment capacity and credit quality. The fossil fuel-producing provinces continue to idle and their unemployment rates remain high. Sound economic and financial conditions in the three largest provinces (Ontario, Quebec and British Columbia) continue, however, to support a credit environment favourable to the loan portfolios. Still, Canada remains vulnerable to a deteriorating global economic backdrop, which threatens to erode job creation and disposable household income—even more so given high debt levels. While the Vancouver and Toronto real estate markets are showing some stability after a slowdown, they remain vulnerable to a less favourable economic environment due to high prices. An unexpected jump in inflation also represents a risk to the Canadian economy to the extent that it could prompt the U.S. Federal Reserve or the Bank of Canada to scale back its monetary accommodation. Should this occur, real estate assets, among others, would be vulnerable to a price correction. The Bank monitors international developments that may affect the Canadian economy. Even though Canada has reached a trade agreement with its North American partners, American protectionism continues to pose a risk to Canada. For example, the U.S. administration did not hesitate to threaten Mexico with tariffs during the migrant dispute, even though a trade agreement had just been reached. In addition, the current Chinese-American conflict may gradually lead to the development of two quite separate supply chains. Should this occur, Canadian companies that choose to focus on the U.S. market may be denied access to the Chinese market, while those that choose the Chinese market may have more difficulty gaining market share in the United States. These uncertainties may significantly destabilize certain sectors, and the Bank has responded by continuing to monitor market developments and remaining vigilant in line with its risk tolerance policy.

Risk	Trend	Description
Reliance on technology and third parties	↗	The Bank is reliant on technology, as clients are seeking greater access to products and services on a variety of platforms that must support substantial data volumes. The fast pace of technological change combined with both client and competitive pressures require significant and sustained investment in technology. Inadequate implementation of technological improvements or new products or services could significantly affect the Bank's ability to serve and retain clients. Third parties provide essential components of the Bank's technological infrastructure such as Internet connections and access to network and other communications services. The Bank also relies on the services of third parties to support business processes and to handle certain IT activities. In some cases, these business relationships require the sharing of confidential information. An interruption of these services or a breach of security could have an unfavourable impact on the Bank's ability to provide products and services to its customers and to conduct business, not to mention the impact it would have on the Bank's reputation. To mitigate this risk, the Bank has a third-party risk management framework wherein information security, financial health, and performance are validated before any agreements are reached and throughout the life of the agreements. It also includes business continuity plans, which are tested periodically to ensure their effectiveness in times of crisis. Despite these preventive measures and the efforts deployed by the Bank's teams to manage third parties, there remains a possibility that certain risks will materialize. In such cases, the Bank would then rely on the contingency and mitigation measures established in collaboration with the third parties. The Bank is aware of the significance of third-party-related risks and continues to develop its practices in this regard.
Environmental, social and governance (ESG) approach and climate change	↗	In recent years, the environmental, social and governance (ESG) approach has not been a major concern for customers and investors. Today, perceptions have changed, and many stakeholders now agree that these issues have become a current concern and could affect corporate profitability in the near future. The Bank has therefore adopted ESG principles and supported a variety of sustainable development initiatives. The increased focus on ESG issues has not been prompted by any specific laws or regulations requiring greater disclosure but rather by a desire for transparency and a broader understanding of their impact on corporate reputation and finances. Pressures from customers, investors, environmental groups and, more recently, non-financial bodies have also prompted financial institutions to consider the ways in which the ESG approach could affect their operations in terms of reputation risk, strategy, and portfolio management and what they can do to apply principles of responsible citizenship. In recent years there has been a growing emphasis on environmental and climate issues. A financial disclosure framework has been published, as well as various climate change guides for banks, insurers and portfolio managers. Considerable change is occurring in terms of commitment to and implementation of such frameworks and guides. In addition, the Bank of Canada's annual *Financial System Review* addressed issues such as the interrelationships between the environment, the economy, and the financial system. This is particularly true in Canada, where resources play a vital role in our economy and where the natural environment is a defining feature of our identity. Although no specific requirements have been published, we will continue to closely monitor developments in this area and all their implications for the Bank.
Technological innovation and competition	↗	The Bank's financial performance depends on its ability to develop and market new and innovative products and services, adopt and develop new technologies that help differentiate its products and services and generate cost savings, and market these new products and services at the right time and at competitive prices. Failure to properly review critical changes within the business before and during the implementation and deployment of key technological systems or failure to align client expectations with the Bank's client commitments and operating capabilities could adversely affect the Bank's operating results or financial position. In addition, the level of competition in the Bank's markets has an impact on its performance. Retaining clients hinges on several factors, including the prices of products and services, quality of service, and changes to the products and services offered.

Other Factors That Can Affect Future Results

International Risks

Through the operations of some of its units (mainly its New York and London offices) and subsidiaries in Canada and abroad (in particular, Credigy Ltd., NBC Global Finance Limited, and Advanced Bank of Asia Limited), the Bank is exposed to risks arising from its presence in international markets and foreign jurisdictions. While these risks do not affect a significant proportion of the Bank's portfolios, their impact must not be overlooked, especially those that are of a legal or regulatory nature. Such risk can be particularly high when the exposure is in a territory where the enforceability of agreements signed by the Bank is uncertain, in countries and regions facing political or socio-economic disturbances, or in countries that may be subject to international sanctions. Generally speaking, there are many ways in which the Bank may be exposed to the risks posed by other countries, not the least of which being foreign laws and regulations. In all such situations, it is important to consider what is referred to as "country risk." Country risk affects not only the activities that the Bank carries out abroad but also the business that it conducts with non-resident clients as well as the services it provides to clients doing business abroad, such as electronic funds transfers, international products and transactions from Canada in foreign currencies.

As part of its activities, the Bank must adhere to anti-money laundering and anti-terrorist financing (AML/ATF) regulatory requirements in effect in each jurisdiction where it conducts business. It must also comply with the requirements pertaining to current international sanctions in these various jurisdictions. Money laundering and terrorist financing is a financial, regulatory and reputation risk. For additional information, see the Regulatory Compliance Risk Management section.

The Bank is exposed to financial risks outside Canada and the United States primarily through its interbank transactions on international financial markets or through international trade finance activities. This geographic exposure represents a moderate proportion of the Bank's total risk. The geographic exposure of loans is disclosed in the quarterly *Supplementary Financial Information* report available on the Bank's website at nbc.ca. To control country risk, the Bank sets credit concentration limits by country and reviews and submits them to the Board for approval upon renewal of the Credit Risk Management Policy. These limits are based on a percentage of the Bank's regulatory capital, in line with the level of risk represented by each country, particularly emerging countries. The risk is rated using a classification mechanism similar to the one used for credit default risk. In addition to the country limits, authorization caps and limits are established, as a percentage of capital, for the world's high-risk regions, i.e., essentially all regions except for North America, Western European countries and the developed countries of Asia.

Acquisitions

The Bank's ability to successfully complete an acquisition is often conditional on regulatory approval, and the Bank cannot be certain of the timing or conditions of regulatory decisions. Acquisitions could affect future results should the Bank experience difficulty integrating the acquired business. If the Bank does encounter difficulty integrating an acquired business, maintaining an appropriate governance level over the acquired business, or retaining key officers within the acquired business, these factors could prevent the Bank from realizing expected revenue growth, cost savings, market share gains and other projected benefits of the acquisition.

Intellectual Property

The Bank protects the intellectual property developed by its employees in connection with their duties. However, in some cases, it may have a more limited ability to acquire intellectual property rights. Moreover, the intellectual property rights acquired by the Bank provide no guarantees that they will be effective in deterring or preventing a third party from misappropriating intellectual property or providing a defense against the misappropriation of intellectual property. Moreover, the goods and services developed by the Bank are provided in a competitive market where third parties could hold intellectual property rights prior to those held by the Bank. In such circumstances, there is no guarantee that the Bank will successfully provide a defense against an infringement claim, that it will be able to modify its goods and services to avoid infringing upon third party rights or that it will obtain a licence with commercially acceptable conditions.

Ability to Attract and Retain Key Officers

The Bank's future performance depends largely on its ability to attract and retain key officers. There is intense competition for the best people in the financial services industry, and there is no assurance that the Bank, or any entity it acquires, will be able to continue to attract and retain key officers.

Judicial and Regulatory Proceedings

The Bank takes reasonable measures to comply with the laws and regulations in effect in the jurisdictions where it operates. Should these measures prove ineffective, the Bank could be subject to judicial or regulatory decisions resulting in fines, damages, or other costs or to restrictions likely to adversely affect its operating results or its reputation. The Bank may also be subject to litigation in the normal course of business. Although the Bank establishes provisions for the measures it is subject to under accounting requirements, actual losses resulting from such litigation could differ significantly from the recognized amounts, and unfavourable outcomes in such cases could have a significant adverse effect on the Bank's operating results. The resulting reputational damage could also affect the Bank's future business prospects. For additional information, see Note 26 to the consolidated financial statements.

Accounting Policies, Methods and Estimates Used by the Bank
The accounting policies and methods used by the Bank determine how the Bank reports its financial position and operating results and require management to make estimates or rely on assumptions about matters that are inherently uncertain. Any changes to these estimates and assumptions may have a significant impact on the Bank's operating results and financial position.

Other Factors
Other factors that could affect the Bank's future results include amendments to tax legislation, unexpected changes in consumer spending and saving habits, the timely development and launch of new products and services, the ability to successfully align its organizational structure, resources and processes, the ability to activate a business continuity plan within a reasonable time, the potential impact of international conflicts or natural catastrophes on the Bank's activities, and the Bank's ability to foresee and effectively manage the risks associated with these factors through rigorous risk management.

Credit Risk

Credit risk is the risk of incurring a financial loss if an obligor does not fully honour its contractual commitments to the Bank. Obligors may be debtors, issuers, counterparties or guarantors. Credit risk is the most significant risk facing the Bank in the normal course of business. The Bank is exposed to credit risk not only through its direct lending activities and transactions but also through commitments to extend credit, letters of guarantee, letters of credit, over-the-counter derivatives trading, debt securities, securities purchased under reverse repurchase agreements, deposits with financial institutions, brokerage activities, and transactions carrying a settlement risk for the Bank such as irrevocable fund transfers to third parties via electronic payment systems.

Governance
A policy framework centralizes the governance of activities that generate credit risk for the Bank and is supplemented by a series of subordinate internal policies and standards. These policies and standards address specific management issues such as credit limits, collateral requirements and risk quantification or issues that provide more thorough guidance for given business segments.

For example, the institutional activities of the Bank and its subsidiaries on financial markets and international commercial transactions are governed by business unit directives that set out standards adapted to the specific environment of these activities. This also applies to retail brokerage subsidiaries. In isolated cases, a business unit or subsidiary may have its own credit policy, and that policy must always fall within the spirit of the Bank's policy framework and be reviewed and approved by the management of the Risk Management Group. The Risk Management Group defines the scope of the universe of subsidiaries carrying significant credit risks and the magnitude of the risks incurred.

Credit risk is controlled through a rigorous process that comprises the following elements:

- credit risk rating and assessment;
- economic capital assessment;
- stress testing and crisis scenarios;
- credit granting process;
- revision and renewal process;
- risk mitigation;
- follow-up of monitored accounts and recovery;
- counterparty risk assessment;
- settlement risk assessment.

Reporting
Every quarter, an integrated risk management report is presented to senior management and the RMC. It presents changes in the credit portfolio and highlights on the following matters:

- credit portfolio volume growth by business segment;
- a breakdown of the credit portfolio according to various criteria for which concentration limits have been set;
- changes in allowances for credit losses;
- changes in impaired loans;
- follow-up of monitored accounts.

Credit Risk Rating and Assessment
Before a sound and prudent credit decision can be made, the obligor's or counterparty's credit risk must be accurately assessed. This is the first step in processing credit applications. Each application is analyzed and assigned one of 19 grades on a scale of 1 to 10 using a credit rating system developed by the Bank for all portfolios exposed to credit risk. As each grade corresponds to a debtor's, counterparty's or third party's probability of default, the Bank can estimate the credit risk. The credit risk assessment method varies according to portfolio type. There are two main methods for assessing credit risk, i.e., the Advanced Internal Rating-Based (AIRB) Approach and the Standardized Approach, as defined by the Basel Accord to determine minimum regulatory capital requirements for most of its portfolios.

The main parameters used to measure the credit risk of loans outstanding and undrawn amounts under the AIRB Approach are as follows:

- probability of default (PD), which is the probability of through-the-cycle 12-month default by the obligor, calibrated on a long-run average PD throughout a full economic cycle;
- loss given default (LGD), which represents the magnitude of the loss from the obligor's default that would be expected in an economic downturn and subject to certain regulatory floors, expressed as a percentage of exposure at default;
- exposure at default (EAD), which is an estimate of the amount drawn and of the expected use of any undrawn portion prior to default, and cannot be lower than the current balance.

The methodology as well as the data and the downturn periods used to estimate LGD are described below.

AIRB APPROACH	DATA	DOWNTURN PERIOD	METHODOLOGY FOR CALCULATING LGD
Retail	The Bank's internal historical data from 1996 to 2016	1996-1998, 2000-2002 October 2008 – December 2009	LGD based on the Bank's historical internal data on recoveries and losses
Corporate	The Bank's internal historical data from 2000 to 2018	2000-2003, 2008-2009 and 2014-2018	LGD based on the Bank's historical internal data on recoveries and losses
Sovereign	Moody's observed default price of bonds, from 1983 to 2015 S&P rating history from 1975 to 2016	1999-2001 and 2008-2012	Based on implied market LGD using observed bond price decreases following the issuer's default
Financial institutions	Global Credit Data Consortium historical loss and recovery database from 1998 to 2014	1991-1992, 1994, 1998, 2001-2002 and 2008-2009	Model for predicting LGD based on different issue- and issuer-related risk drivers

<u>Personal Credit Portfolios</u>
This category comprises portfolios of residential mortgage loans, consumer loans and loans to certain small businesses. To assess credit risk, AIRB models are in place for the main portfolios, particularly mortgage loans, home equity lines of credit, credit cards, budget loans and lines of credit. A risk analysis based on loan grouping in pools of homogeneous obligor and product profiles is used for overall management of personal credit portfolios. This personal credit assessment approach, which has proven particularly effective for estimating credit defaults and losses, takes a number of factors into account, namely:

- behaviour scoring;
- loan product characteristics;
- collateral provided;
- the length of time on the Bank's balance sheet;
- loan status (active, delinquent or defaulted).

This mechanism provides adequate risk measurement inasmuch as it effectively differentiates risk levels by pool. Therefore, the results are periodically reviewed and, if necessary, adjustments are made to the models. Obligor migrations between pools are among the factors considered in the credit risk assessment.

Loan pools are also established based on PD, LGD, and EAD, which are measured based on the characteristics of the obligor and the transaction itself. The credit risk of these portfolios is estimated using credit scoring models that determine the obligor's PD. LGD is estimated based on transaction-specific factors such as loan product characteristics (for example, a line of credit versus a term loan), loan-to-value ratio and types of collateral.

Under the Bank's standards applicable to default-risk rating and facility-risk rating and according to its risk review, renewal and quantification standards, default risk ratings must be reviewed annually.

Credit scoring models are also used to grant credit. These models use proven statistical methods that measure applicants' demand characteristics and history based on internal and external historical information to estimate the applicant's future credit behaviour and assign a probability of default. The underlying data include client information such as current and past employment, historical loan data in the Bank's management systems and information from external sources such as credit rating agencies.

The Bank also uses behaviour scoring models to manage and monitor current commitments. The risk assessment is based on statistical analyses of the past behaviour of obligors with which the Bank has a long-term relationship in an effort to predict their future behaviour. The underlying information includes the obligor's cash flows and borrowing trends. Information on characteristics that determine behaviour in these models also comes from both internal sources on current commitments and external sources. The table below shows the PD categories along with the associated credit qualities of the personal credit portfolio.

Business and Government Credit Portfolios

This category comprises business (other than some small businesses that are classified in personal credit portfolios), government and financial institution credit portfolios.

These credit portfolios are assigned a risk rating based on a detailed individual analysis of the financial and non-financial aspects of the obligor, including the obligor's financial strength, sector of economic activity, competitive ability, access to capital and management quality. The Bank has risk-rating tools and models enabling it to specifically assess the risk represented by an obligor in relation to its industry and peers. The models used are adapted to the obligor's broad sector of activity. Models are in place for ten sectors: business/commercial, large business, financial institutions, sovereigns, investment funds, energy, real estate, agriculture, insurance, and public-private partnership project financing.

This risk assessment method assigns a default risk rating to an obligor that reflects its credit quality. To each default credit risk rating corresponds a PD (see the following table). Using this classification of obligor credit risk, the Bank can differentiate appropriately between the various assessments of an obligor's capacity to meet its contractual obligations. Default risk ratings are assigned according to an assessment of an obligor's commercial and financial risks based on a solvency review. Various risk quantification models, described below, are used to perform this assessment.

The business and government default risk rating scale used by the Bank is similar to the systems used by major external rating agencies. The following table presents a grouping of the ratings by major risk category and compares them with the ratings of two major rating agencies.

Internal Default Risk Ratings*

Description[1]	Personal credit portfolios					Business and government credit portfolios
	PD (%) – Retail	Ratings	PD (%) – Corporate and financial institutions	PD (%) – Sovereign	Standard & Poor's	Moody's
Excellent	0.000–0.144	1–2.5	0.000–0.125	0.000–0.094	AAA to A-	Aaa to A3
Good	0.145–0.506	3–4	0.125–0.451	0.094–0.454	BBB+ to BBB-	Baa1 to Baa3
Satisfactory	0.507–2.681	4.5–6.5	0.451–4.743	0.454–6.607	BB+ to B	Ba1 to B2
Special mention	2.682–9.348	7–7.5	4.743–11.161	6.607–19.120	B- to CCC+	B3 to Caa1
Substandard	9.349–99.999	8–8.5	11.161–99.999	19.120–99.999	CCC & CCC-	Caa2 & Caa3
Default	100	9–10	100	100	CC, C & D	Ca, C & D

(1) Additional information is provided in Note 7 – *Loans and Allowances for Credit Losses* to the audited annual consolidated financial statements for the year ended October 31, 2019.

The Bank also uses individual assessment models by industry to assign a risk rating to the credit facility based on the collateral and guarantees the obligor is able to provide and, in some cases, based on other factors. The Bank consequently has a bi-dimensional risk-rating system that, using models and based on internal and external historical data, establishes a default risk rating for each obligor. In addition, the models assign, to each credit facility, an LGD risk rating that is independent of the default risk rating assigned to the obligor.

The Bank's default risk ratings and LGD risk ratings as well as the related risk parameters contribute directly to informed credit-granting, renewal and monitoring decisions. They are also used to determine and analyze risk-based pricing. In addition, from a credit portfolio management perspective, they are used to establish counterparty credit concentration limits and segment concentration limits and to determine the credit risk appetite of these portfolios. Moreover, they represent an important component in estimating expected and unexpected losses, measuring minimum required economic capital, and measuring the minimum level of capital required, as prescribed by the regulatory authorities.

The credit risk of obligors and of their facilities is assessed with the PD and LGD parameters at least once a year or more often if significant changes (triggers) are observed when updating financial information or if another qualitative indicator of a deterioration in the obligor's solvency or in the collateral associated with the obligor's facilities is noted. A watchlist also exists that enables the Bank to more actively monitor the financial position of obligors whose default-risk rating is greater than or equal to 7.0. This process seeks to minimize an obligor's default risk and allows for proactive credit risk management.

Validation

The Risk Management Group monitors the effectiveness of the risk-rating systems and associated parameters, which are also reviewed regularly in accordance with the Bank's policies.

Backtesting is performed at regular intervals to validate the effectiveness of the models used to estimate PD, LGD, and EAD. For PD in particular, this backtesting takes the form of sequentially applied statistical tests designed to assess the following criteria:

- the model's discriminatory power;
- overrides;
- model calibration;
- the stability of the model's output.

The credit risk quantification models are developed and tested by a team of specialists and their performance is monitored by the applicable business units and related credit risk management services. Models are validated by a unit that is independent of both the specialists who developed the model and the concerned business units. Approvals of new models or changes to existing models are subject to an escalation process established by the model risk management policy. Furthermore, new models or changes to existing models that markedly impact regulatory capital must be approved by the Board before being submitted to the regulatory agencies, and a summary report of all changes to the models is submitted to the RMC once a year.

The facility and default risk-rating systems, methods and models are also subject to periodic independent validation as often as required given the inherent risk of the activity. Models that have a significant impact on regulatory capital must be reviewed regularly, thereby further raising the certainty that these quantification mechanisms are working as expected.

The key aspects to be validated are factors allowing accurate risk classification by level, adequate quantification of exposure, use of assessment techniques that include external factors such as economic conditions and credit status and, lastly, compliance with internal policies and regulatory provisions. Each year, the Risk Management Group presents a summary report on the validations to the RMC.

The Bank's credit risk assessment and rating systems are overseen by the Models Oversight Committee, the GRC and the RMC, and are an integral part of a comprehensive Bank-wide credit risk oversight framework. Along with the above-mentioned elements, the Bank documents and periodically reviews the policies, definitions of responsibilities, resource allocation and existing processes.

Assessment of Economic Capital

The assessment of the Bank's minimum required economic capital is based on the credit risk assessments of debtors. These two activities are therefore interlinked. The different models used to assess the credit risk of a given portfolio type also enable the Bank to determine the default correlation among debtors. This information is a critical component in the evaluation of potential losses for all portfolios carrying credit risk. Estimates of potential losses, whether expected or not, are based on historical loss experience, portfolio monitoring, market data and statistical modelling. Expected and unexpected losses are factors used in assessing the minimum required economic capital for all of the Bank's credit portfolios. The assessment of economic capital also considers the anticipated potential migrations of obligors' default risk during the remaining term of their credit commitments. The main risk factors that have an impact on economic capital are as follows:

- the obligor's PD;
- EAD;
- LGD;
- the PD correlation among obligors;
- the residual term of credit commitments;
- the impact of economic and sector-based cycles on asset quality.

Stress Testing and Crisis Scenarios

The Bank carries out stress tests to evaluate its sensitivity to crisis situations in certain activity sectors and key portfolios. A global stress test methodology covers most business, government, and personal credit portfolios to provide the Bank with an overview of the situation. By simulating specific scenarios, these tests enable the Bank to measure the level of regulatory capital needed to absorb potential losses and to determine the impact on its solvency. In addition, these tests contribute to portfolio management as they influence the determination of concentration limits by obligor, product or business sector.

Mortgage Loan Underwriting

To mitigate the impact of an economic slowdown and ensure the long-term quality of its portfolio, the Bank uses sound risk management when granting residential mortgages to confirm: (i) the obligor's intention to meet its financial obligations, (ii) the obligor's ability to repay its debts and (iii) the quality of the collateral. In addition, in accordance with the applicable rules, the Bank takes a prudent approach to client qualification by using, for example, a higher interest rate to mitigate the risk of short- or medium-term rate increases.

Nonetheless, the risk of economic slowdown could adversely affect the profitability of the mortgage portfolio. In stress test analyses, the Bank considers a variety of scenarios to measure the impact of adverse market conditions. In such circumstances, our analyses show significantly higher credit losses, which would decrease profitability and reduce the Bank's capital ratios.

Credit-Granting Process

Credit-granting decisions are based first and foremost on the results of the risk assessment. Aside from a client's solvency, credit-granting decisions are also influenced by factors such as available collateral, transaction compliance with policies, standards and procedures, and the Bank's overall risk-adjusted return objective. Each credit-granting decision is made by authorities within the risk management teams and management who are independent of the business units and are at a reporting level commensurate with the size of the proposed credit transaction and the associated risk.

Decision-making authority is determined in compliance with the delegation of authority set out in the Credit Risk Management Policy. A person in a senior position in the organization approves credit facilities that are substantial or carry a higher risk for the Bank. The GRC approves and monitors all substantial credit facilities. Credit applications that exceed management's latitudes are submitted to the Board for approval. The credit-granting process demands a high level of accountability from managers, who must proactively manage the credit portfolio.

Review and Renewal Processes

The Bank periodically reviews credit files. The review process enables the Bank to update information on the quality of the facilities and covers, among other things, risk ratings, compliance with credit conditions, and obligor behaviour. The credit risk of all obligors is reviewed at least once per year. After this periodic review, for on-demand or unused credit, the Bank decides whether to pursue its business relationship with the obligor and, if so, revises the credit conditions.

Risk Mitigation

The Bank also controls credit risk using various risk mitigation techniques. In addition to the standard practice of requiring collateral to guarantee repayment of the credit it grants, the Bank also uses protection mechanisms such as credit derivative financial instruments, syndication and loan assignments as well as an orderly reduction in the amount of credit granted.

The most common method used to mitigate credit risk is to obtain quality collateral from obligors. Obtaining collateral cannot replace a rigorous assessment of an obligor's ability to meet its financial obligations, but, beyond a certain risk threshold, it is an essential complement. Collateral is not required in all cases. It depends upon the level of risk presented by the obligor and the type of loan granted. However, if the level of risk to the Bank is considered high, collateral will likely be required. The legal validity and enforceability of any collateral obtained and the Bank's ability to correctly and regularly measure the collateral's value are critical for this mechanism to play its proper role in risk mitigation.

The Bank has established specific requirements in its internal policies with respect to the appropriate legal documentation and assessment for the kinds of collateral that business units may require to guarantee the loans granted. The categories of eligible collateral and the lending value of the collateralized assets have also been defined by the Bank. For the most part, they include the following asset categories as well as guarantees (whether secured by collateral or unsecured) and government and bank guarantees:

- accounts receivable;
- inventories;
- machinery and equipment and rolling stock;
- residential and commercial real estate, office buildings and industrial facilities;
- cash and marketable securities.

Portfolio Diversification and Management

The Bank is exposed to credit risk, not only through outstanding loans and undrawn amounts of commitments to a particular obligor but also through the sectoral distribution of the outstanding loans and undrawn amounts and through the exposure of its various credit portfolios to geographical, concentration and settlement risks.

The Bank's approach to controlling these diverse risks begins with a diversification of exposures. Measures designed to maintain a healthy degree of diversification of credit risk in its portfolios are set out in the Bank's policies, standards and procedures. These instructions are mainly reflected in the application of various exposure limits: credit concentration limits by counterparty and credit concentration limits by business sector, country, region, product, and type of financial instrument. These limits are determined based on the Bank's credit risk appetite framework and are reviewed periodically. Compliance with these limits, particularly exceptions, is monitored through periodic reports submitted by the Risk Management Group's officers to the Board.

Continuous analyses are performed in order to anticipate problems with a sector or obligor before they materialize as defaulted payments.

Other Risk Mitigation Methods

Credit risk mitigation measures for transactions in derivative financial instruments, which are regularly used by the Bank, are described in detail in the Counterparty Risk section.

Credit Derivative Financial Instruments and Financial Guarantee Contracts

The Bank also reduces credit risk by using the protection provided by credit derivative financial instruments such as credit default swaps. When the Bank acquires credit protection, it pays a premium on the swap to the counterparty in exchange for the counterparty's commitment to pay if the underlying entity defaults or another event involving the underlying entity and covered by the legal agreement occurs. Since, like obligors, providers of credit protection must receive a default risk rating, the Bank's standards set out all the criteria under which a counterparty may be judged eligible to mitigate the Bank's credit risk. The Bank may also reduce its credit risk by entering into financial guarantee contracts whereby a guarantor indemnifies the Bank for a loss resulting from an obligor failing to make a payment when due in accordance with the contractual terms of a debt instrument.

Loan Syndication

The Bank has developed specific instructions on the appropriate objectives, responsibilities and documentation requirements for loan syndication.

Follow-Up of Monitored Accounts and Recovery

Credit granted and obligors are monitored on an ongoing basis and in a manner commensurate with the related risk. Loan portfolio managers use an array of intervention methods to conduct a particularly rigorous follow-up on files that show a high risk of default. When loans continue to deteriorate and there is an increase in risk to the point where monitoring has to be increased, a group specialized in managing problem accounts steps in to maximize collection of the disbursed amounts and tailor strategies to these accounts.

In these cases, loan portfolio managers prepare and submit, to the credit department, a detailed monitoring report (watchlist) each month to track the status of at-risk obligors and the corrective measures undertaken. The management of each department concerned performs follow-ups on the reports, and each quarter a credit monitoring committee meets to review the action plans and monitoring reports of obligors that have commitments of $3 million or more. The authority to approve allowances for credit losses is attributed using limits delegated on the basis of hierarchical level under the Credit Risk Management Policy.

Information on the recognition of impaired loans and allowances for credit losses is presented in Notes 1 and 7 to the consolidated financial statements.

Forbearance and Restructuring

Situations where a business or retail obligor begin showing clear signs of potential insolvency are managed on a case-by-case basis and require the use of judgment. The Loan Work Out Policy sets out the principles applicable in such situations to guide loan restructuring decisions and identify situations where distressed restructuring applies. A distressed restructuring situation occurs when the Bank, for economic or legal reasons related to the obligor's financial difficulties, grants the obligor a special concession that is contrary to the Bank's policies. Such concessions could include a lower interest rate, waiver of principal and extension of the maturity date.

The Bank has established a management framework for commercial and corporate obligors that represent higher-than-normal risk of default. It outlines the roles and responsibilities of loan portfolio managers with respect to managing high-risk accounts and the responsibilities of the Work Out units and other participants in the process. Lastly, the Credit Risk Management Policy and a management framework are used to determine the authorization limits for distressed restructuring situations. During fiscal years 2019 and 2018, the amount of distressed loan restructurings was not significant.

Counterparty Risk Assessment

Counterparty risk is a credit risk that the Bank incurs on various types of transactions involving financial instruments. The most significant risks are those it faces when it trades derivative financial instruments with counterparties on the over-the-counter market or when it purchases securities under reverse repurchase agreements or sells securities under repurchase agreements. Securities lending transactions and securities brokerage activities involving derivative financial instruments are also sources of counterparty risk. Note 16 to the consolidated financial statements provides a complete description of the credit risk for derivative financial instruments by type of traded product.

The Risk Management Group has developed models by broad category of financial instrument through which it applies an advanced methodology for calculating the Bank's credit risk exposure and economic capital. The exposures are subject to limits. These two elements are established based on the potential volatility of the underlying assets until expiration of the contract.

Counterparty obligations related to the trading of contracts on derivative financial instruments, securities lending transactions and reverse repurchase agreements are frequently subject to credit risk mitigation measures. The mitigation techniques are somewhat different from those used for loans and advances and depend on the nature of the instrument or the type of contract traded. The most widely used measure is the signing of master agreements: the International Swaps & Derivatives Association, Inc. (ISDA) master agreement, the Global Master Repurchase Agreement (GMRA) and the Global Master Securities Lending Agreement (GMSLA). These agreements make it possible, in the event of default, insolvency or bankruptcy of one of the contracting parties, to apply full netting of the gross amounts of the market values for each of the transactions covered by the agreement in force at the time of default. The amount of the final settlement is therefore the net balance of gains and losses on each transaction, which reduces exposure when a counterparty defaults. The Bank's policies require that an ISDA, GMRA, or GMSLA agreement be signed with most trading counterparties to derivatives, foreign exchange forward contracts, securities lending transactions and reverse repurchase agreements.

Another mechanism for reducing credit risk on derivatives and foreign exchange forward contracts complements the ISDA master agreement in many cases and provides the Bank and its counterparty (or either of the parties, if need be) with the right to request collateral from the counterparty when the net balance of gains and losses on each transaction exceeds a threshold defined in the agreement. These agreements, also known as Credit Support Annexes (CSAs), are common between financial institutions active in international financial markets since they limit credit risk while providing traders with additional flexibility to continue trading with the counterparty. The Bank often uses this type of legal documentation in transactions with financial institutions and governments. For business transactions, the Bank prefers to use internal mechanisms set out in the credit agreements. The Bank's internal policies set the conditions governing the implementation of such mitigation methods.

Requiring collateral as part of a securities lending transaction or reverse repurchase agreement is not solely the result of an internal credit decision. In fact, it is a mandatory market practice imposed by self-regulating organizations in the financial services sector such as the Investment Industry Regulatory Organization of Canada.

The Bank also has policies and guidelines governing its own collateral pledged to counterparties, given the potential impact of such asset transfers on its liquidity. In accordance with its Liquidity, Funding & Pledging Policy, the Bank conducts simulations of potential counterparty collateral claims under the CSAs in effect in the event of a Bank downgrade or other unlikely occurrences. The simulations are based on various Bank downgrading scenarios or market value fluctuations of transactions covered by CSAs.

The Bank has identified circumstances in which it is likely to be exposed to wrong-way risk, which is generally associated with exposure to counterparty risk and characterized by higher risk for the Bank if a counterparty's PD increases (unfavourable positive correlation). A common wrong-way risk arises from the trading of derivatives contracts with counterparties where the underlying assets may include equity securities issued by those counterparties.

Assessment of Settlement Risk

Settlement risk potentially arises from transactions that feature reciprocal delivery of cash or securities between the Bank and a counterparty. Foreign exchange contracts are an example of transactions that can generate significant levels of settlement risk. However, the implementation of multilateral settlement systems that allow settlement netting among participating institutions has contributed greatly to reducing the risks associated with the settlement of foreign exchange transactions among banks. The Bank also uses financial intermediaries to gain access to established clearing houses in order to minimize settlement risk for certain financial derivative transactions. In some cases, the Bank may have direct access to established clearing houses for settling financial transactions such as repurchase agreements or reverse repurchase agreements. In addition, certain derivative financial instruments traded over the counter are settled directly or indirectly by central counterparties. For additional information, see the table that presents notional amounts in Note 16 to the consolidated financial statements.

There are several other types of transactions that may generate settlement risk, in particular the use of certain electronic fund transfer services. This risk refers to the possibility that the Bank may make a payment or settlement on a transaction without receiving the amount owed by the counterparty, and with no opportunity to recover the funds delivered (irrevocable settlement).

The ultimate means for completely eliminating such a risk is for the Bank to complete no payments or settlements before receiving the funds due from the counterparty. Such an approach cannot, however, be used systematically. For several electronic payment services, the Bank is able to implement mechanisms that allow it to make its transfers revocable or to debit the counterparty in the amount of the settlements before it makes its own transfer. On the other hand, the nature of transactions in financial instruments makes it impossible for such practices to be widely used. For example, on foreign exchange transactions involving a currency other than the U.S. dollar, time zone differentials impose strict payment schedules on the parties. The Bank cannot unduly postpone a settlement without facing significant penalties, due to the large size of amounts involved.

The most effective way for the Bank to control settlement risks, both for financial market transactions and irrevocable transfers, is to impose internal risk limits based on the counterparty's ability to pay.

The amounts shown in the following tables represent the Bank's maximum exposure to credit risk as at the financial reporting date without taking into account any collateral held or any other credit enhancements. These amounts do not take into account allowances for credit losses nor amounts pledged as collateral. The tables also exclude equity securities.

Maximum Credit Risk Exposure Under the Basel Asset Categories *

(millions of Canadian dollars)						As at October 31, 2019
	Drawn	Undrawn commitments	Repo-style transactions(1)	Derivative financial instruments(2)	Other off-balance-sheet items(3)	Total
Retail						
Residential mortgage	50,328	8,812	–	–	–	59,140
Qualifying revolving retail	2,540	3,046	–	–	–	5,586
Other retail	14,258	1,911	–	–	20	16,189
	67,126	13,769	–	–	20	80,915
Non-retail						
Corporate	56,002	20,527	21,524	1	4,103	102,157
Sovereign	31,308	5,222	36,208	190	148	73,076
Financial institutions	5,200	425	97,423	1,966	629	105,643
	92,510	26,174	155,155	2,157	4,880	280,876
Trading portfolio	–	–	–	12,015	–	12,015
Securitization	1,166	–	–	–	3,598	4,764
Total – Gross credit risk	160,802	39,943	155,155	14,172	8,498	378,570
Standardized Approach	17,166	601	28,571	1,951	119	48,408
AIRB Approach	143,636	39,342	126,584	12,221	8,379	330,162
Total – Gross credit risk	160,802	39,943	155,155	14,172	8,498	378,570

(millions of Canadian dollars)						As at October 31, 2018
	Drawn	Undrawn commitments	Repo-style transactions(1)	Derivative financial instruments(2)	Other off-balance-sheet items(3)	Total
Retail						
Residential mortgage	45,926	8,287	–	–	–	54,213
Qualifying revolving retail	2,829	3,447	–	–	–	6,276
Other retail	15,461	1,589	–	–	14	17,064
	64,216	13,323	–	–	14	77,553
Non-retail						
Corporate	50,750	17,588	16,657	29	3,503	88,527
Sovereign	27,131	5,234	41,364	47	139	73,915
Financial institutions	4,107	303	75,839	4,122	738	85,109
	81,988	23,125	133,860	4,198	4,380	247,551
Trading portfolio	–	–	–	9,620	–	9,620
Securitization	1,474	–	–	–	3,272	4,746
Total – Gross credit risk	147,678	36,448	133,860	13,818	7,666	339,470
Standardized Approach	13,152	253	14,577	3,965	356	32,303
AIRB Approach	134,526	36,195	119,283	9,853	7,310	307,167
Total – Gross credit risk	147,678	36,448	133,860	13,818	7,666	339,470

(1) Securities purchased under reverse repurchase agreements and sold under repurchase agreements as well as securities loaned and borrowed.
(2) Exposure presented using the SA-CCR method since the first quarter of 2019.
(3) Letters of guarantee, documentary letters of credit and securitized assets that represent the Bank's commitment to make payments in the event that a client cannot meet its financial obligations to third parties.

Market Risk

Market risk is the risk of losses arising from movements in market prices. Market risk comes from a number of factors, particularly changes to market variables such as interest rates, exchange rates, equity prices, commodity prices and implied volatilities. The Bank is exposed to market risk through its participation in trading, investment and asset/liability management activities. Trading activities involve taking positions, particularly on various instruments such as bonds, shares, currencies, commodities or derivative financial instruments. The Bank is exposed to non-trading market risk through its asset/liability management and investment portfolios.

The trading portfolios include positions in financial instruments and commodities held either with trading intent or to hedge other elements of the trading book. Positions held with trading intent are those held for short-term resale and/or with the intent of taking advantage of actual or expected short-term price movements or to lock in arbitrage profits. These portfolios target one of the following objectives: market making, liquidating positions for clients or selling financial products to clients.

Non-trading portfolios include financial instruments intended to be held to maturity as well as those held for daily cash management or for the purpose of maintaining targeted returns or ensuring asset and liability management.

Governance

A market risk management policy governs global market risk management across the Bank's units and subsidiaries that are exposed to this type of risk. It is approved by the GRC. The policy sets out the framework and principles for managing market risk; defines risk measures, control and monitoring activities; sets limits; and reports on breaches.

The Financial Markets Risk Committee oversees all Financial Markets segment risks that could adversely affect the Bank's results, liquidity, or capital. This committee also oversees the Financial Markets segment's risk framework to ensure that controls are in place to contain risk in accordance with the Bank's risk appetite framework.

Market risk limits ensure the link and coherence between the Bank's market risk appetite targets and the day-to-day market risk management by all parties involved, notably senior management, business lines and market risk sector in its independent control function. The Bank's monitoring and reporting process consists of comparing market risk exposure to alert levels and market risk limits determined for all limit authorization and approval levels.

Assessing Market Risk

The Risk Management Group uses a variety of risk measures to estimate the size of potential losses under more or less severe scenarios, and using both short-term and long-term time horizons. For short-term horizons, the Bank's risk measures include Value-at-Risk (VaR), Stressed VaR (SVaR), and sensitivity metrics. For long-term horizons or sudden significant market moves, including those due to a lack of market liquidity, the risk measures include stress testing across an extensive range of scenarios.

VaR and SVaR Models

VaR is a statistical measure of risk that is used to quantify market risks by product and by risk type as well as aggregate risk by portfolio, for the Bank as a whole. VaR is defined as the maximum loss at a specific confidence level over a certain horizon under normal market conditions. The VaR method has the advantage of providing a uniform measurement of financial instrument-related market risks based on a single statistical confidence level and time horizon.

For VaR, the Bank uses a historical price distribution to compute the probable loss levels at the 99% confidence level, using a two-year history of daily time series of risk factor changes. VaR is the maximum daily loss the Bank could incur, in 99 cases out of 100, in a given portfolio. In other words, the loss could exceed that amount in only one out of 100 cases.

The trading VaR is measured by assuming a holding period of one day for ongoing market risk management and a 10-day holding period for regulatory capital purposes. VaR is calculated on a daily basis both for major classes of financial instruments (including derivative financial instruments) and all trading portfolios in the Financial Markets segment and the Bank's Global Funding and Treasury Group.

In addition to the one-day trading VaR, the Bank calculates a trading SVaR, which is a statistical measure of risk that replicates the VaR calculation method but uses, instead of a two-year history of risk factor changes, a 12-month data period corresponding to a continuous period of significant financial stress that is relevant in terms of the Bank's portfolios.

VaR methodology techniques are well suited to measure risks under normal market conditions. VaR metrics are most appropriate as a risk measure for trading positions in liquid financial markets. However, there are limitations in measuring risks with this method when extreme and sudden market risk events occur, since they are likely to underestimate the Bank's market risk. VaR methodology limitations include the following:

- past changes in market risk factors may not always produce accurate predictions of the distribution and correlations of future market movements;
- a VaR with a daily time horizon does not fully capture the market risk of positions that cannot be liquidated or hedged within one day;
- the market risk factor historical database used for VaR calculation may not reflect potential losses that could occur under unusual market conditions (e.g., periods of extreme illiquidity) relative to the historical period used for VaR estimates;
- the use of a 99% VaR confidence level does not reflect the extent of potential losses beyond that percentile.

Given the limitations of VaR, for the Bank it represents only one component in its risk management oversight, which also incorporates, among other measures, stress testing, sensitivity analysis, concentration and liquidity limits and analysis.

The Bank also conducts backtesting of the VaR model. It consists of comparing the profits and losses to the statistical VaR measure. Backtesting is essential to verifying the VaR model's capacity to adequately forecast the maximum risk of market losses and thus validate, retroactively, the quality and accuracy of the results obtained using the model. If the backtesting results present material discrepancies, the VaR model could be revised in accordance with the Bank's model risk management framework.

Controlling Market Risk

Outstanding VaR exposure is monitored daily in relation to established limits for each type of market risk, portfolio and business unit. The RMC reviews VaR results and other risk measure results each quarter, including any breaches of the limits set out in the policy.

The Bank also uses economic capital for market risk as an indicator for risk appetite and limits setting. This indicator measures the amount of capital that is required to absorb unexpected losses due to market risk events over a one-year horizon and with a determined confidence level. For additional information on economic capital, see the Capital Management section of this MD&A.

The following tables provide a breakdown of the Bank's Consolidated Balance Sheet into assets and liabilities by those that carry market risk and those that do not carry market risk, distinguishing between trading positions whose main risk measures are VaR and SVaR and non-trading positions that use other risk measures.

Reconciliation of Market Risk With Consolidated Balance Sheet Items

(millions of Canadian dollars)					As at October 31, 2019
		Market risk measures			
	Balance sheet	Trading[1]	Non-Trading[2]	Not subject to market risk	Non-traded risk primary risk sensitivity
Assets					
Cash and deposits with financial institutions	13,698	579	12,609	510	Interest rate[3]
Securities					
At fair value through profit or loss	61,823	58,170	3,653	–	Interest rate[3] and equity[4]
At fair value through other comprehensive income	10,648	–	10,648	–	Interest rate[3] and equity[5]
At amortized cost	9,755	–	9,755	–	Interest rate[3]
Securities purchased under reverse repurchase agreements and securities borrowed	17,723	–	17,723	–	Interest rate[3][6]
Loans and acceptances, net of allowances	153,251	6,060	147,191	–	Interest rate[3]
Derivative financial instruments	8,129	7,134	995	–	Interest rate[7] and exchange rate[7]
Defined benefit asset	38	–	38	–	Other[8]
Other	6,393	–	–	6,393	
	281,458	71,943	202,612	6,903	
Liabilities					
Deposits	189,566	9,869	179,697	–	Interest rate[3]
Acceptances	6,893	–	6,893	–	Interest rate[3]
Obligations related to securities sold short	12,849	12,849	–	–	
Obligations related to securities sold under repurchase agreements and securities loaned	21,900	–	21,900	–	Interest rate[3][6]
Derivative financial instruments	6,852	6,123	729	–	Interest rate[7] and exchange rate[7]
Liabilities related to transferred receivables	21,312	5,165	16,147	–	Interest rate[3]
Defined benefit liability	374	–	374	–	Other[8]
Other	5,803	24	911	4,868	Interest rate[3]
Subordinated debt	773	–	773	–	Interest rate[3]
	266,322	34,030	227,424	4,868	

(1) Trading positions whose risk measures are VaR and SVaR. For additional information, see the tables on the following pages that show the VaR and SVaR distributions of the trading portfolios by risk category as well as their correlation effect.
(2) Non-trading positions that use other risk measures.
(3) For additional information, see the tables on the following pages that show the VaR and SVaR distributions of the trading portfolios by risk category and their correlation effect as well as the interest rate sensitivity tables.
(4) For additional information, see Note 6 to the consolidated financial statements.
(5) The fair value of equity securities designated at fair value through other comprehensive income is presented in Notes 3 and 6 to the consolidated financial statements.
(6) These instruments are recorded at amortized cost and are subject to credit risk for capital management purposes. For trading-related transactions with maturities of more than one day, interest rate risk is included in the VaR and SVaR measures.
(7) For additional information, see Notes 16 and 17 to the consolidated financial statements.
(8) For additional information, see Note 23 to the consolidated financial statements.

(millions of Canadian dollars)					As at October 31, 2018
		Market risk measures			
	Balance sheet	Trading[(1)]	Non-trading[(2)]	Not subject to market risk	Non-traded risk primary risk sensitivity
Assets					
Cash and deposits with financial institutions	12,756	226	12,269	261	Interest rate[(3)]
Securities					
At fair value through profit or loss	55,817	51,575	4,242	–	Interest rate[(3)] and equity[(4)]
At fair value through other comprehensive income	5,668	–	5,668	–	Interest rate[(3)] and equity[(5)]
At amortized cost	8,298	–	8,298	–	Interest rate[(3)]
Securities purchased under reverse repurchase agreements and securities borrowed	18,159	–	18,159	–	Interest rate[(3)(6)]
Loans and acceptances, net of allowances	146,082	5,417	140,665	–	Interest rate[(3)]
Derivative financial instruments	8,608	7,625	983	–	Interest rate[(7)] and exchange rate[(7)]
Defined benefit asset	64	–	64	–	Other[(8)]
Other	7,019	–	–	7,019	
	262,471	64,843	190,348	7,280	
Liabilities					
Deposits	170,830	7,187	163,643	–	Interest rate[(3)]
Acceptances	6,801	–	6,801	–	Interest rate[(3)]
Obligations related to securities sold short	17,780	17,780	–	–	
Obligations related to securities sold under repurchase agreements and securities loaned	19,998	–	19,998	–	Interest rate[(3)(6)]
Derivative financial instruments	6,036	4,807	1,229	–	Interest rate[(7)] and exchange rate[(7)]
Liabilities related to transferred receivables	20,100	3,733	16,367	–	Interest rate[(3)]
Defined benefit liability	186	–	186	–	Other[(8)]
Other	5,638	21	910	4,707	Interest rate[(3)]
Subordinated debt	747	–	747	–	Interest rate[(3)]
	248,116	33,528	209,881	4,707	

(1) Trading positions whose risk measures are VaR and SVaR. For additional information, see the tables on the following pages that show the VaR and SVaR distributions of the trading portfolios by risk category as well as their correlation effect.
(2) Non-trading positions that use other risk measures.
(3) For additional information, see the tables on the following pages that show the VaR and SVaR distributions of the trading portfolios by risk category and their correlation effect as well as the interest rate sensitivity tables.
(4) For additional information, see Notes 6 to the consolidated financial statements.
(5) The fair value of equity securities designated at fair value through other comprehensive income is presented in Notes 3 and 6 to the consolidated financial statements.
(6) These instruments are recorded at amortized cost and are subject to credit risk for capital management purposes. For trading-related transactions with maturities of more than one day, interest rate risk is included in the VaR and SVaR measures.
(7) For additional information, see Notes 16 and 17 to the consolidated financial statements.
(8) For additional information, see Note 23 to the consolidated financial statements.

Trading Activities

The first table below shows the VaR distribution of trading portfolios by risk category as well as their correlation effect. The second table on the next page shows the SVaR distribution, i.e., the VaR of the Bank's current portfolios obtained following the calibration of risk factors over a 12-month stress period.

VaR of Trading Portfolios by Risk Category[(1)] *

Year ended October 31 (millions of Canadian dollars)				2019				2018
	Low	High	Average	Period end	Low	High	Average	Period end
Interest rate	(4.0)	(7.1)	(5.3)	(4.4)	(3.0)	(5.9)	(4.1)	(5.9)
Foreign exchange	(0.4)	(1.8)	(0.8)	(1.3)	(0.5)	(2.7)	(1.2)	(1.4)
Equity	(2.8)	(6.0)	(3.8)	(3.8)	(1.6)	(5.8)	(3.5)	(4.7)
Commodity	(0.5)	(1.5)	(1.0)	(1.2)	(0.5)	(1.7)	(1.0)	(0.9)
Correlation effect[(2)]	n.m.	n.m.	4.8	4.4	n.m.	n.m.	4.6	7.0
Total trading VaR	(3.8)	(8.9)	(6.1)	(6.3)	(3.1)	(7.4)	(5.2)	(5.9)

n.m. Computation of a correlation effect for the high and low is not meaningful, as highs and lows may occur on different days and be attributable to different types of risk.
(1) Amounts are presented on a pre-tax basis and represent one-day VaR using a 99% confidence level.
(2) The total trading VaR is less than the sum of the individual risk factor VaR results due to the correlation effect.

SVaR of Trading Portfolios by Risk Category[(1)] *

Year ended October 31 (millions of Canadian dollars)				2019				2018
	Low	High	Average	Period end	Low	High	Average	Period end
Interest rate	(11.8)	(26.6)	(16.4)	(15.1)	(7.5)	(15.7)	(11.8)	(13.6)
Foreign exchange	(0.6)	(4.1)	(1.4)	(2.0)	(0.5)	(4.1)	(1.5)	(2.4)
Equity	(4.5)	(14.4)	(7.3)	(8.9)	(1.2)	(9.3)	(3.5)	(9.3)
Commodity	(1.1)	(4.0)	(2.1)	(2.7)	(0.4)	(2.9)	(1.8)	(2.2)
Correlation effect[(2)]	n.m.	n.m.	14.2	13.4	n.m.	n.m.	8.9	17.7
Total trading SVaR	(9.0)	(17.8)	(13.0)	(15.3)	(4.0)	(17.8)	(9.7)	(9.8)

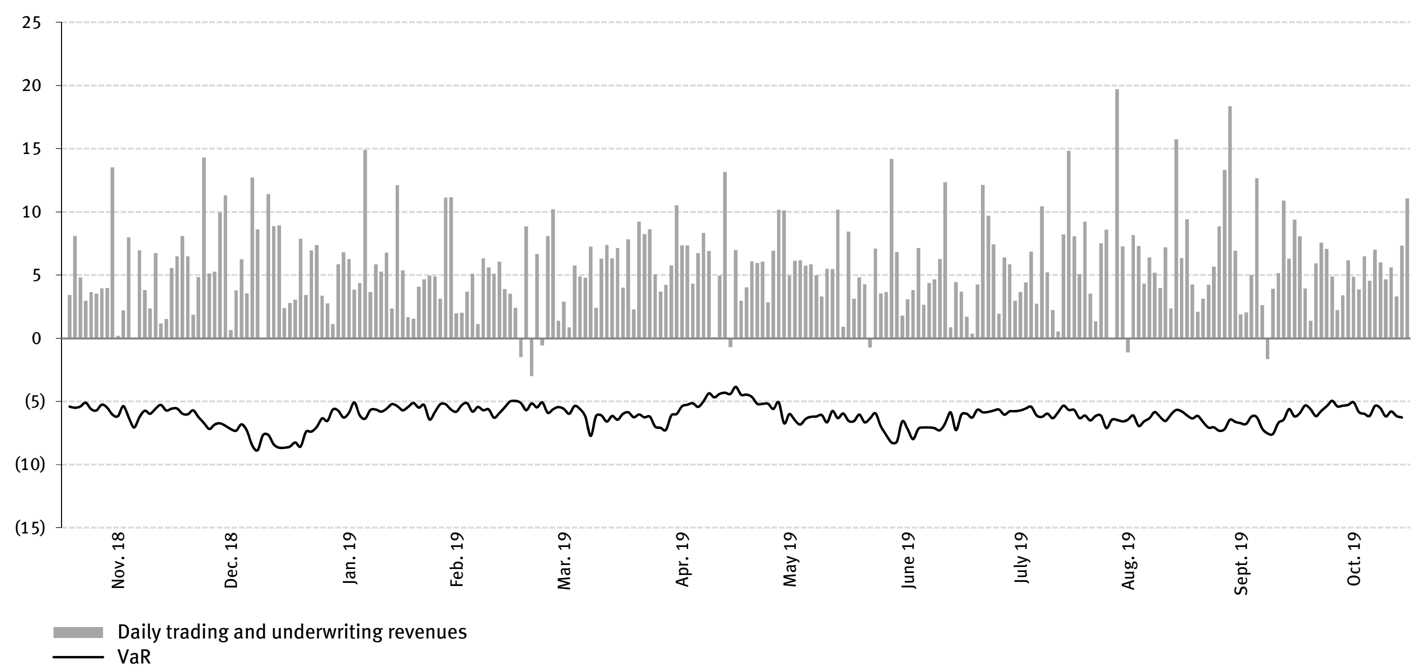
n.m. Computation of a correlation effect for the high and low is not meaningful, as highs and lows may occur on different days and be attributable to different types of risk.
(1) Amounts are presented on a pre-tax basis and represent one-day SVaR using a 99% confidence level.
(2) The total trading SVaR is less than the sum of the individual risk factor SVaR results due to the correlation effect.

The average total trading VaR stood at $6.1 million for fiscal 2019, up from $5.2 million in fiscal 2018. The average total trading SVaR was also up, rising from $9.7 million in fiscal 2018 to $13.0 million in fiscal 2019. These increases were essentially due to higher interest rate risk and higher equity risk.

The revenues generated by trading activities are compared with VaR as a backtesting assessment of the appropriateness of this risk measure as well as the financial performance of trading activities relative to the risk undertaken.

The table below shows daily trading and underwriting revenues and VaR. Daily trading and underwriting revenues were positive on 97% of the days for the year ended October 31, 2019. Daily trading and underwriting losses in excess of $1 million were recorded on 4 days. None of these losses exceeded the VaR.

Daily Trading and Underwriting Revenues
(millions of Canadian dollars)



Crisis Scenarios
A crisis scenario is a risk management technique that consists of estimating potential losses under abnormal market conditions and risk factor movements. This technique enhances transparency by exploring a range of serious but plausible events.

These crises scenarios simulate the results that the portfolios would generate if the extreme scenarios in question were to occur. The Bank's stress testing framework, which is to all positions generating market risk currently comprises the following range of different stress test scenarios:

- sharp parallel increases/decreases in interest rates; non-parallel movements (flattening and steepening) and increases/decreases in credit spreads;
- sharp stock market crash coupled with a significant increase in volatility; increase in stock prices associated with less volatility; increase in the volatility of the term structure coupled with a decrease in stock prices;
- significant increases/decreases in commodity prices coupled with increases/decreases in volatility; short-term and long-term increases/decreases in commodity prices;
- depreciation/appreciation of the U.S. dollar and of other currencies relative to the Canadian dollar.

Structural Interest Rate Risk
As part of its core banking activities, such as lending and deposit taking, the Bank is exposed to interest rate risk. Interest rate risk is the potential negative impact of interest rate fluctuations on the Bank's annual net interest income and economic value of equity. Activities related to hedging, investments and term funding are also exposed to structural interest rate risk. The Bank's main exposure to interest rate risk stems from a variety of sources:

- yield curve risk, which refers to changes in the level, slope and shape of the yield curve;
- repricing risk, which arises from timing differences in the maturity and repricing of on- and off-balance-sheet items;
- options risk, either implicit (e.g., prepayment of mortgage loans) or explicit (e.g., capped mortgages and rate guarantees) in balance sheet products;
- basis risk that is caused by imperfect correlation between different yield curves.

The Bank's exposure to structural interest rate risk is assessed and controlled mostly through the impact of stress scenarios and market shocks on the economic value of the Bank's equity and on 12-month net interest income projections. These metrics are based on cash flow projections prepared using a number of assumptions. Specifically, the Bank has developed key assumptions on loan prepayment levels, deposit redemptions, and the behaviour of customers that were granted rate guarantees. These specific assumptions were developed based on historical analyses and are reviewed frequently.

Funds transfer pricing is a process by which the Bank's business units are charged or paid according to their use or supply of funding. Through this mechanism, all funding activities as well as the interest rate risk and liquidity risk associated with those activities are centralized in the Global Funding and Treasury Group.

Active management of structural interest rate risk can significantly enhance the Bank's profitability and add to shareholder value. The Bank's goal is to maximize its economic value of equity and annual net interest income considering the Bank's risk appetite. This has to be accomplished within prescribed risk limits and is done primarily by implementing a policy framework approved by the Board, which establishes a risk tolerance threshold, monitoring structures controlled by the various committees, risk indicators, reporting procedures, delegation of responsibilities and segregation of duties. The Bank also prepares an annual funding plan that incorporates the expected growth of assets and liabilities.

Regulatory Context
On May 30, 2019, OSFI released a revised version of its B-12 guideline, *Interest Rate Risk Management*. The guideline outlines OSFI's expectations regarding the management of Interest Rate Risk in the Banking Book (IRRBB) in areas such as governance processes, risk measurement, development of stress test scenarios as well as key behavioural and modelling assumptions. D-SIBs will have to apply this revised guideline as of January 1, 2020.

Governance
Management of the Bank's structural interest rate risk is mandated to the Global Funding and Treasury Group. In this role, the executives and personnel of this group are responsible for the day-to-day management of the risks inherent to structural interest rate risk hedging decisions and operations. They act as the primary effective challenge function with respect to the execution of these activities. The Office of the President approves and endorses the structural interest rate exposure and strategies on the recommendation of the Global Funding and Treasury Group. The Risk Management Group is responsible for assessing structural interest rate risk, monitoring activities, and ensuring compliance with the structural interest rate risk policy. The Risk Management Group ensures that an appropriate risk management framework is in place and ensures compliance with the risk appetite framework and policy. Structural interest rate risk supervision is mainly provided by the Financial Markets Risk Committee. This committee reviews exposure to structural interest rate risk, the use of limits, and changes made to assumptions.

Stress Testing and Crisis Scenarios

Stress tests are performed on a regular basis to assess the impact of various scenarios on annual net interest income and on the economic value of equity in order to guide the management of structural interest rate risk. Crisis scenarios are performed where the yield curve level, slope and shape are shocked. Yield curve basis and volatility scenarios are also performed. All risk factors mentioned above are covered by specific scenarios and have Board-approved or GRC-approved risk limits.

Dynamic simulation is also used to project the Bank's future net interest income, future economic value and future structural interest rate risk exposure. These simulations project cash flows of assets, liabilities and off-balance-sheet products over a given investment horizon. Given their dynamic nature, they encompass assumptions pertaining to changes in volume, client term preference, prepayments of deposits and loans, and the yield curve.

The following tables present the potential before-tax impact of an immediate and sustained 100-basis-point increase or decrease in interest rates on the economic value of equity and on the net interest income of the non-trading portfolios for the next 12 months, assuming no further hedging is undertaken.

Interest Rate Sensitivity – Non-Trading Activities (Before Tax) *

As at October 31
(millions of Canadian dollars)

	2019			2018		
	Canadian dollar	Other currencies	Total	Canadian dollar	Other currencies	Total
Impact on equity						
100-basis-point increase in the interest rate	(178)	40	(138)	(140)	9	(131)
100-basis-point decrease in the interest rate	199	(4)	195	154	17	171
Impact on net interest income						
100-basis-point increase in the interest rate	(26)	42	16	10	19	29
100-basis-point decrease in the interest rate	73	(4)	69	34	8	42

Investment Governance

The Bank has created securities portfolios in liquid and less liquid securities for strategic, long-term investment and liquidity management purposes. These investments carry market risk, credit risk, liquidity risk and concentration risk.

The investment governance sets out the guiding principles and general management standards that must be followed by all those who manage portfolios of these securities included in the portfolios of the Bank and its subsidiaries. Under this investment governance, business units that are active in managing these types of portfolios must adopt internal investment policies that set, among other things, targets and limits for the allocation of assets in the portfolios concerned and internal approval mechanisms. The primary objective is to reduce concentration risk by industry, issuer, country, type of financial instrument and credit quality.

Overall limits in value and in proportion to the Bank's equity are set on the outstanding amount of liquid preferred shares, liquid equity securities excluding preferred shares, and instruments classified as illiquid securities in the securities portfolios. The overall exposure to common shares with respect to an individual issuer and the total outstanding amount invested in private equity funds, for investment banking services, are also subject to limits. Restrictions are also set on investments defined as special. Lastly, the Bank has a specific strategic investment policy, approved by the Board, which defines strategic investments as purchases of business assets or acquisitions of significant interests in an entity for purposes of acquiring control or creating a long-term relationship.

Structural Foreign Exchange Risk

The Bank's structural foreign exchange risk arises from investments in foreign operations denominated in currencies other than the Canadian dollar. This risk, predominantly in U.S. dollars, is measured by assessing the impact of currency fluctuations on net interest income and shareholders' equity. The Bank uses financial instruments (derivative and non-derivative) to hedge some of this risk. An adverse change in foreign exchange rates can also impact the Bank's capital ratios due to the amount of RWA denominated in a foreign currency. When the Canadian dollar depreciates relative to other currencies, unrealized translation gains on the Bank's net investments in foreign operations, net of related hedges, are reported in other comprehensive income in shareholders' equity. In addition, the Canadian-dollar equivalent of U.S.-dollar-denominated RWA and regulatory capital deductions increases. The reverse is true when the Canadian dollar appreciates relative to the U.S. dollar. The structural foreign exchange risk exposure is managed to ensure that the potential impacts on the capital ratios and net income are within tolerable limits set by risk policies.

Liquidity and Funding Risk

Liquidity and funding risk is the risk that the Bank will be unable to honour daily cash and financial obligations without resorting to costly and untimely measures. Liquidity and funding risk arises when sources of funds become insufficient to meet scheduled payments under the Bank's commitments. Liquidity risk stems from mismatched cash flows related to assets and liabilities as well as the characteristics of certain products such as credit commitments and non-fixed-term deposits.

The Bank's primary objective as a financial institution is to manage liquidity such that it supports the Bank's business strategy and allows it to honour its commitments when they come due, even in extreme conditions. This is done primarily by implementing a policy framework approved by the Board, which establishes a risk appetite, monitoring structures controlled by various committees, risk indicators, reporting procedures, delegation of responsibilities and segregation of duties. The Bank also prepares an annual funding plan that incorporates the expected growth of assets and liabilities.

Regulatory Environment
The Bank works closely with national and international regulators to implement regulatory liquidity standards. The Bank adapts its processes and policies to reflect the Bank's liquidity risk appetite towards these new requirements.

The *Liquidity Adequacy Requirements* are reviewed annually to reflect domestic and international regulatory changes. They constitute OSFI's proposed liquidity framework and include six chapters:

- overview;
- liquidity coverage ratio (LCR);
- net stable funding ratio (NSFR);
- net cumulative cash flow (NCCF);
- liquidity monitoring tools;
- intraday liquidity monitoring tools.

The LCR is used to ensure that banks can overcome severe short-term stress, while the NSFR is a structural ratio over a one-year horizon. The NCCF metric is defined as a monitoring tool that calculates a survival period. It is based on the assumptions of a stress scenario prescribed by OSFI that aims to represent a combined systemic and bank-specific crisis.

The Bank publishes the LCR on a quarterly basis. It is currently monitoring the NSFR ratio and will be compliant therewith as of the effective date of January 1, 2021, with OSFI having published the final version of the *Net Stable Funding Ratio Disclosure Requirements* guideline on April 11, 2019, which sets out NSFR ratio disclosure requirements for D-SIBs. These requirements will be applicable as of January 1, 2020, but since OSFI has introduced an additional year to implement the disclosure framework, they will take effect on January 1, 2021. On April 11, 2019, OSFI also issued a new version of its *Liquidity Adequacy Requirements* guideline, which will come into effect on January 1, 2020. This version differs from the previous one and seeks to ensure that liquidity risk measuring and monitoring standards reflect current sound practices.

On May 23, 2019, OSFI updated the covered bond limit calculation. Effective August 1, 2019, total assets pledged by a deposit-taking institution for covered bonds must not, at any time, represent more than 5.5% of the issuer's on-balance-sheet assets.

On July 18, 2019, OSFI published proposed changes to guideline B-6 – *Liquidity Principles* for public consultation. The current version was last updated in 2012, and the proposed changes aim to ensure that the guideline remains current, relevant, and appropriate to the scale and complexity of institutions. OSFI is targeting an implementation date of January 1, 2020.

Governance
The Global Funding and Treasury Group is responsible for managing liquidity and funding risk. Although the day-to-day and strategic management of risks associated with liquidity, funding and pledging activities is assumed by the Global Funding and Treasury Group, the Risk Management Group is responsible for assessing liquidity risk and overseeing compliance with the resulting policy. The Risk Management Group ensures that an appropriate risk management framework is in place and ensures compliance with the risk appetite framework. This structure provides an independent oversight and effective challenge for the liquidity, funding and pledging decisions, strategy, and exposure.

The Bank's Liquidity, Funding and Pledging Governance policy requires review and approval by the RMC, based on recommendations from the GRC. The Bank has established two levels of limits. The first level of limits encompasses the Bank's overall liquidity position and is Board approved, while the second level of limits is more focused on specific elements of liquidity risk and is approved by the GRC. The Board not only approves the supervision of day-to-day risk management and governance but also backup plans in anticipation of emergency and liquidity crisis situations. If a limit has to be revised, the Risk Management Group with the support of the Global Funding and Treasury Group, submits the proposed revision to the GRC. If the latter approves the request, it is presented to the Board for approval only if a level-one limit is concerned.

Oversight of liquidity risk is entrusted mainly to the Financial Markets Risk Committee, whose members include representatives of the Financial Markets segment, the Global Funding and Treasury Group, the Risk Management Group, and Internal Audit.

Through the Financial Markets Risk Committee, the Risk Management Group regularly reports changes in liquidity, funding and pledging indicators and compliance with regulatory, Board and GRC approved limits. If control reports indicate non-compliance with the limits and, generally, deterioration of liquidity indicators, the Global Funding and Treasury Group takes remedial action. According to the escalation process, problematic situations are reported to management and to the GRC and the RMC. An executive report on the Bank's liquidity and funding risk management, which describes the Bank's liquidity position and informs the Board of non-compliance with the limits and other rules observed during the reference period as well as remedial action taken, is submitted quarterly to the RMC.

Liquidity Management

The Bank performs liquidity management, funding and pledging operations not only from its head office and regional offices in Canada, but also through certain foreign centres. Although the volume of such operations abroad represents a sizable portion of global liquidity management, the Bank's liquidity management is centralized. By organizing liquidity management, funding and pledging activities within the Global Funding and Treasury Group, the Bank can better coordinate enterprise-wide funding and risk monitoring activities. All internal funding transactions between Bank entities are controlled by the Global Funding and Treasury Group.

This centralized structure streamlines the allocation and control of liquidity management, funding and pledging limits. Nonetheless, the Liquidity, Funding and Pledging Governance policy contains special provisions for the financial centres that are most active in terms of institutional funding and sets limits and monitoring thresholds for secured and unsecured short-term funding, both in absolute value and materiality.

The Bank's funds transfer pricing system prices liquidity by allocating the cost or income to the various business segments. Liquidity costs are allocated to liquidity-intensive activities, mainly long-term loans, and commitments to extend credit and less liquid securities as well as strategic investments. The liquidity compensation is credited to the suppliers of funds, primarily funding in the form of stable deposits from the Bank's distribution network.

Short-term day-to-day funding decisions are based on a daily cumulative net cash position, which is controlled using liquidity ratio limits. Among these ratios and metrics, the Bank pays particular attention to the funds obtained on the wholesale market and to cumulative cash flows over various time horizons.

Moreover, the Bank's collateral pledging activities are monitored in relation to the different limits set by the Bank and are subject to monthly stress tests using simulations. In particular, the Bank uses various scenarios to estimate the potential amounts of additional collateral that would be required in the event of a downgrade to the Bank's credit rating.

Liquidity risk can be assessed in many different ways using different liquidity indicators. One of the key monitoring tools of liquidity risk is the Bank's survival period based on contractual maturity and behavioural assumptions applied to balance sheet items as well as off-balance-sheet commitments.

Stress Testing and Crisis Scenarios

Using various simulations, survival period measures the number of months it would take to completely utilize the Bank's liquid assets if the Bank were to lose deposits prematurely or if funds from wholesale markets were not renewed at maturity. It is measured monthly using three scenarios, which were developed to assess sensitivity to a Bank-specific and/or systemic crisis. Deposit loss simulations are carried out based on their degree of stability, while the value of certain assets is encumbered by an amount reflecting their readiness for liquidation in a crisis. Appropriate scenarios and limits are included in the Bank's liquidity, funding and pledging governance policy.

The Bank maintains an up-to-date, comprehensive financial contingency and crisis recovery plan that describes the measures to be taken in the event of a critical liquidity situation. This plan is reviewed and approved annually by the Board as part of business continuity and recovery planning. For additional information, see the Regulatory Compliance Risk Management section of this MD&A.

Liquidity Risk Appetite

The Bank monitors and manages its risk appetite through liquidity limits, ratios and stress tests. The Bank's liquidity risk appetite is based on the following principles:

- ensure the Bank has a sufficient amount of unencumbered liquid assets to cover its financial requirements, in both normal and stressed conditions;
- ensure the Bank keeps a liquidity buffer above the minimum regulatory requirement;
- ensure the Bank maintains diversified and stable sources of funding.

Liquid Assets

To protect depositors and creditors from unexpected crisis situations, the Bank holds a portfolio of unencumbered liquid assets that can be readily liquidated to meet financial obligations. The majority of unencumbered liquid assets are held in Canadian or U.S. dollars. Moreover, all assets that can be quickly monetized are considered liquid assets. The Bank's liquidity reserves do not factor in the availability of the central bank's emergency liquidity facilities. The following tables provide information on the Bank's encumbered and unencumbered assets.

Liquid Asset Portfolio

As at October 31 (millions of Canadian dollars)	Bank-owned liquid assets[1]	Liquid assets received[2]	Total liquid assets	Encumbered liquid assets[3]	2019 Unencumbered liquid assets	2018 Unencumbered liquid assets
Cash and deposits with financial institutions	13,698	–	13,698	4,102	9,596	10,287
Securities						
Issued or guaranteed by the Canadian government, U.S. Treasury, other U.S. agencies and other foreign governments	25,648	18,760	44,408	20,953	23,455	20,825
Issued or guaranteed by Canadian provincial and municipal governments	10,224	5,404	15,628	9,483	6,145	6,540
Other debt securities	5,647	2,212	7,859	2,278	5,581	5,398
Equity securities	40,707	28,934	69,641	42,673	26,968	16,611
Loans						
Securities backed by insured residential mortgages	7,422	–	7,422	4,496	2,926	3,286
As at October 31, 2019	103,346	55,310	158,656	83,985	74,671	
As at October 31, 2018	91,640	57,483	149,123	86,176		62,947

As at October 31 (millions of Canadian dollars)	2019	2018
Unencumbered liquid assets by entity		
National Bank (parent)	30,380	30,205
Domestic subsidiaries	14,815	11,543
Foreign subsidiaries and branches	29,476	21,199
	74,671	62,947

As at October 31 (millions of Canadian dollars)	2019	2018
Unencumbered liquid assets by currency		
Canadian dollar	39,172	35,838
U.S. dollar	19,356	22,663
Other currencies	16,143	4,446
	74,671	62,947

Liquid Asset Portfolio – Average[4]

Year ended October 31 (millions of Canadian dollars)	Bank-owned liquid assets[1]	Liquid assets received[2]	Total liquid assets	Encumbered liquid assets[3]	2019 Unencumbered liquid assets	2018 Unencumbered liquid assets
Cash and deposits with financial institutions	11,830	–	11,830	3,339	8,491	9,098
Securities						
Issued or guaranteed by the Canadian government, U.S. Treasury, other U.S. agencies and other foreign governments	28,152	23,349	51,501	28,506	22,995	19,180
Issued or guaranteed by Canadian provincial and municipal governments	11,320	6,761	18,081	13,639	4,442	4,652
Other debt securities	5,410	2,474	7,884	2,999	4,885	4,041
Equity securities	38,416	29,850	68,266	41,906	26,360	22,001
Loans						
Securities backed by insured residential mortgages	7,688	–	7,688	4,538	3,150	4,297
As at October 31, 2019	102,816	62,434	165,250	94,927	70,323	
As at October 31, 2018	96,513	63,347	159,860	96,591		63,269

(1) Bank-owned liquid assets include assets for which there are no legal or geographic restrictions.
(2) Securities received as collateral with respect to securities financing and derivative transactions and securities purchased under reverse repurchase agreements and securities borrowed.
(3) In the normal course of its funding activities, the Bank pledges assets as collateral in accordance with standard terms. Encumbered liquid assets include assets used to cover short sales, obligations related to securities sold under repurchase agreements and securities loaned, guarantees related to security-backed loans and borrowings, collateral related to derivative financial instrument transactions, asset-backed securities and liquid assets legally restricted from transfers.
(4) The average is based on the sum of the end-of-period balances of the 12 months of the year divided by 12.

Summary of Encumbered and Unencumbered Assets

(millions of Canadian dollars)						As at October 31, 2019
	Encumbered assets[1]		Unencumbered assets		Total	Encumbered assets as % of total assets
	Pledged as collateral	Other[2]	Available as collateral	Other[3]		
Cash and deposits with financial institutions	143	3,959	9,596	–	13,698	1.4
Securities	24,950	–	57,276	–	82,226	8.9
Securities purchased under reverse repurchase agreements and securities borrowed	–	12,850	4,873	–	17,723	4.6
Loans and acceptances, net of allowances	31,835	–	2,926	118,490	153,251	11.3
Derivative financial instruments	–	–	–	8,129	8,129	–
Investments in associates and joint ventures	–	–	–	385	385	–
Premises and equipment	–	–	–	490	490	–
Goodwill	–	–	–	1,412	1,412	–
Intangible assets	–	–	–	1,406	1,406	–
Other assets	–	–	–	2,738	2,738	–
	56,928	16,809	74,671	133,050	281,458	26.2

(millions of Canadian dollars)						As at October 31, 2018
	Encumbered assets[1]		Unencumbered assets		Total	Encumbered assets as % of total assets
	Pledged as collateral	Other[2]	Available as collateral	Other[3]		
Cash and deposits with financial institutions	87	2,382	10,287	–	12,756	0.9
Securities	20,787	–	48,996	–	69,783	7.9
Securities purchased under reverse repurchase agreements and securities borrowed	–	17,781	378	–	18,159	6.8
Loans and acceptances, net of allowances	28,670	–	3,286	114,126	146,082	10.9
Derivative financial instruments	–	–	–	8,608	8,608	–
Investments in associates and joint ventures	–	–	–	645	645	–
Premises and equipment	–	–	–	601	601	–
Goodwill	–	–	–	1,412	1,412	–
Intangible assets	–	–	–	1,314	1,314	–
Other assets	–	–	–	3,111	3,111	–
	49,544	20,163	62,947	129,817	262,471	26.5

(1) In the normal course of its funding activities, the Bank pledges assets as collateral in accordance with standard terms. Encumbered assets include assets used to cover short sales, obligations related to securities sold under repurchase agreements and securities loaned, guarantees related to security-backed loans and borrowings, collateral related to derivative financial instrument transactions, asset-backed securities, residential mortgage loans securitized and transferred under the Canada Mortgage Bond program, assets held in consolidated trusts supporting the Bank's funding activities and mortgage loans transferred under covered bond programs.
(2) Other encumbered assets include assets for which there are restrictions and therefore cannot be used for collateral or funding purposes as well as assets used to cover short sales.
(3) Other unencumbered assets are assets that cannot be used for collateral or funding purposes in their current form. This category includes assets that are potentially eligible as funding program collateral (e.g., Canada Mortgage and Housing Corporation insured mortgages that can be securitized into mortgage-backed securities under the *National Housing Act* (Canada)).

Liquidity Coverage Ratio (LCR)

The LCR was introduced primarily to ensure banks maintain sufficient liquidity to withstand periods of severe short-term stress. OSFI has been requiring Canadian banks to maintain a minimum LCR of 100%. An LCR above 100% ensures that banks are holding sufficient high-quality liquid assets (HQLA) to cover net cash outflows given a severe, 30-day liquidity crisis. The assumptions underlying the LCR scenario were established by the BCBS and OSFI.

The following table provides average LCR data calculated using the daily figures in the quarter. For the quarter ended October 31, 2019, the Bank's average LCR was 146%, well above the 100% regulatory requirement and demonstrating the Bank's solid liquidity position.

LCR Disclosure Requirements(1)

(millions of Canadian dollars)			For the quarter ended
	October 31, 2019		July 31, 2019
	Total unweighted value(2) (average)	Total weighted value(3) (average)	Total weighted value(3) (average)
High-quality liquid assets (HQLA)			
1 Total HQLA	n.a.	45,891	46,194
Cash outflows			
2 Retail deposits and deposits from small business customers, of which:	43,933	3,039	2,893
3 Stable deposits	19,350	581	588
4 Less stable deposits	24,583	2,458	2,305
5 Unsecured wholesale funding, of which:	76,579	42,479	39,240
6 Operational deposits (all counterparties)	13,065	3,143	2,780
7 Non-operational deposits (all counterparties)	54,143	29,965	28,888
8 Unsecured debt	9,371	9,371	7,572
9 Secured wholesale funding	n.a.	15,952	16,440
10 Additional requirements, of which:	36,093	10,199	9,031
11 Outflows related to derivative exposures and other collateral requirements	9,233	5,291	4,113
12 Outflows related to loss of funding on secured debt securities	839	839	858
13 Backstop liquidity and credit enhancement facilities and commitments to extend credit	26,021	4,069	4,060
14 Other contractual commitments to extend credit	1,970	576	415
15 Other contingent commitments to extend credit	92,650	1,447	1,442
16 Total cash outflows	n.a.	73,692	69,461
Cash inflows			
17 Secured lending (e.g., reverse repos)	116,299	19,500	19,765
18 Inflows from fully performing exposures	10,496	6,455	6,094
19 Other cash inflows	16,070	16,070	13,531
20 Total cash inflows	142,865	42,025	39,390
		Total adjusted value(4)	Total adjusted value(4)
21 Total HQLA	n.a.	45,891	46,194
22 Total net cash outflows	n.a.	31,667	30,071
23 Liquidity coverage ratio (%)(5)	n.a.	146 %	154 %

n.a. Not applicable
(1) OSFI prescribed a table format in order to standardize disclosure throughout the banking industry.
(2) Unweighted values are calculated as outstanding balances maturing or callable within 30 days (for inflows and outflows).
(3) Weighted values are calculated after the application of respective haircuts (for HQLA) or inflow and outflow rates.
(4) Total adjusted values are calculated after the application of both haircuts and inflow and outflow rates and any applicable caps.
(5) The data in this table has been calculated using averages of the daily figures in the quarter.

As at October 31, 2019, Level 1 liquid assets represented 79% of the Bank's HQLA, which includes cash, central bank deposits, and bonds issued or guaranteed by the Canadian government and Canadian provincial governments.

Cash outflows arise from the application of OSFI-prescribed assumptions on deposits, debt, secured funding, commitments and additional collateral requirements. The cash outflows are partly offset by cash inflows, which come mainly from secured loans and performing loans. The Bank expects some quarter-over-quarter variation between reported LCRs, and such variation may not be indicative of a trend. The variation between the quarter ended October 31, 2019 and the previous quarter was a result of normal business activities. The Bank's liquid asset buffer is well in excess of its total net cash outflows.

The LCR assumptions differ from the assumptions used for the liquidity disclosures presented in the tables on the previous pages or those used for internal liquidity management rules. While the liquidity disclosure framework was prescribed by the EDTF, the Bank's internal liquidity metrics use assumptions that are calibrated according to its business model and experience.

Intraday Liquidity
The Bank manages its intraday liquidity in such a way that the amount of available liquidity exceeds its maximum intraday liquidity requirements. The Bank monitors its intraday liquidity on an hourly basis and the evolution is presented monthly to the Financial Markets Risk Committee.

Funding Risk
Funding risk is defined as the risk to the Bank's ongoing ability to raise sufficient funds to finance actual or proposed business activities on an unsecured or secured basis at an acceptable price. The Bank maintains a good balance of its funding through appropriate diversification of its unsecured funding vehicles, securitization programs and secured funding. The Bank also diversifies its funding by currency, geography and maturity. The funding management priority is to achieve an optimal balance between deposits, securitization, secured funding and unsecured funding. This brings optimal stability to the funding and reduces vulnerability to unpredictable events.

Funding and liquidity levels remained sound and robust over the year and the Bank does not foresee any event, commitment or demand that might have a significant impact on its funding and liquidity risk position. For additional information, see the table entitled Residual Contractual Maturities of Balance Sheet Items and Off-Balance-Sheet Commitments in Note 29 to the consolidated financial statements.

Credit Ratings
The credit ratings assigned by ratings agencies represent their assessment of the Bank's credit quality based on qualitative and quantitative information provided to them. Credit ratings may be revised at any time based on various factors, including macro-economic factors, methodologies used by ratings agencies, or the current and projected financial condition of the Bank. Credit ratings are one of the main factors that influence the Bank's ability to access financial markets at a reasonable cost. A downgrade in the Bank's credit ratings could adversely affect the cost, size and term of future funding and could also result in increased requirement to pledge collateral or decreased capacity to engage in certain collateralized business activities at a reasonable cost, including hedging and derivatives transactions.

Funding and liquidity levels remained sound and robust, and the Bank continues to enjoy excellent access to the market for its funding needs. The Bank received favourable credit ratings from all the agencies, reflecting the high quality of its debt instruments, and the Bank's objective is to maintain these high ratings. On July 29, 2019, DBRS Limited (DBRS) changed the trend on all the Bank's ratings and its related entities from "Stable" to "Positive" to reflect improvements in its assessment of the Bank's funding and liquidity levels. For Moody's, S&P, and Fitch, the outlook remains unchanged at "Stable." The following table presents the Bank's credit ratings according to four rating agencies as at October 31, 2019.

The Bank's Credit Ratings

				As at October 31, 2019
	Moody's	**S&P**	**DBRS**	**Fitch**
Short-term senior debt	P-1	A-1	R-1 (mid)	F1
Canadian commercial paper		A-1 (mid)		
Long-term deposits	Aa3		AA (low)	A+
Long-term non-bail-inable senior debt(1)	Aa3	A	AA (low)	A+
Senior debt(2)	A3	BBB+	A (high)	A+
NVCC subordinated debt	Baa2 (hyb)	BBB	BBB (high)	
NVCC preferred shares	Ba1 (hyb)	P-3 (high)	Pfd-2 (low)	
Counterparty risk(3)	Aa3/P-1			A+
Covered bonds program	Aaa		AAA	AAA
Rating outlook	Stable	Stable	Positive	Stable

(1) Includes senior debt issued prior to September 23, 2018 and senior debt issued on or after September 23, 2018 which is excluded from the Bank Recapitalization (Bail-in) Regime.
(2) Subject to conversion under the Bank Recapitalization (Bail-in) Regime.
(3) Moody's uses the term Counterparty Risk Rating while Fitch uses the term Derivative Counterparty Rating.

Guarantees
As part of a comprehensive liquidity management framework, the Bank regularly reviews its contracts that stipulate that additional collateral could be required in the event of a downgrade of the Bank's credit rating. The Bank's liquidity position management already incorporates additional collateral requirements in the event of a one-notch to three-notch downgrade. The table below presents the additional collateral requirements in the event of a one-notch or three-notch credit rating downgrade.

(millions of Canadian dollars)	As at October 31, 2019	
	One-notch downgrade	Three-notch downgrade
Derivatives[1]	26	35

(1) Contractual requirements related to agreements known as Credit Support Annexes.

Funding Strategy
The main objective of the funding strategy is to support the Bank's organic growth while also enabling it to survive potentially severe and prolonged crises and to meet its regulatory obligations and financial targets.

The Bank's funding framework is summarized as follows:

- pursue a diversified deposit strategy to fund core banking activities through stable deposits coming from the networks of each of the Bank's major business segments;
- incorporate the regulatory framework into day-to-day liquidity management and into the long-term funding plan by leveraging a strong risk management culture and centralized expertise;
- maintain active access to various markets to ensure a diversification of institutional funding in terms of source, geographic location, currency, instrument and maturity, whether or not funding is secured.

The funding strategy is implemented in accordance with the overall objectives of strengthening the Bank's franchise among market participants and consolidating its excellent reputation. The Bank continuously monitors and analyzes the possibilities for accessing less expensive and more flexible funding. The deposit strategy remains a priority for the Bank, which continues to prefer deposits to institutional funding.

The Bank actively monitors and controls liquidity risk exposures and funding needs within and across entities, business segments, and currencies. The process involves evaluating the liquidity position of individual business segments in addition to that of the Bank as a whole as well as the liquidity risk from raising unsecured and secured funding in foreign currencies. The funding strategy is implemented through the funding plan and deposit strategy, which are monitored, updated to reflect actual results and regularly evaluated.

Diversified Funding Sources

The primary purpose of diversification by source, geographic location, currency, instrument, maturity and depositor is to mitigate liquidity and funding risk by ensuring that the Bank maintains alternative sources of funds that strengthen its capacity to withstand a variety of severe yet plausible institution-specific and market-wide shocks. To meet this objective, the Bank:

- takes funding diversification into account in the business planning process;
- maintains a variety of funding programs to access different markets;
- sets limits on funding concentration;
- maintains strong relationships with fund providers;
- is active in various funding markets of all tenors and for various instruments;
- identifies and monitors the main factors that affect the ability to raise funds.

The Bank is active in the following funding and securitization platforms:

- Canadian dollar Senior Unsecured Debt;
- U.S. dollar Senior Unsecured Debt programs;
- Canadian Medium-Term Note Shelf;
- U.S. dollar Commercial Paper programs;
- U.S. dollar Certificates of Deposit;
- Euro Medium-Term Note program;
- Canada Mortgage and Housing Corporation securitization programs;
- Canadian Credit Card Trust II;
- Legislative Covered Bond program.

The table below presents the residual contractual maturities of the Bank's wholesale funding. The information has been presented in accordance with the categories recommended by the EDTF for comparison purposes with other banks.

Residual Contractual Maturities of Wholesale Funding[1]

(millions of Canadian dollars)								As at October 31, 2019
	1 month or less	Over 1 month to 3 months	Over 3 months to 6 months	Over 6 months to 12 months	Subtotal 1 year or less	Over 1 year to 2 years	Over 2 years	Total
Deposits from banks[2]	605	13	7	–	625	–	–	625
Certificates of deposit and commercial paper[3]	1,914	4,199	3,238	2,644	11,995	–	–	11,995
Senior unsecured medium-term notes[4]	14	395	2,103	2,771	5,283	3,432	4,730	13,445
Senior unsecured structured notes	654	–	–	254	908	–	4,108	5,016
Covered bonds and asset-backed securities								
Mortgage securitization	–	1,491	995	1,256	3,742	3,640	13,930	21,312
Covered bonds	–	–	–	–	–	2,290	7,168	9,458
Securitization of credit card receivables	–	–	874	–	874	–	37	911
Subordinated liabilities[5]	–	–	–	–	–	–	773	773
	3,187	6,098	7,217	6,925	23,427	9,362	30,746	63,535
Secured funding	–	1,491	1,869	1,256	4,616	5,930	21,135	31,681
Unsecured funding	3,187	4,607	5,348	5,669	18,811	3,432	9,611	31,854
	3,187	6,098	7,217	6,925	23,427	9,362	30,746	63,535
As at October 31, 2018	1,944	7,261	4,339	5,143	18,687	9,856	28,950	57,493

(1) Bankers' acceptances are not included in this table.
(2) Deposits from banks include all non-negotiable term deposits from banks.
(3) Includes bearer deposit notes.
(4) Certificates of deposit denominated in euros are included in senior unsecured medium-term notes.
(5) Subordinated debt is presented in this table but the Bank does not consider it as part of its wholesale funding.

Operational Risk

Operational risk is the risk of loss resulting from an inadequacy or a failure ascribable to human resources, equipment, processes, technology or external events. Operational risk exists for every Bank activity. Theft, fraud, cyberattacks, unauthorized transactions, system errors, human error, amendments to or misinterpretation of laws and regulations, litigation or disputes with clients, inappropriate sales practice behaviour or property damage are just a few examples of events likely to cause financial loss, harm the Bank's reputation or lead to punitive damages or regulatory penalties or sanctions.

Although operational risk cannot be eliminated entirely, it can be managed in a thorough and transparent manner to keep it at an acceptable level. The Bank's operational risk management framework is built on the concept of three lines of defence and provides a clear allocation of responsibilities to all levels of the organization, as mentioned below.

Operational Risk Management Framework

The operational risk management framework is described in the Operational Risk Management Policy, which is derived from the Risk Management Policy. The operational risk management framework is aligned with the Bank's risk appetite and is made up of policies, standards, and procedures specific to each operational risk, which fall under the responsibility of specialized groups.

The segments use several operational risk management tools and methods to identify, assess, and monitor their operational risks and control measures. With these tools and methods, the segments can:

- recognize and understand the inherent and residual risks to which their activities and operations are exposed;
- identify how to mitigate the identified risks and monitor them to keep them at an acceptable level;
- proactively and continuously manage risks.

Operational Risk Management Tools and Methods

Collection and Analysis of Data on Operational Losses Incurred by the Bank

The Operational Risk Unit applies a process, across the Bank and its subsidiaries, for collecting and compiling data on internal operational losses. This data is entered into a centralized database and includes the amount of each loss, the type of risk involved, a description of the event that caused the loss, and the date of the loss, making it possible to better understand the fundamental causes of this type of loss and develop mitigation strategies. During fiscal years 2019 and 2018, there were no material losses resulting from an operational risk event.

Analysis and Lessons Learned From Operational Events Observed in Other Large Businesses

By collecting and analyzing media-reported information about significant operational events, in particular events related to information security and theft of personal information experienced by other financial institutions, the Bank can assess the effectiveness of its own operational risk management practices and reinforce them, if necessary.

Operational Risk Self-Assessment Program

The operational risk self-assessment program gives each business unit and corporate unit the means to proactively identify and assess new or major operational risks to which they are exposed, evaluate the effectiveness of mitigating controls, and develop action plans to keep such risks at acceptable levels.

Key Risk Indicators

The business units and corporate units define key indicators associated with their main operational risks. The key indicators are used to monitor operational risk profiles and are related to critical thresholds that, once reached, result in action by management. Using key risk indicators, the business units can track risks and proactively detect any adverse change in risk exposure.

Scenario Analysis

Scenario analysis, which is part of a Bank-wide stress testing program, is an important and useful tool for assessing the potential impacts arising from major operational events. It helps the Bank define its risk appetite, set its exposure limits, and engage in strategic planning. More specifically, it helps senior management to better understand the risks facing the Bank and to make appropriate management decisions to mitigate potential operational risks.

Insurance Program

In order to protect itself against any material losses related to its exposure to unforeseeable operational risks, the Bank also has adequate insurance, the nature and amount of which meet its coverage requirements.

Operational Risk Reports and Disclosures

Operational events for which the financial impact exceeds the tolerance thresholds or that have a significant regulatory or reputation impact are submitted to the decision-making levels concerned. Management is obligated to report on its management process and to remain alert to current and future issues. Reports on the Bank's risk profile, highlights, and emerging risks are periodically submitted, on a timely basis, to the Operational Risk Management Committee, the GRC and the RMC. This reporting enhances the transparency and proactive management of the main operational risk factors.

Regulatory Compliance Risk

Regulatory compliance risk is the risk of the Bank or its employees failing to comply with the regulatory requirements in effect where the Bank does business, both in Canada and internationally. Regulatory compliance risk is present in all of the daily operations of each Bank segment. A situation of regulatory non-compliance can adversely affect the Bank's reputation and result in penalties, fines and sanctions or increased oversight by regulators.

Organizational Structure of Compliance
Compliance is an independent oversight function within the Bank. The Senior Vice-President, Chief Compliance Officer and Chief Anti-Money Laundering Officer serves as both chief compliance officer (CCO) and chief anti-money laundering and anti-terrorist financing officer (CAMLATFO). She is responsible for implementing and updating the Bank's compliance program and the AML/ATF program across all Bank segments. Having a reporting relationship with the Chair of the RMC, the CCO and CAMLATFO meets with him on at least once every quarter. With him, she goes over matters on the relationship between the Compliance Service and the Bank's management and on access to the information required. The CCO and CAMLATFO can also communicate directly with officers and directors of the Bank and of its subsidiaries and foreign centres.

Regulatory Compliance Framework
The Bank operates in a highly regulated industry. To ensure sound management of regulatory compliance, the Bank favours proactive approaches and incorporates regulatory requirements into its day-to-day operations.

Regulatory compliance risk management ensures that events stemming from regulatory non-compliance are proactively identified and understood and that mitigating strategies are implemented. Such proactive management also provides reasonable assurance that the Bank is in compliance, in all material respects, with the regulatory requirements in effect where it does business, both in Canada and internationally.

The implementation of a regulatory compliance risk management framework across the Bank is entrusted to the Compliance Service, which has the following mandate:

- make sure that policies and standards that ensure compliance with the regulations are in effect, including regulations related to AML/ATF, to international sanctions, and to corruption;
- develop compliance and AML/ATF training programs for Bank employees, officers, and directors;
- exercise independent oversight and monitor the programs, policies, and procedures implemented by the Bank, its subsidiaries, and foreign centres to ensure that the control mechanisms are sufficient, respected, and effective;
- report relevant compliance and AML/ATF matters to the Bank's Board and inform it of any changes in the effectiveness of the Bank's risk management framework.

The Bank holds itself to high regulatory compliance risk management standards in order to earn the trust of its clients, its shareholders, the market and the general public.

Described below are the main regulatory developments that have been monitored over the past year.

<u>Consumer Protection</u>
Last year saw several regulatory changes. Notably, several amendments to the Quebec *Consumer Protection Act* came into force, and the industry adopted a voluntary code of conduct to protect seniors. In addition, Bill C-86 was adopted by the Government of Canada and will substantially amend the *Bank Act* (Canada). The purpose of these regulatory changes is to ensure consumer protection by fostering transparency and informed decision-making. Furthermore, the Bank constantly monitors the consumer protection landscape such that it can change its business practices if necessary. The Bank also makes sure its practices are aligned with industry practices by taking part in a variety of events that bring together players from the financial services ecosystem.

<u>Anti-Money Laundering and Anti-Terrorist Financing (AML/ATF) Activities</u>
On July 10, 2019, the Government of Canada published amendments to the regulations under the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act* (2019), which will come into force in three stages. Amendments regarding identification methods may be applied once the Financial Transactions and Reports Analysis Centre of Canada (FINTRAC) publishes its guideline on the topic, and the other amendments will come into force in June 2020 and June 2021. Regarding the five-year review of the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act*, Canadian banks are still awaiting the introduction of the bill.

<u>Privacy and Data Protection</u>
Due to changes in technologies and in society at large, privacy and data protection is a topical issue in Canada. In Europe, the new *General Data Protection Regulation* (GDPR) has been in force since May 2018, and several companies have received substantial penalties for contravening this regulation. In the United States, California has also adopted a stringent privacy protection act, which will come into force in January 2020. Changes in legislation related to the protection of personal information could accelerate in several jurisdictions, including Canada. This acceleration could be reflected in the granting of greater powers to the regulators responsible for privacy protection, such as the power to impose penalties. We are monitoring the relevant legislative developments.

Canada Deposit Insurance Corporation (CDIC)
Changes in the Government of Canada's deposit insurance framework have been announced concerning information on co-owned accounts and accounts held in trust as well as on the insurability of certain deposits. As of April 30, 2020, coverage will be extended to insurable deposits in foreign currencies and to term deposits with maturities exceeding five years. In addition, as of April 30, 2021, separate coverage will be granted for Registered Education Savings Plans and Registered Disability Savings Plans. New requirements will also be established for the coverage of deposits in trust, particularly nominee-brokered deposits.

Recovery and Resolution Planning
As part of the regulatory measures used to manage systemic risks, D-SIBs are required to have in place recovery and resolution plans. A recovery plan is essentially a road map that guides the recovery of a bank in the event of severe financial stress; conversely, a resolution plan guides its orderly wind-down in the event of failure when recovery is no longer an option. The Bank improves and periodically updates its recovery and resolution plans to prepare for these high-risk, but low-probability events. These plans are presented to its domestic regulatory authorities. In addition, the Bank and other D-SIBs continue to work with the CDIC to develop a comprehensive settlement plan that would ensure orderly winding down of the Bank's operations.

Section 871(m) – Dividend Equivalent Payments
Section 871(m) of the U.S. Internal Revenue Code aims to ensure that non-U.S. persons pay tax on payments that can be considered dividends on U.S. shares, when these payments are made on certain derivative instruments. The derivative instruments for which the underlyings are U.S. shares or "non-qualified indices" concluded as of January 1, 2017 are subject to the withholding and reporting requirements. The effective date for certain components of this regulation has been deferred from January 1, 2019 to January 1, 2021. Some of the obligations of a qualified derivatives dealer, established under subsection 871(m) of the IRC and the qualified intermediary agreement have also been deferred to January 1, 2021.

Good Practice in the Foreign Exchange Market
The FX Global Code is a voluntary code of good practice that applies to all participants in the wholesale foreign exchange market in all of the world's financial centres. The code is the result of nearly two years of collaborative effort among central banks, including the Bank of Canada, and market participants from the world's leading financial centres. The code defines the good practices to be followed by market participants to guarantee a robust, fair and transparent foreign exchange market. It covers such areas as ethics, governance, execution of orders (confirmation and settlement), information sharing, and risk management. The Bank completed implementation of the code of good practice and published a declaration of compliance with the FX Global Code on its website.

Reform of Benchmark Interest Rates
The reform of benchmark interest rates is a global initiative coordinated and led by central banks and public authorities around the world, including in Canada. The objective is to improve benchmarks by ensuring that they satisfy robust international standards. The initiative will introduce other benchmarks as potential successors to benchmark interest rates such as the Interbank Offered Rates (IBOR), which are the benchmark rates used by the major international banks for short-term loans on the interbank market. These rates, particularly LIBOR (London Interbank Offered Rate), are widely used as benchmark rates around the world for derivative financial instruments, bonds and other floating-rate instruments. The gradual elimination of the IBOR rates will have an impact on over-the-counter derivative transactions, and the Bank expects that a standardized solution for the industry will be adopted, probably in the form of an ISDA protocol. For some other types of contracts, contractual amendments are anticipated by the end of 2021, when some of the current rates are expected to be eliminated.

Reputation Risk

Reputation risk is the risk that the Bank's operations or practices will be judged negatively by the public, whether that judgment is with or without basis, thereby adversely affecting the perception, image or trademarks of the Bank, potentially resulting in costly litigation or loss of income. Reputation risk generally arises from a deficiency in managing another risk. The Bank's reputation may, for example, be adversely affected by non-compliance with laws and regulations or by process failures. All risks must therefore be managed effectively in order to protect the Bank's reputation.

The Bank seeks to ensure that its employees are constantly aware of the potential repercussions of their actions on the Bank's reputation and image. In addition to the previously discussed operational risk management initiatives, a variety of mechanisms are in place to support sound reputation risk management, including codes of professional conduct applicable to all employees, policies regarding ethics and corporate governance and appropriate training programs.

The Bank also has a reputation risk policy, approved by the RMC of the Board, that covers all of the Bank's practices and transactions, including those of the third parties with which it establishes business relationships. The policy sets the reputation risk management principles and rules. The policy is complemented by the special provisions of the new products and activities policy, which determines the approvals required by the various committees that assess risk whenever new products or activities are introduced within the business units. These provisions are intended, among other things, to provide oversight for the management of reputation risk, which may be material for such products or activities. The new products and activities policy requires that any new product or activity for which reputation risk is determined to be high be submitted to the GRC for approval. The activities of the Compliance Service, Legal Affairs Department, Public Relations Department and Investor Relations Department complete the reputation risk management framework.

Strategic Risk

Strategic risk is the risk of a loss arising from inappropriate strategic orientations, improper execution or ineffective response to economic, financial, or regulatory changes. The corporate strategic plan is developed by the Office of the President, in alignment with the Bank's overall risk appetite, and approved by the Board. Once approved, the initiatives of the strategic plan are monitored regularly to ensure that they are progressing. If not, strategies could be reviewed or adjusted if deemed appropriate.

In addition, the Bank has a specific Board-approved policy for strategic investments, which are defined as purchases of business assets or acquisitions of significant interests in an entity for the purposes of acquiring control or creating a long-term relationship. As such, acquisition projects and other strategic investments are analyzed through a due diligence process to ensure that these investments are aligned with the corporate strategic plan and the Bank's risk appetite.

Environmental Risk

Environmental risk is the risk of an environmental issue leading to a loss in financial or operating value or harming the Bank's reputation or having an impact on its stakeholders. Consequently, physical risks resulting from the impacts of increases in the number and intensity of extreme weather events, as well as transition risks resulting from a shift to a low-carbon economy, require particular attention to reduce the Bank's exposure to these negative externalities and, at the same time, seize new growth opportunities.

The Bank, aware that it has a mobilizing role to play in environmental matters, announced its support for the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD) and will disclose, in addition to its performance reports, the information recommended by the task force.

The TCFD has structured its recommendations around four pillars that represent an organization's operating fundamentals: governance, strategy, risk management, and metrics and targets. These four major classes of recommendations are intended to provide a framework for the publication of climate-related financial information such that institutional investors can make informed choices about their exposure to climate-related risks and opportunities.

Governance

Oversight by the Board of Directors (Board)

The Board identifies environmental, social, and governance (ESG) issues, including the impacts that climate change could have on the organization as a whole, and monitors the evolution of those issues.

The Risk Management Committee, Audit Committee, and Conduct Review and Corporate Governance Committee are responsible for periodically examining the efforts made by the Bank to ensure that it is operating in accordance with high standards of corporate responsibility, including in environmental issues. This year, their respective mandates were expanded in this regard. Each year, the Board also reviews the Bank's Social Responsibility Report, which notably provides details about its contribution to environmental protection.

To further clarify the Bank's commitment to exercising effective governance with regard to mechanisms to oversee risks and opportunities related specifically to the climate, the Risk Management Committee has a specific responsibility to ensure that the risk management framework takes ESG risks into account such that they are appropriately identified and monitored and integrated into the existing risk management processes.

Management's Role

The Bank oversees climate-related risks through the risk management framework and various executive committees. The Enterprise-Wide Risk Management Committee (co-chaired by the Executive Vice-President, Risk Management and the Chief Financial Officer and Executive Vice-President, Finance) is regularly informed of developments and issues to facilitate monitoring and discussion such that issues can be effectively resolved when necessary.

Strategy

The Bank has committed, through its mission, to make a positive impact on its stakeholders. It works to ensure that its commitments are reflected throughout its practices, including the transition to a low-carbon economy.

An identification of environment-related risks and opportunities has helped the Bank to evolve and incorporate climate matters into its internal decision-making. There are many opportunities to limit environmental risks—including climate-related risks—and their impacts on the community. With this in mind, the Bank plans on offering more solutions whereby clients can increase their presence in low-carbon activities such as renewable energies and responsible investment. For example, a program that allows for the issuance of sustainability bonds will enable various organizations, including the Bank itself, to issue debt securities to finance projects that meet certain environmental and social criteria. The Bank also provides financial support to environmental organizations whose mission is to promote sustainable development and protect biodiversity and natural environments.

Over the past year, the Bank has completed a classification of the physical risks and transition-related risks based on each of the industries that make up its credit portfolios. In addition, in response to the TCFD's recommendations, the Bank assessed the proportion of its carbon-related exposures to better understand the impacts of climate-related risks and opportunities on its credit portfolios. The results of these assessments will allow the Bank to start by examining its investment and asset growth strategy in more detail. They will also help guide the Bank's climate scenario analyses of these industries in the years to come. The Bank will communicate the results of these analyses in an open and transparent manner. The Bank continues to work with its peers to find solutions for more accurate and consistent analyses and assessments of climate-related risks and opportunities. It is also a member of several strategic working groups, helping it to stay abreast of developments related to ESG risks, particularly climate risks.

Risk Management

Risk Identification, Assessment and Management

The Bank recognizes the importance of identifying, assessing, and managing climate-related risks. To this end, it proactively monitors all risks as well as its segments' risk exposures in relation to its risk appetite and established limits. Top and emerging risks are risks that could have a material adverse effect on the Bank's financial results, reputation, or long-term business model and strategy. These risks include credit, market, liquidity, operational, and ESG risks as well as climate-related risks. In addition, rapidly changing economic, regulatory, technological and business environments may have an impact on certain activities or on the Bank as a whole.

Based on the TCFD's recommendations, the Bank has identified two types of relevant climate-related risks to include in its monitoring activities: physical risks and transition-related risks. It defines physical risks as the potential impacts on its physical assets and financial assets arising from more frequent and more intense extreme weather events, food insecurity, and energy and resource supply problems related to climate change. The Bank defines transition-related risks as the impacts arising from the move toward a low-emission economy. Such impacts include technological changes or public policy directions that could lead to a revaluation of the company's assets and result in new costs or new opportunities. The Bank's definition of transition-related risk also includes market risk and reputational risk.

The Bank ensures that it has processes in place to proactively identify and measure these risks so that it can implement appropriate mitigation strategies. To this end, the Bank has implemented an environmental policy that applies to activities and decisions across the Bank as well as in all its business segments. This policy clearly sets out the established principles for identifying and limiting environmental risk as well as the impacts on the community and its business segments.

Incorporation of Risk

Given that environmental risk is associated with credit risk and operational risk, the Bank recognizes the importance of incorporating several additional control measures into its existing risk management processes. To this end, risks are regularly reported to the Enterprise-Wide Risk Management Committee.

The Bank's current approach to controlling risks includes regularly identifying and prioritizing the impacts of physical risks and transitional risks. This applies to all industries affected by the Bank's assets. In the interests of proactively ensuring the strategic positioning of its entire portfolio, the Bank has expressed its desire to support the energy transition toward a lower-carbon economy. Through its credit adjudication process, it seeks to develop and implement a process for assessing and quantifying the impacts of climate change on its strategy and results.

Indicators and Objectives

Measures Used to Assess Climate-Related Risks and Opportunities

To date, the Bank has implemented several measures to manage climate-related risks and opportunities related to its investment, funding, and operational strategies. Among other things, the Bank calculates its own annual greenhouse gas (GHG) emissions, and it performs a calculation and analysis of the proportion of its carbon-related investments that serves as a guide to discussions about strategic alignment and risk appetite.

GHG Emissions

The Bank has carried out a voluntary annual inventory of its GHG emissions since 2008. It reports the information to the Carbon Disclosure Project, which compiles several types of climate data.

Objectives for Managing Climate-Related Risks and Opportunities

The Bank is committed to reducing its environmental footprint by implementing, on a voluntary basis, various eco-responsible measures aimed at calculating and reducing its GHG emissions. This includes significant improvements made to the energy efficiency of its facilities over the past 15 years. The Bank has implemented an innovative system for managing the energy consumption of 300 branches that uses a web-based interface. As a result, the Bank can monitor its facilities in real time with a view to managing its energy consumption more effectively.

Outlook and Next Steps

For the coming year, the Bank will focus its efforts on:

- growing the proportion of its renewable-energy-related funding assets at a faster pace than those related to fossil fuels;
- offering to support customers in their energy transitions;
- developing indicators for effectively monitoring its sustainable development performance;
- strengthening its partnerships with the industry's main change agents in order to meet its commitments.

Critical Accounting Estimates

A summary of the significant accounting policies used by the Bank is presented in Note 1 to the consolidated financial statements of this Annual Report. Some of these accounting policies are considered critical given their importance to the presentation of the Bank's financial position and operating results and require subjective and complex judgments and estimates on matters that are inherently uncertain. Any change in these judgments and estimates could have a significant impact on the Bank's consolidated financial statements. The critical accounting estimates are as follows.

Classification of Financial Instruments

At initial recognition, all financial instruments are recorded at fair value on the Consolidated Balance Sheet. At initial recognition, financial assets must be classified as subsequently measured at fair value through other comprehensive income, at amortized cost, or at fair value through profit or loss. The Bank determines the classification based on the contractual cash flow characteristics of the financial assets and on the business model it uses to manage these financial assets.

For the purpose of classifying a financial asset, the Bank must determine whether the contractual cash flows associated with the financial asset are solely payments of principal and interest on the principal amount outstanding. The principal is generally the fair value of the financial asset at initial recognition. The interest consists of consideration for the time value of money, for the credit risk associated with the principal amount outstanding during a particular period, and for other basic lending risks and costs as well as of a profit margin. If the Bank determines that the contractual cash flows associated with a financial asset are not solely payments of principal and interest, the financial assets must be classified as measured at fair value through profit or loss.

When classifying financial assets, the Bank determines the business model used for each portfolio of financial assets that are managed together to achieve a same business objective. The business model reflects how the Bank manages its financial assets and the extent to which the financial asset cash flows are generated by the collection of the contractual cash flows, the sale of the financial assets, or both. The Bank determines the business model using scenarios that it reasonably expects to occur. Consequently, the business model determination is a matter of fact and requires the use of judgment and consideration of all the relevant evidence available at the date of determination.

A financial asset portfolio falls within a "hold to collect" business model when the Bank's primary objective is to hold these financial assets in order to collect contractual cash flows from them and not to sell them. When the Bank's objective is achieved both by collecting contractual cash flows and by selling the financial assets, the financial asset portfolio falls within a "hold to collect and sell" business model. In this type of business model, collecting contractual cash flows and selling financial assets are both integral components to achieving the Bank's objective for this financial asset portfolio. Financial assets are mandatorily measured at fair value through profit or loss if they do not fall within either a "hold to collect" business model or a "hold to collect and sell" business model.

Fair Value of Financial Instruments

The fair value of a financial instrument is the price that would be received to sell a financial asset or paid to transfer a financial liability in an orderly transaction in the principal market at the measurement date under current market conditions (i.e., an exit price).

Unadjusted quoted prices in active markets, based on bid prices for financial assets and offered prices for financial liabilities, provide the best evidence of fair value. A financial instrument is considered quoted in an active market when prices in exchange, dealer, broker or principal-to-principal markets are accessible at the measurement date. An active market is one where transactions occur with sufficient frequency and volume to provide quoted prices on an ongoing basis.

When there is no quoted price in an active market, the Bank uses another valuation technique that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs. The chosen valuation technique incorporates all the factors that market participants would consider when pricing a transaction. Judgment is required when applying a large number of acceptable valuation techniques and estimates to determine fair value. The estimated fair value reflects market conditions on the valuation date and, consequently, may not be indicative of future fair value.

The best evidence of the fair value of a financial instrument at initial recognition is the transaction price, i.e., the fair value of the consideration received or paid. If there is a difference between the fair value at initial recognition and the transaction price, and the fair value is determined using a valuation technique based on observable market inputs or, in the case of a derivative, if the risks are fully offset by other contracts entered into with third parties, this difference is recognized in the Consolidated Statement of Income. In other cases, the difference between the fair value at initial recognition and the transaction price is deferred on the Consolidated Balance Sheet. The amount of the deferred gain or loss is recognized over the term of the financial instrument. The unamortized balance is immediately recognized in net income when (i) observable market inputs can be obtained and support the fair value of the transaction, (ii) the risks associated with the initial contract are substantially offset by other contracts entered into with third parties, (iii) the gain or loss is realized through a cash receipt or payment, or (iv) the transaction matures or is cancelled before maturity.

In certain cases, measurement adjustments are recognized to address factors that market participants would use at the measurement date to determine fair value but that are not included in the measurement technique due to system limitations or uncertainty surrounding the measure. These factors include, but are not limited to, the unobservable nature of inputs used in the valuation model, assumptions about risk such as market risk, credit risk, or risk related to the valuation model and future administration costs. The Bank may also consider market liquidity risk when determining the fair value of financial instruments when it believes these instruments could be disposed of for a consideration below the fair value otherwise determined due to a lack of market liquidity or an insufficient volume of transactions in a given market. The measurement adjustments also include the funding valuation adjustment applied to derivative financial instruments to reflect the market implied cost or benefits of funding collateral for uncollateralized or partly collateralized transactions.

IFRS establishes a fair value hierarchy that classifies the inputs used in financial instrument fair value measurement techniques according to three levels. The fair value hierarchy has the following levels:

Level 1
Inputs corresponding to unadjusted quoted prices in active markets for identical assets and liabilities and accessible to the Bank at the measurement date. These instruments consist primarily of equity securities, derivative financial instruments traded in active markets, and certain highly liquid debt securities actively traded in over-the-counter markets.

Level 2
Valuation techniques based on inputs, other than the quoted prices included in Level 1 inputs, that are directly or indirectly observable in the market for the asset or liability. These inputs are quoted prices of similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; inputs other than quoted prices used in a valuation model that are observable for that instrument; and inputs that are derived principally from or corroborated by observable market inputs by correlation or other means. These instruments consist primarily of certain loans, certain deposits, derivative financial instruments traded in over-the-counter markets, certain debt securities, certain equity securities whose value is not directly observable in an active market, liabilities related to transferred receivables as well as certain other liabilities.

Level 3
Valuation techniques based on one or more significant inputs that are not observable in the market for the asset or liability. The Bank classifies financial instruments in Level 3 when the valuation technique is based on at least one significant input that is not observable in the markets. The valuation technique may also be partly based on observable market inputs. Financial instruments whose fair values are classified in Level 3 consist of investments in hedge funds, certain derivative financial instruments, equity and debt securities of private companies, certain loans, and certain deposits (structured deposit notes).

Establishing fair value is an accounting estimate and has an impact on *Securities at fair value through profit or loss*, certain *Loans*, *Securities at fair value through other comprehensive income*, *Obligations related to securities sold short*, *Derivative financial instruments*, financial instruments designated at fair value through profit or loss, and financial instruments designated at fair value through other comprehensive income on the Consolidated Balance Sheet. This estimate also has an impact on *Non-interest income* in the Consolidated Statement of Income of the Financial Markets segment and of the *Other* heading. Lastly, this estimate has an impact on *Other comprehensive income* in the Consolidated Statement of Comprehensive Income. For additional information on the fair value determination of financial instruments, see Notes 3 and 6 to the consolidated financial statements.

Impairment of Financial Assets

At the end of each reporting period, the Bank applies a three-stage impairment approach to measure the expected credit losses (ECL) on all debt instruments measured at amortized cost or at fair value through other comprehensive income and on loan commitments and financial guarantees that are not measured at fair value. ECLs are a probability-weighted estimate of credit losses over the remaining expected life of the financial instrument. The ECL model is forward looking. Measurement of ECLs at each reporting period reflects reasonable and supportable information about past events, current conditions, and forecasts of future events and economic conditions. Judgment is required in making assumptions and estimates, determining movements between the three stages, and applying forward-looking information. Any changes in assumptions and estimates, as well as the use of different, but equally reasonable, estimates and assumptions, could have an impact on the allowances for credit losses and the provisions for credit losses for the year. All business segments are affected by this accounting estimate. For additional information, see Note 7 to the consolidated financial statements.

Determining the Stage

The ECL three-stage impairment approach is based on the change in the credit quality of financial assets since initial recognition. If, at the reporting date, the credit risk of non-impaired financial instruments has not increased significantly since initial recognition, these financial instruments are classified in Stage 1, and an allowance for credit losses that is measured, at each reporting date, in an amount equal to 12-month expected credit losses is recorded. When there is a significant increase in credit risk since initial recognition, these non-impaired financial instruments are migrated to Stage 2, and an allowance for credit losses that is measured, at each reporting date, in an amount equal to lifetime expected credit losses is recorded. In subsequent reporting periods, if the credit risk of the financial instrument improves such that there is no longer a significant increase in credit risk since initial recognition, the ECL model requires reverting to Stage 1, i.e., recognition of 12-month expected credit losses. When one or more events that have a detrimental impact on the estimated future cash flows of a financial asset have occurred, the financial asset is considered credit-impaired and is migrated to Stage 3, and an allowance for credit losses equal to lifetime expected losses continues to be recorded or the financial asset is written off. Interest income is calculated on the gross carrying amount for financial assets in Stages 1 and 2 and on the net carrying amount for financial assets in Stage 3.

Assessment of Significant Increase in Credit Risk

In determining whether credit risk has increased significantly, the Bank uses an internal credit risk grading system, external risk ratings, and forward-looking information to assess deterioration in credit quality of a financial instrument. To assess whether or not the credit risk of a financial instrument has increased significantly, the Bank compares the probability of default (PD) occurring over its expected life as at the reporting date with the PD occurring over its expected life on the date of initial recognition and considers reasonable and supportable information indicative of a significant increase in credit risk since initial recognition. The Bank includes relative and absolute thresholds in the definition of significant increase in credit risk and a backstop of 30 days past due. All financial instruments that are 30 days past due are migrated to Stage 2 even if other metrics do not indicate that a significant increase in credit risk has occurred. The assessment of a significant increase in credit risk requires significant judgment.

Measurement of Expected Credit Losses

ECLs are measured as the probability-weighted present value of all expected cash shortfalls over the remaining expected life of the financial instrument, and reasonable and supportable information about past events, current conditions and forecasts of future events and economic conditions is considered. The estimation and application of forward-looking information requires significant judgment. The cash shortfall is the difference between all contractual cash flows owed to the Bank and all the cash flows that the Bank expects to receive.

The measurement of ECLs is primarily based on the product of the financial instrument's probability of default (PD), loss given default (LGD) and exposure at default (EAD). Forward-looking macroeconomic factors such as unemployment rates, housing price indices, interest rates, and gross domestic product (GDP) are incorporated into the risk parameters. The estimate of expected credit losses reflects an unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes. The Bank incorporates three forward-looking macroeconomic scenarios in its ECL calculation process: a base scenario, an upside scenario and a downside scenario. Probability weights are attributed to each scenario. The scenarios and probability weights are reassessed quarterly and are subject to management review. The Bank applies experienced credit judgment to adjust the modelled ECL results when it becomes evident that known or expected risk factors and information were not considered in the credit risk rating and modelling process.

ECLs for all financial instruments are recognized in *Provisions for credit losses* in the Consolidated Statement of Income. In the case of debt instruments measured at fair value through other comprehensive income, ECLs are recognized in *Provisions for credit losses* in the Consolidated Statement of Income, and a corresponding amount is recognized in *Other comprehensive income* with no reduction in the carrying amount of the asset on the Consolidated Balance Sheet. As for debt instruments measured at amortized cost, they are presented net of the related allowance for credit losses on the Consolidated Balance Sheet. Allowances for credit losses for off-balance-sheet credit exposures that are not measured at fair value are included in *Other liabilities* on the Consolidated Balance Sheet.

Purchased or Originated Credit-Impaired Financial Assets
On initial recognition of a financial asset, the Bank determines whether the asset is credit-impaired. For financial assets that are credit-impaired upon purchase or origination, the lifetime expected credit losses are reflected in the initial fair value. In subsequent reporting periods, the Bank recognizes only the cumulative changes in these lifetime ECLs since initial recognition as an allowance for credit losses. The Bank recognizes changes in ECLs in *Provisions for credit losses* in the Consolidated Statement of Income, even if the lifetime ECLs are less than ECLs that were included in the estimated cash flows on initial recognition.

Definition of Default
The definition of default used by the Bank to measure ECLs and transfer financial instruments between stages is consistent with the definition of default used for internal credit risk management purposes. The Bank considers a financial asset, other than a credit card receivable, to be credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred or when contractual payments are 90 days past due. Credit card receivables are considered credit-impaired and are fully written off at the earlier of the following: when a notice of bankruptcy is received, a settlement proposal is made, or contractual payments are 180 days past due.

Write-Offs
A financial asset and its related allowance for credit losses are normally written off in whole or in part when the Bank considers the probability of recovery to be non-existent and when all guarantees and other remedies available to the Bank have been exhausted or if the borrower is bankrupt or winding up and balances owing are not likely to be recovered.

Impairment of Non-Financial Assets

Premises and equipment and intangible assets with finite useful lives are tested for impairment when events or changes in circumstances indicate that their carrying value may not be recoverable. At the end of each reporting period, the Bank determines whether there is an indication that premises and equipment or intangible assets with finite useful lives may be impaired. Goodwill and intangible assets that are not yet available for use or that have indefinite useful lives are tested for impairment annually or more frequently if there is an indication that the asset might be impaired.

An asset is tested for impairment by comparing its carrying amount with its recoverable amount. The recoverable amount must be estimated for the individual asset. Where it is not possible to estimate the recoverable amount of an individual asset, the recoverable amount of the cash-generating unit (CGU) to which the asset belongs will be determined. Goodwill is always tested for impairment at the level of a CGU or a group of CGUs. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The Bank uses judgment to identify CGUs.

An asset's recoverable amount is the higher of fair value less costs to sell and the value in use of the asset or CGU. Value in use is the present value of expected future cash flows from the asset or CGU. The recoverable amount of the CGU is determined using valuation models that consider various factors such as projected future cash flows, discount rates and growth rates. The use of different estimates and assumptions in applying the impairment tests could have a significant impact on income. If the recoverable amount of an asset or a CGU is less than its carrying amount, the carrying amount is reduced to its recoverable amount and an impairment loss is recognized in *Non-interest expenses* in the Consolidated Statement of Income.

Management exercises judgment when determining whether there is objective evidence that premises and equipment or intangible assets with finite useful lives may be impaired. It also uses judgment in determining to which CGU or group of CGUs an asset or goodwill is to be allocated. Moreover, for impairment assessment purposes, management must make estimates and assumptions regarding the recoverable amount of non-financial assets, CGUs or a group of CGUs. For additional information on the estimates and assumptions used to calculate the recoverable amount of an asset or CGU, see Note 11 to the consolidated financial statements.

Any changes to these estimates and assumptions may have an impact on the recoverable amount of a non-financial asset and, consequently, on impairment testing results. These accounting estimates have an impact on *Premises and equipment*, *Intangible assets* and *Goodwill* reported on the Consolidated Balance Sheet. The aggregate impairment loss, if any, is recognized as a non-interest expense for the corresponding segment and presented in the *Other* item.

Employee Benefits – Pension Plans and Other Post-Employment Benefits

Pension plan and other post-employment plan expenses and obligations are actuarially determined using the projected benefit method prorated on service. The calculations incorporate management's best estimates of various actuarial assumptions such as discount rates, rates of compensation increase, health care cost trend rates, mortality rates and retirement age.

Remeasurements of these plans result in actuarial gains and losses related to the defined benefit obligation and the actual return on plan assets, excluding the net interest determined by applying a discount rate to the net asset or liability of the plans. Remeasurements are immediately recognized in *Other comprehensive income* and will not be subsequently reclassified to net income; these cumulative gains and losses are reclassified to *Retained earnings*.

The use of different assumptions could have a significant impact on the defined benefit asset (liability) presented in *Other assets (Other liabilities)* on the Consolidated Balance Sheet, on the pension plan and other post-employment benefit plan expenses presented in *Compensation and employee benefits* in the Consolidated Statement of Income, as well as on *Remeasurements of pension plans and other post-employment benefit plans* presented in *Other comprehensive income*. All business segments are affected by this accounting estimate. For additional information, including the significant assumptions used to determine the Bank's pension plan and other post-employment benefit plan expenses and the sensitivity analysis for significant plan assumptions, see Note 23 to the consolidated financial statements.

Income Taxes

The Bank makes assumptions to estimate income taxes as well as deferred tax assets and liabilities. This process includes estimating the actual amount of income taxes payable and evaluating tax loss carryforwards and temporary differences arising from differences between the values of the items reported for accounting and for income tax purposes. Deferred tax assets and liabilities, presented in *Other assets* and *Other liabilities* on the Consolidated Balance Sheet, are calculated according to the tax rates to be applied in future periods. Previously recorded deferred tax assets and liabilities must be adjusted when the date of the future event is revised based on current information. The Bank periodically evaluates deferred tax assets to assess recoverability. In the Bank's opinion, based on the information at its disposal, it is probable that all deferred tax assets will be realized prior to their expiration.

This accounting estimate affects *Income taxes* in the Consolidated Statement of Income for all business segments. For additional information on income taxes, see Notes 1 and 24 to the consolidated financial statements.

Contingent Liabilities

Maple Financial Group Inc.
The Bank has a 24.9% equity interest in Maple Financial Group Inc. (Maple), a privately owned Canadian company that operated through direct and indirect wholly owned subsidiaries in Canada, Germany, the United Kingdom and the United States.

Maple Bank GmbH (Maple GmbH), an indirect wholly owned subsidiary of Maple, has been the subject of an investigation into alleged tax irregularities by German prosecutors since September 2015 and, to the Bank's knowledge, that investigation is ongoing. The Bank understands that the investigation is focusing on selected trading activities by Maple GmbH and some of its former employees, primarily during taxation years 2006 to 2010. The German authorities have alleged that these trading activities, often referred to as "cum/ex trading," violated German tax laws. Neither the Bank nor its employees were involved in these trading activities and, to the Bank's knowledge, are not the subject of this investigation. At that time, the Bank announced that if it were determined that portions of the dividends it received from Maple could be reasonably attributed to tax fraud by Maple GmbH, arrangements would be made to repay those amounts to the relevant authority.

On February 6, 2016, the German Federal Financial Supervisory Authority, BaFin, placed a moratorium on the business activities of Maple GmbH preventing it from carrying out its normal business activities. In August 2016, Maple filed for bankruptcy under applicable Canadian laws, and a trustee was appointed to administer the company. Similar proceedings were initiated for each of Maple's other material subsidiaries in their home jurisdictions. In light of the situation, the Bank wrote off the carrying value of its equity interest in Maple in an amount of $164 million ($145 million net of income taxes) during the first quarter of 2016. The $164 million write-off of the equity interest in this associate was recognized in the *Non-interest income – Other* item of the Consolidated Statement of Income for the year ended October 31, 2016 and was reported in the Financial Markets segment.

While there has not yet been a determination of tax fraud on the part of Maple GmbH or its employees, in the insolvency proceedings of Maple GmbH the German finance office issued a declaration about the result of the tax audit at Maple GmbH and about the relevant tax consequences of the cum/ex trading and concluded a final tax claim of the tax authorities against the insolvency administrator. This claim was approved by the Maple GmbH creditor assembly.

The Bank has been in contact with the German prosecutors, who have confirmed that, in their view based upon the evidence they have considered since the occurrence of the insolvency, the Bank was not involved in any respect with the alleged tax fraud undertaken by Maple GmbH nor was it negligent in failing to identify that alleged fraud. Further to discussions between the Bank and the German prosecutors concerning the amounts deemed attributable to the alleged tax fraud, the Bank paid 7.7 million euros to the German tax authorities on November 19, 2019.

The Bank has been engaging in discussions with the bankruptcy and insolvency administrators of relevant Maple entities regarding potential claims they may assert against Maple's former shareholders in relation to the insolvency of Maple and its subsidiaries. The Bank does not see a legal basis for any such liability but is nevertheless continuing discussions at this time. If any payments are required, they are not expected to be material to the Bank's financial position.

Litigation

In the normal course of business, the Bank and its subsidiaries are involved in various claims relating, among other matters, to loan portfolios, investment portfolios and supplier agreements, including court proceedings, investigations or claims of a regulatory nature, class actions or other legal remedies of varied natures.

More specifically, the Bank is involved as a defendant in class actions instituted by consumers contesting, *inter alia*, certain transaction fees or who wish to avail themselves of certain legislative provisions relating to consumer protection. The recent developments in the main legal proceedings involving the Bank are as follows:

Watson

In 2011, a class action was filed in the Supreme Court of British Columbia against Visa Corporation Canada (Visa) and MasterCard International Incorporated (MasterCard) (the Networks) as well as National Bank and a number of other Canadian financial institutions. A similar action was also initiated in Quebec, Ontario, Alberta and Saskatchewan. In each of the actions, the Networks and financial institutions are alleged to have been involved in a price-fixing system to maintain and increase the fees paid by merchants on transactions executed using the credit cards of the Networks. In so doing, they would notably be in breach of the *Competition Act*. An unspecified amount of compensatory and punitive damages is being claimed. In 2017, a settlement was reached with the plaintiffs; in 2018 it was approved by the trial courts in each of the five jurisdictions where the action was initiated. The rulings approving the settlement are now the subject of appeal proceedings in multiple jurisdictions.

Defrance

On January 21, 2019, the Quebec Superior Court authorized a class action against the Bank and several other Canadian financial institutions. The originating application was served to the Bank on April 23, 2019. The class action was initiated on behalf of consumers residing in Quebec. The plaintiffs allege that non-sufficient funds charges, billed by all of the defendants when a payment order is refused due to non-sufficient funds, are illegal and prohibited by the *Consumer Protection Act*. The plaintiffs are claiming, in the form of damages, the repayment of these charges as well as punitive damages.

It is impossible to determine the outcome of the claims instituted or which may be instituted against the Bank and its subsidiaries. The Bank estimates, based on the information at its disposal, that while the amount of contingent liabilities pertaining to these claims, taken individually or in the aggregate, could have a material impact on the Bank's consolidated results of operation for a particular period, it would not have a material adverse impact on the Bank's consolidated financial position.

Provisions are liabilities of uncertain timing and amount. A provision is recognized when the Bank has a present obligation (legal or constructive) arising from a past event, when it is probable that an outflow of economic resources will be required to settle the obligation and when the amount of the obligation can be reliably estimated. Provisions are based on the Bank's best estimates of the economic resources required to settle the present obligation, given all relevant risks and uncertainties, and, when it is significant, the effect of the time value of money.

The recognition of a litigation provision requires the Bank's management to assess the probability of loss and estimate any potential monetary impact. The Bank examines each litigation provision individually by considering the development of each case, its past experience in similar transactions and the opinion of its legal counsel. Each new piece of information can alter the Bank's assessment as to the probability and estimated amount of the loss and the extent to which it adjusts the recorded provision. Moreover, the actual settlement cost of these litigations can be significantly higher or lower than the amounts recognized.

Structured Entities

In the normal course of business, the Bank enters into arrangements and transactions with structured entities. Structured entities are entities designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when voting rights relate solely to administrative tasks and the relevant activities are directed by means of contractual arrangements. A structured entity is consolidated when the Bank concludes, after evaluating the substance of the relationship and its right or exposure to variable returns, that it controls that entity. Management must exercise judgment in determining whether the Bank controls an entity. Additional information is provided in the Securitization and Off-Balance-Sheet Arrangements section of this MD&A and in Note 27 to the consolidated financial statements.

Future Accounting Policy Changes

The IASB issues revisions and amendments to a number of standards, some of which have already had an impact on the Bank and others that could have an impact in the future. The Bank is currently assessing the impact that adoption of the following standards will have on its consolidated financial statements. A summary of these amendments and the effective dates applicable to the Bank are presented below.

Effective Date – November 1, 2019

IFRS 16 – *Leases*

In January 2016, the IASB issued IFRS 16 – *Leases*. The new standard replaces the previous lease accounting standard, IAS 17 – *Leases,* and related interpretations. Under IAS 17, lessees and lessors were required to classify their leases as either finance leases or operating leases and to account for these two types of leases differently. IFRS 16 provides a single accounting model for lessees, requiring lessees to recognize a right-of-use asset as well as a liability that reflects the present value of future lease payments. Lessees will also recognize depreciation expense on the right-of-use asset and interest expense on the lease liability in the Consolidated Statement of Income. As for lessors, IFRS 16 substantially carries forward the lessor accounting in IAS 17, with the distinction between finance and operating leases being retained.

The Bank has elected to apply IFRS 16 using the modified retrospective basis by adjusting the Consolidated Balance Sheet as at November 1, 2019, the date of initial application, with no restatement of comparative periods. The most significant impact to the Bank will be related to real estate leases, which are currently classified as operating leases.

On transition, the Bank will apply, on a lease-by-lease basis, certain practical expedients. More specifically, it will measure the right-of-use assets at an amount equal to the lease liability, it will rely on the Bank's assessment about whether leases are onerous as at October 31, 2019 as an alternative to performing an impairment test as at November 1, 2019, and it will exclude initial direct costs from the measurement of the right-of-use assets as at November 1, 2019. Furthermore, on transition and thereafter, the Bank will exclude leases for which the underlying asset is of low value, will exclude short-term leases and, for real estate leases, will elect not to separate non-lease components from lease components.

As at October 31, 2019, the Bank's best estimate of the impact of adopting IFRS 16 is an increase in total assets of approximately $653 million representing leased premises, an increase in total liabilities of approximately $653 million primarily representing lease liabilities, and a decrease of approximately 9 basis points in the Common Equity Tier 1 (CET 1) capital ratio as at November 1, 2019.

IFRIC Interpretation 23 – *Uncertainty Over Income Tax Treatments*

In June 2017, the IASB issued IFRIC Interpretation 23, which addresses how to reflect tax treatment uncertainty in accounting for income taxes. This interpretation will not have an impact on the Bank's Consolidated Balance Sheet as at November 1, 2019.

Effective Date – November 1, 2020

Conceptual Framework for Financial Reporting

On March 29, 2018, the IASB published *Conceptual Framework for Financial Reporting* to replace its 2010 conceptual framework. For the IASB, the revised conceptual framework has been in effect since its publication date. Early application is permitted.

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

In September 2019, in response to uncertainty arising from the phasing-out of benchmark interest rates such as interbank offered rates (IBORs), the IASB issued amendments to its new and former financial instrument standards, IFRS 9 – *Financial Instruments* and IAS 39 – *Financial Instruments: Recognition and Measurement* as well as to the related standard on disclosures, IFRS 7 – *Financial Instruments: Disclosures.*

The amendments modify certain hedge accounting requirements in IFRS 9 and IAS 39 to provide relief from the potential effects of the uncertainty caused by the IBOR reform. In addition, the amendments to IFRS 7 require additional disclosure about hedging relationships directly affected by this uncertainty. When the Bank adopted IFRS 9 on November 1, 2017, it made an accounting policy choice to continue applying the IAS 39 hedge accounting requirements.

For the Bank, the effective date of these amendments is November 1, 2020. However, early adoption is permitted.

Effective Date – November 1, 2021

IFRS 17 – *Insurance Contracts*

In May 2017, the IASB issued IFRS 17 – *Insurance Contracts*, a new standard that replaces IFRS 4, the current insurance contract accounting standard. IFRS 17 introduces a new accounting framework that will improve the comparability and quality of financial information. At its meeting on November 14, 2018, the IASB tentatively decided to defer the IFRS 17 effective date to fiscal years beginning on or after January 1, 2022.

Additional Financial Information

Table 1 – Quarterly Results

(millions of Canadian dollars, except per share amounts)					2019
	Total	Q4	Q3	Q2	Q1
Statement of income data					
Net interest income	3,596	936	855	942	863
Non-interest income[1]	3,836	979	1,093	828	936
Total revenues	7,432	1,915	1,948	1,770	1,799
Provisions for credit losses	347	89	86	84	88
Non-interest expenses[2]	4,301	1,095	1,154	1,026	1,026
Income taxes	462	127	100	102	133
Net income	2,322	604	608	558	552
Non-controlling interests	66	14	17	19	16
Net income attributable to the Bank's shareholders	2,256	590	591	539	536
Earnings per common share					
Basic	$ 6.39	$ 1.68	$ 1.68	$ 1.52	$ 1.51
Diluted	6.34	1.67	1.66	1.51	1.50
Dividends (per share)					
Common	$ 2.66	$ 0.68	$ 0.68	$ 0.65	$ 0.65
Preferred					
Series 28	–	–	–	–	–
Series 30	1.0156	0.2515	0.2516	0.2562	0.2563
Series 32	0.9750	0.2437	0.2438	0.2437	0.2438
Series 34	1.4000	0.3500	0.3500	0.3500	0.3500
Series 36	1.3500	0.3375	0.3375	0.3375	0.3375
Series 38	1.1125	0.2781	0.2781	0.2782	0.2781
Series 40	1.1500	0.2875	0.2875	0.2875	0.2875
Series 42	1.2375	0.3094	0.3093	0.3094	0.3094
Return on common shareholders' equity	18.0 %	18.2 %	18.7 %	17.8 %	17.2 %
Total assets		281,458	276,312	269,106	263,355
Long-term financial liabilities[3]		773	773	772	764
Net impaired loans[4] **under IFRS 9**		450	420	379	373
Net impaired loans under IAS 39					
Number of common shares outstanding *(thousands)*					
Average – Basic	335,104	334,393	334,843	335,478	335,716
Average – Diluted	337,630	336,900	337,768	338,515	338,585
End of period		334,172	334,210	335,116	335,500
Per common share					
Book value		$ 36.89	$ 36.12	$ 35.49	$ 34.85
Share price					
High	$ 68.02	68.02	64.16	63.82	61.80
Low	54.97	60.38	60.71	60.31	54.97
Number of employees – Worldwide		25,487	24,881	24,137	23,960
Number of branches in Canada		422	429	428	428

(1) For fiscal 2019, the *Non-interest income* item includes a $79 million gain on disposal of Fiera Capital Corporation shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss resulting from the fair value measurement of an investment.
(2) For fiscal 2019, the *Non-interest expenses* item includes $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, an $11 million charge related to Maple, and $10 million in severance pay.
(3) Subordinated debt.
(4) Given the adoption of IFRS 9, all loans classified in Stage 3 of the expected credit loss model are impaired loans; the net impaired loans presented in this table exclude POCI loans. Under IAS 39, loans were considered impaired according to different criteria. Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn.

				2018					2017
Total	Q4	Q3	Q2	Q1	Total	Q4	Q3	Q2	Q1
3,382	826	837	885	834	3,436	881	887	815	853
3,784	988	955	869	972	3,173	823	788	782	780
7,166	1,814	1,792	1,754	1,806	6,609	1,704	1,675	1,597	1,633
327	73	76	91	87	244	70	58	56	60
4,063	1,036	1,011	992	1,024	3,857	976	971	941	969
544	139	136	124	145	484	133	128	116	107
2,232	566	569	547	550	2,024	525	518	484	497
87	16	23	25	23	84	19	24	22	19
2,145	550	546	522	527	1,940	506	494	462	478
$ 6.01	$ 1.53	$ 1.54	$ 1.46	$ 1.48	$ 5.44	$ 1.40	$ 1.39	$ 1.30	$ 1.35
5.94	1.52	1.52	1.44	1.46	5.38	1.39	1.37	1.28	1.34
$ 2.44	$ 0.62	$ 0.62	$ 0.60	$ 0.60	$ 2.28	$ 0.58	$ 0.58	$ 0.56	$ 0.56
–	–	–	–	–	0.9500	0.2375	0.2375	0.2375	0.2375
1.0250	0.2562	0.2563	0.2562	0.2563	1.0250	0.2562	0.2563	0.2562	0.2563
0.9750	0.2437	0.2438	0.2437	0.2438	0.9750	0.2437	0.2438	0.2437	0.2438
1.4000	0.3500	0.3500	0.3500	0.3500	1.4000	0.3500	0.3500	0.3500	0.3500
1.3500	0.3375	0.3375	0.3375	0.3375	1.3500	0.3375	0.3375	0.3375	0.3375
1.1125	0.2781	0.2781	0.2782	0.2781	0.4724	0.4724	–	–	–
0.9310	0.2875	0.2875	0.3560	–	–	–	–	–	–
0.5323	0.5323	–	–	–	–	–	–	–	–
18.4 %	17.8 %	18.4 %	18.6 %	18.7 %	18.1 %	17.8 %	18.2 %	17.9 %	18.4 %
	262,471	257,637	256,259	251,065		245,827	240,072	239,020	234,119
	747	753	755	8		9	9	10	1,009
	404	413	382	371					
						206	240	213	226
339,372	337,508	339,160	339,885	340,950	340,809	341,108	341,555	341,107	339,476
343,240	341,395	343,280	343,900	345,458	344,771	345,507	345,353	345,416	343,270
	335,071	337,441	339,348	340,390		339,592	341,580	341,524	340,810
	$ 34.40	$ 33.91	$ 32.64	$ 31.75		$ 31.51	$ 30.84	$ 29.97	$ 29.51
$ 65.63	65.63	64.29	64.08	65.35	$ 62.74	62.74	56.44	58.75	56.60
58.69	58.93	61.26	58.69	62.33	46.83	55.29	51.77	52.94	46.83
	23,450	23,029	22,359	21,868		21,635	21,526	21,290	21,295
	428	428	428	429		429	443	445	448

Table 2 – Overview of Results

Year ended October 31 (taxable equivalent basis)[(1)] (millions of Canadian dollars)	2019	2018	2017	2016	2015
Net interest income on a taxable equivalent basis	3,791	3,526	3,645	3,436	3,240
Non-interest income on a taxable equivalent basis[(2)]	3,971	3,885	3,208	2,639	2,817
Total revenues on a taxable equivalent basis	7,762	7,411	6,853	6,075	6,057
Non-interest expenses[(3)]	4,301	4,063	3,857	3,875	3,665
Contribution on a taxable equivalent basis	3,461	3,348	2,996	2,200	2,392
Provisions for credit losses	347	327	244	484	228
Income before income taxes on a taxable equivalent basis	3,114	3,021	2,752	1,716	2,164
Income taxes on a taxable equivalent basis	792	789	728	460	545
Net income	2,322	2,232	2,024	1,256	1,619
Non-controlling interests	66	87	84	75	70
Net income attributable to the Bank's shareholders	2,256	2,145	1,940	1,181	1,549
Average assets	286,162	265,940	248,351	235,913	222,929

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(2) For fiscal 2019, the *Non-interest income* item includes a $79 million gain on disposal of Fiera Capital Corporation shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss resulting from the fair value measurement of an investment.
(3) For fiscal 2019, the *Non-interest expenses* item includes $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, an $11 million charge related to Maple, and $10 million in severance pay.

Table 3 – Changes in Net Interest Income[(1)]

Year ended October 31 (taxable equivalent basis)[(2)] (millions of Canadian dollars)	2019	2018	2017	2016	2015
Personal and Commercial[(1)]					
Net interest income	2,383	2,276	2,127	2,011	1,917
Average assets	112,798	106,857	102,139	97,741	92,090
Average interest-bearing assets	106,995	101,446	97,339	92,660	86,543
Net interest margin[(3)]	2.23 %	2.24 %	2.19 %	2.17 %	2.22 %
Wealth Management[(1)]					
Net interest income on a taxable equivalent basis	470	446	373	316	266
Average assets	6,219	6,167	5,947	5,612	5,275
Financial Markets					
Net interest income on a taxable equivalent basis	474	409	772	938	1,001
Average assets	112,493	100,721	94,991	87,491	86,466
USSF&I					
Net interest income	656	584	466	284	205
Average assets	10,985	9,270	7,519	5,319	2,275
Other					
Net interest income on a taxable equivalent basis	(192)	(189)	(93)	(113)	(149)
Average assets	43,667	42,925	37,755	39,750	36,823
Total					
Net interest income on a taxable equivalent basis	3,791	3,526	3,645	3,436	3,240
Average assets	286,162	265,940	248,351	235,913	222,929

(1) For fiscal years prior to 2019, certain amounts have been reclassified, mainly amounts related to advisor banking service activities, which have been transferred from the Wealth Management segment to the Personal and Commercial segment.
(2) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(3) Net interest margin is calculated by dividing net interest income by average interest-bearing assets.

Table 4 – Non-Interest Income

Year ended October 31 (taxable equivalent basis)[1] (millions of Canadian dollars)	2019	2018	2017	2016	2015
Underwriting and advisory fees	**314**	388	349	376	387
Securities brokerage commissions	**178**	195	216	235	273
Mutual fund revenues	**449**	438	412	364	320
Trust service revenues	**609**	587	518	453	446
Credit fees	**134**	126	130	110	112
Revenues from acceptances, letters of credit and guarantee	**283**	277	231	236	223
Card revenues	**175**	159	132	119	128
Deposit and payment service charges	**271**	280	279	258	238
Trading revenues (losses) on a taxable equivalent basis	**964**	941	409	154	209
Gains (losses) on available-for-sale securities, net			140	70	82
Gains (losses) on non-trading securities, net	**77**	77			
Insurance revenues, net	**136**	121	117	114	107
Foreign exchange revenues, other than trading	**96**	95	81	81	88
Share in the net income of associates and joint ventures	**34**	28	35	15	26
Other[2]	**251**	173	159	54	178
	3,971	3,885	3,208	2,639	2,817
Canada	**3,637**	3,589	3,027	2,434	2,737
United States	**84**	108	136	124	72
Other countries	**250**	188	45	81	8
Non-interest income on a taxable equivalent basis as a % of total revenues on a taxable equivalent basis[1]	**51.2 %**	52.4 %	46.8 %	43.4 %	46.5 %
Non-interest income on a taxable equivalent basis and excluding specified items as a % of total revenues on a taxable equivalent basis and excluding specified items[1]	**50.5 %**	52.4 %	46.8 %	45.0 %	45.4 %

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(2) For fiscal 2019, other revenues includes a $79 million gain on disposal of Fiera Capital Corporation shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss resulting from the fair value measurement of an investment.

Table 5 – Trading Activity Revenues[1]

Year ended October 31 (taxable equivalent basis)[2] (millions of Canadian dollars)	2019	2018	2017	2016	2015
Financial markets					
Equities	**624**	576	506	438	450
Fixed-income	**289**	267	294	263	237
Commodities and foreign exchange	**126**	130	107	116	147
	1,039	973	907	817	834
Other segments	**160**	176	97	80	151
	1,199	1,149	1,004	897	985

(1) Includes net interest income on a taxable equivalent basis and non-interest income on a taxable equivalent basis.
(2) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Table 6 – Non-Interest Expenses

Year ended October 31 (millions of Canadian dollars)	2019	2018	2017	2016	2015
Compensation and employee benefits[1]	2,532	2,466	2,358	2,161	2,160
Occupancy[2]	254	193	195	195	185
Technology	372	375	364	367	352
Amortization – Premises and equipment	44	43	41	38	38
Amortization – Technology[3]	332	245	204	220	182
Communications	62	63	61	67	69
Professional fees	249	244	254	276	233
Restructuring charge[4]	–	–	–	131	86
Travel and business development	128	128	122	120	113
Capital and payroll taxes	70	79	73	71	69
Other[5]	258	227	185	229	178
Total	4,301	4,063	3,857	3,875	3,665
Canada	3,931	3,750	3,571	3,601	3,457
United States	210	205	209	235	192
Other countries	160	108	77	39	16
Non-interest expenses as a % of total revenues on a taxable equivalent basis[6]	55.4 %	54.8 %	56.3 %	63.8 %	60.5 %
Non-interest expenses as a % of total revenues on a taxable equivalent basis and excluding specified items[6]	54.5 %	54.8 %	56.3 %	58.6 %	59.1 %

(1) For fiscal 2019, compensation and employee benefits include $10 million in severance pay.
(2) For fiscal 2019, occupancy expense includes $45 million in provisions for onerous contracts.
(3) For fiscal 2019, the *Amortization – Technology* expense includes $57 million in impairment losses on premises and equipment and on intangible assets.
(4) The fiscal 2016 restructuring charge had included $129 million in compensation and employee benefits and $2 million in occupancy expenses, and the fiscal 2015 restructuring charge had included $51 million in compensation and employee benefits and $35 million in other charges such as occupancy expenses and professional fees.
(5) For fiscal 2019, other expenses include an $11 million charge related to Maple; the fiscal 2016 other expenses had included $25 million in litigation charges.
(6) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.

Table 7 – Provisions for Credit Losses[1]

Year ended October 31 (millions of Canadian dollars)	2019	2018	2017[2]	2016[2]	2015[2]
Personal Banking[3][4]					
Stage 3	**166**	158	153	156	165
Stages 1 and 2	**8**	9	–	–	–
	174	167	153	156	165
Commercial Banking					
Stage 3	**35**	40	43	73	63
Stages 1 and 2[5]	**28**	21	(40)	250	–
	63	61	3	323	63
Wealth Management[4]					
Stage 3	**–**	–	–	1	–
Stages 1 and 2	**–**	1	–	–	–
	–	1	–	1	–
Financial Markets					
Stage 3	**18**	–	–	–	–
Stages 1 and 2	**12**	4	–	–	–
	30	4	–	–	–
USSF&I					
Stage 3	**94**	126	48	4	–
Stages 1 and 2	**(24)**	(3)	–	–	–
POCI loans	**10**	(29)	–	–	–
	80	94	48	4	–
Other					
Stage 3	**–**	–	–	–	–
Stages 1 and 2[6]	**–**	–	40	–	–
	–	–	40	–	–
Total provisions for credit losses	**347**	327	244	484	228
Average loans and acceptances	**148,765**	139,603	130,882	122,559	108,740
Provisions for credit losses on impaired loans[1] as a % of average loans and acceptances	**0.21 %**	0.23 %	0.19 %	0.19 %	0.21 %
Provisions for credit losses as a % of average loans and acceptances	**0.23 %**	0.23 %	0.19 %	0.39 %	0.21 %

(1) Given the adoption of IFRS 9, all loans classified in Stage 3 of the expected credit loss model are impaired loans. Under IAS 39, loans were considered impaired according to different criteria. Provisions for credit losses on impaired loans presented in this table exclude provisions for credit losses on POCI loans.
(2) These figures are presented in accordance with IAS 39.
(3) Includes credit card receivables.
(4) For fiscal years prior to 2019, certain amounts have been reclassified, as amounts related to advisor banking service activities were transferred from the Wealth Management segment to the Personal and Commercial segment.
(5) During fiscal 2017, the Bank recorded a $40 million reversal of the sectoral provision on non-impaired loans that had been taken collectively for the oil and gas producer and service company loan portfolio. In addition, the fiscal 2016 provisions for credit losses had included a $250 million amount related to the initial recording of this sectoral provision.
(6) During fiscal 2017, the provisions for credit losses had included a $40 million increase in the collective allowance for credit risk on non-impaired loans, which was established taking into account the Bank's overall credit portfolio, except for loans covered by the sectoral allowance and POCI loans.

Table 8 – Change in Average Volumes

Year ended October 31 (taxable equivalent basis)[1] (millions of Canadian dollars)	2019		2018[2]		2017[2]		2016[2]		2015[2]	
	Average volume $	Rate %	Average volume $	Rate %	Average volume $	Rate %	Average volume $	Rate %	Average volume $	Rate %
Assets										
Deposits with financial institutions	13,149	1.64	16,282	1.27	15,802	0.72	14,079	0.46	11,771	0.26
Securities	85,772	1.97	75,923	1.64	66,591	1.75	60,784	1.98	57,494	2.25
Securities purchased under reverse repurchase agreements and securities borrowed	22,472	1.60	20,090	1.09	19,878	1.03	19,038	0.75	25,610	0.79
Residential mortgage loans	53,474	2.85	51,497	2.75	50,844	2.61	46,310	2.69	41,798	2.85
Personal loans	33,077	3.97	32,208	3.69	30,890	3.34	30,409	3.27	28,840	3.38
Credit card receivables	2,219	13.71	2,164	13.35	2,206	12.07	2,107	11.98	2,023	11.85
Business and government loans	51,746	5.10	45,649	4.71	39,579	3.95	34,197	3.22	26,883	3.22
POCI loans	1,386	12.78	1,486	12.76	1,238	15.18	1,545	14.01	1,204	17.87
Interest-bearing assets	263,295	3.12	245,299	2.81	227,028	2.58	208,469	2.50	195,623	2.56
Other assets	22,867		20,641		21,323		27,444		27,306	
Total assets	286,162	2.87	265,940	2.60	248,351	2.36	235,913	2.12	222,929	2.15
Liabilities and equity										
Personal deposits	54,756	1.27	50,499	1.12	48,408	1.01	44,510	1.13	42,480	1.20
Deposit-taking institutions	5,950	1.81	5,980	1.45	7,567	0.69	12,468	0.39	10,925	0.24
Other deposits	123,754	2.02	110,697	1.62	98,279	1.20	85,874	1.10	76,063	1.12
	184,460	1.79	167,176	1.47	154,254	1.11	142,852	1.04	129,468	1.07
Subordinated debt	758	3.25	564	3.20	423	3.81	1,047	3.16	1,571	3.80
Obligations other than deposits	47,404	1.35	47,762	1.20	44,204	0.74	38,804	0.31	40,374	0.41
Interest-bearing liabilities	232,622	1.90	215,502	1.57	198,881	1.11	182,703	0.98	171,413	1.03
Other liabilities	38,827		36,492		36,722		41,627		40,792	
Equity	14,713		13,946		12,748		11,583		10,724	
Liabilities and equity	286,162	1.55	265,940	1.27	248,351	0.89	235,913	0.76	222,929	0.79
Net interest margin		1.32		1.33		1.47		1.36		1.36

(1) See the Financial Reporting Method section on pages 14 and 15 for additional information on non-GAAP financial measures.
(2) For fiscal years prior to 2019, certain amounts have been reclassified.

Table 9 – Distribution of Gross Loans and Acceptances by Borrower Category Under Basel Asset Classes

As at October 31 (millions of Canadian dollars)	2019		2018		2017		2016		2015	
	$	%	$	%	$	%	$	%	$	%
Residential mortgage[(1)(2)]	74,448	48.4	70,591	48.1	66,398	48.4	58,265	45.2	54,004	46.1
Qualifying revolving retail	4,099	2.7	4,211	2.9	4,217	3.1	4,178	3.2	4,093	3.6
Other retail	11,606	7.5	12,246	8.3	12,150	8.9	10,316	8.0	9,512	8.1
Agriculture	6,308	4.1	5,759	3.9	4,923	3.6	4,599	3.6	4,433	3.8
Oil and gas, and pipelines[(3)]	4,329	2.8	4,056	2.8	3,364	2.5	3,595	2.8	3,978	3.4
Mining	758	0.5	1,032	0.7	470	0.3	582	0.5	429	0.4
Utilities	3,372	2.2	2,715	1.9	2,347	1.7	1,814	1.4	1,385	1.2
Non-real-estate construction[(3)(4)]	1,168	0.8	1,049	0.7	1,336	1.0	1,147	0.9	1,240	1.0
Manufacturing[(3)]	6,303	4.1	5,303	3.6	4,274	3.1	3,561	2.8	3,738	3.2
Wholesale	2,221	1.4	2,163	1.5	2,066	1.5	2,021	1.6	1,908	1.6
Retail	3,289	2.1	3,069	2.1	3,431	2.5	2,911	2.3	2,965	2.5
Transportation[(3)]	1,682	1.1	1,452	1.0	1,425	1.0	1,565	1.2	1,189	1.0
Communications	1,614	1.0	1,597	1.1	1,662	1.2	1,578	1.2	1,254	1.1
Finance and insurance	4,335	2.8	4,732	3.2	4,932	3.6	3,872	3.0	2,679	2.3
Real estate and real-estate-construction[(3)(5)]	11,635	7.6	11,629	7.9	10,418	7.6	9,458	7.3	8,639	7.4
Professional services	1,846	1.2	1,582	1.1	1,416	1.0	1,374	1.1	1,214	1.0
Education and health care[(3)]	3,520	2.3	3,284	2.2	2,886	2.1	2,738	2.1	2,730	2.3
Other services	4,937	3.2	4,715	3.2	4,762	3.5	4,647	3.6	4,200	3.6
Government	1,071	0.7	1,445	1.0	1,452	1.1	1,201	0.9	891	0.7
Other[(2)]	4,222	2.7	2,534	1.7	1,233	0.9	7,537	5.9	5,326	4.5
POCI loans	1,166	0.8	1,576	1.1	1,990	1.4	1,846	1.4	1,424	1.2
	153,929	100.0	146,740	100.0	137,152	100.0	128,805	100.0	117,231	100.0

(1) Includes residential mortgage loans on one to four-unit dwellings (Basel definition) and home equity lines of credit.
(2) Since November 1, 2016, the loans acquired by the Financial Markets segment for securitization purposes, and reported in the *Other* category, are now being reported in the *Residential mortgage* category. Figures as at October 31, 2016 and from previous years were not adjusted to reflect those modifications.
(3) The presentation of certain borrower categories was changed during fiscal 2019. Comparative figures have been revised.
(4) Includes civil engineering loans, public-private partnership loans, and project finance loans.
(5) Includes residential mortgages on dwellings of five or more units and SME loans.

Table 10 – Impaired Loans[(1)]

As at October 31 (millions of Canadian dollars)	2019	2018	2017[(2)]	2016[(2)]	2015[(2)]
Net impaired loans[(3)]					
Personal Banking[(4)]	187	199	81	89	95
Commercial Banking	222	187	121	190	157
Wealth Management[(4)]	3	3	1	1	2
Financial Markets	23	–	–	–	–
USSF&I	15	15	3	1	–
Other	–	–	–	–	–
Total net impaired loans	450	404	206	281	254
Gross impaired loans	684	630	380	492	457
Allowances for credit losses on impaired loans	234	226			
Individual and collective allowances on impaired loans			174	211	203
Net impaired loans[(3)]	450	404	206	281	254
Provisioning rate	34.2 %	35.9 %	45.8 %	42.9 %	44.4 %
As a % of loans and acceptances	0.3 %	0.3 %	0.2 %	0.2 %	0.2 %

(1) Given the adoption of IFRS 9, all loans classified in Stage 3 of the expected credit loss model are impaired loans. Under IAS 39, loans were considered impaired according to different criteria. The impaired loans presented in this table exclude POCI loans.
(2) These figures are presented in accordance with IAS 39.
(3) Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn.
(4) For fiscal years prior to 2019, certain amounts have been reclassified, as amounts related to advisor banking service activities were transferred from the Wealth Management segment to the Personal and Commercial segment.

Table 11 – Allowances for Credit Losses

Year ended October 31 (millions of Canadian dollars)	2019	2018	2017[1]	2016[1]	2015[1]
Balance at beginning	714	735	769	555	605
Provisions for credit losses	347	327	244	484	228
Write-offs	(351)	(367)	(320)	(282)	(278)
Disposals	(1)	(24)	–	–	–
Recoveries	52	45	13	13	13
Exchange and other movements	(6)	(2)	(11)	(1)	(13)
Balance at end	755	714	695	769	555
Composition of allowances:					
Allowances for credit losses on impaired loans[2]	234	226	174	211	203
Allowances for credit losses on non-impaired loans	501	498			
Allowances for credit losses on off-balance-sheet commitments and other assets	77	56			
Allowances for credit losses on POCI loans	(57)	(66)	(24)	(12)	(14)
Sectoral allowance on non-impaired loans – Oil and gas[3]			139	204	–
Collective allowance on non-impaired loans[4]			406	366	366

(1) These figures are presented in accordance with IAS 39.
(2) Given the adoption of IFRS 9, all loans classified in Stage 3 of the expected credit loss model are impaired loans. Under IAS 39, loans were considered impaired according to different criteria. Allowances for credit losses on impaired loans presented in this table exclude allowances for credit losses on POCI loans.
(3) The sectoral allowance on non-impaired loans – oil and gas was established collectively for the portfolio of loans to producers and service companies in the oil and gas sector.
(4) The collective allowance for credit risk on non-impaired loans was established taking into account the Bank's overall credit portfolio, except for loans covered by the sectoral allowance and POCI loans.

Table 12 – Deposits

As at October 31 (millions of Canadian dollars)	2019		2018		2017		2016		2015	
	$	%	$	%	$	%	$	%	$	%
Personal	60,065	31.7	55,688	32.6	52,175	33.3	51,163	36.0	47,394	36.3
Business and government	125,266	66.1	110,321	64.6	99,115	63.3	85,263	60.0	76,845	58.9
Deposit-taking institutions	4,235	2.2	4,821	2.8	5,381	3.4	5,640	4.0	6,219	4.8
Total	189,566	100.0	170,830	100.0	156,671	100.0	142,066	100.0	130,458	100.0
Canada	172,764	91.1	156,054	91.4	145,288	92.8	131,869	92.8	116,315	89.2
United States	6,907	3.7	6,048	3.5	5,825	3.7	4,442	3.1	9,655	7.4
Other countries	9,895	5.2	8,728	5.1	5,558	3.5	5,755	4.1	4,488	3.4
Total	189,566	100.0	170,830	100.0	156,671	100.0	142,066	100.0	130,458	100.0
Personal deposits as a % of total assets		21.3		21.2		21.2		22.0		21.9

Audited Consolidated Financial Statements

Management's Responsibility for Financial Reporting

The consolidated financial statements of National Bank of Canada (the Bank) have been prepared in accordance with section 308(4) of the *Bank Act* (Canada), which states that, except as otherwise specified by the Office of the Superintendent of Financial Institutions (Canada) (OSFI), the financial statements are to be prepared in accordance with International Financial Reporting Standards (IFRS), as issued by the International Accounting Standards Board (IASB). IFRS represent Canadian generally accepted accounting principles (GAAP). None of the OSFI accounting requirements are exceptions to IFRS.

Management maintains the accounting and internal control systems needed to discharge its responsibility, which is to provide reasonable assurance that the financial accounts are accurate and complete and that the Bank's assets are adequately safeguarded. Controls that are currently in place include quality standards on staff hiring and training; the implementation of organizational structures with clear divisions of responsibility and accountability for performance; the *Code of Professional Conduct*; and the communication of operating policies and procedures.

As Chief Executive Officer and as Chief Financial Officer, we have overseen the evaluation of the design and operation of the Bank's internal controls over financial reporting in accordance with *Regulation 52-109 Respecting Certification of Disclosures in Issuers' Annual and Interim Filings* released by the Canadian Securities Administrators. Based on the evaluation work performed, we have concluded that the internal controls over financial reporting were effective as at October 31, 2019 and that they provide reasonable assurance that the financial information is reliable and that the Bank's consolidated financial statements have been prepared in accordance with IFRS.

The Board of Directors (the Board) is responsible for reviewing and approving the financial information contained in the Annual Report. Acting through the Audit Committee, the Board also oversees the presentation of the consolidated financial statements and ensures that accounting and control systems are maintained. Composed of directors who are neither officers nor employees of the Bank, the Audit Committee is responsible, through Internal Audit, for performing an independent and objective review of the Bank's internal control effectiveness, i.e., governance processes, risk management processes and control measures. Furthermore, the Audit Committee reviews the consolidated financial statements and recommends their approval to the Board.

The control systems are further supported by the presence of the Compliance Service, which exercises independent oversight and evaluation in order to assist managers in effectively managing regulatory compliance risk and to obtain reasonable assurance that the Bank is compliant with regulatory requirements.

Both the Senior Vice-President, Internal Audit and the Senior Vice-President, Chief Compliance Officer and Chief Anti-Money Laundering Officer have a direct functional link to the Chair of the Audit Committee and to the Chair of the Risk Management Committee. They both also have direct access to the President and Chief Executive Officer.

In accordance with the *Bank Act* (Canada), OSFI is mandated to protect the rights and interests of the depositors. Accordingly, OSFI examines and enquires into the business and affairs of the Bank, as deemed necessary, to ensure that the provisions of the *Bank Act* (Canada) are being satisfied and that the Bank is in sound financial condition.

The independent auditor, Deloitte LLP, whose report follows, was appointed by the shareholders on the recommendation of the Board. The auditor has full and unrestricted access to the Audit Committee to discuss audit and financial reporting matters.

Louis Vachon
President and Chief Executive Officer

Ghislain Parent
Chief Financial Officer and Executive Vice-President, Finance

Montreal, Canada, December 3, 2019

Independent Auditor's Report

To the Shareholders of National Bank of Canada,

Opinion

We have audited the consolidated financial statements of National Bank of Canada (the Bank), which comprise the consolidated balance sheets as at October 31, 2019 and 2018, and the consolidated statements of income, the consolidated statements of comprehensive income, the consolidated statements of changes in equity and the consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies (collectively referred to as the "financial statements").

In our opinion, the accompanying 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 the years then ended in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board (IFRS).

Basis for Opinion

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

Other Information

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

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

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon. In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

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

Responsibilities of Management and Those Charged With Governance for the Financial Statements

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

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

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

Auditor's Responsibilities for the Audit of the Financial Statements

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

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

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

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

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

The engagement partner on the audit resulting in this independent auditor's report is Chantal Leclerc.

/s/ Deloitte LLP[1]

December 3, 2019
Montreal, Quebec

[1] CPA auditor, CA, public accountancy permit No. A121444

(millions of Canadian dollars)

Consolidated Balance Sheets

As at October 31		2019	2018
Assets			
Cash and deposits with financial institutions		**13,698**	12,756
Securities	Notes 3, 4 and 6		
At fair value through profit or loss		**61,823**	55,817
At fair value through other comprehensive income		**10,648**	5,668
At amortized cost		**9,755**	8,298
		82,226	69,783
Securities purchased under reverse repurchase agreements and securities borrowed		**17,723**	18,159
Loans	Note 7		
Residential mortgage		**57,171**	53,651
Personal		**36,944**	37,357
Credit card		**2,322**	2,325
Business and government		**50,599**	46,606
		147,036	139,939
Customers' liability under acceptances		**6,893**	6,801
Allowances for credit losses		**(678)**	(658)
		153,251	146,082
Other			
Derivative financial instruments	Note 16	**8,129**	8,608
Investments in associates and joint ventures	Note 9	**385**	645
Premises and equipment	Note 10	**490**	601
Goodwill	Note 11	**1,412**	1,412
Intangible assets	Note 11	**1,406**	1,314
Other assets	Note 12	**2,738**	3,111
		14,560	15,691
		281,458	262,471
Liabilities and equity			
Deposits	Notes 4 and 13	**189,566**	170,830
Other			
Acceptances		**6,893**	6,801
Obligations related to securities sold short		**12,849**	17,780
Obligations related to securities sold under repurchase agreements and securities loaned		**21,900**	19,998
Derivative financial instruments	Note 16	**6,852**	6,036
Liabilities related to transferred receivables	Notes 4 and 8	**21,312**	20,100
Other liabilities	Note 14	**6,177**	5,824
		75,983	76,539
Subordinated debt	Note 15	**773**	747
Equity			
Equity attributable to the Bank's shareholders	Notes 18 and 22		
Preferred shares		**2,450**	2,450
Common shares		**2,949**	2,822
Contributed surplus		**51**	57
Retained earnings		**9,312**	8,472
Accumulated other comprehensive income		**16**	175
		14,778	13,976
Non-controlling interests	Note 19	**358**	379
		15,136	14,355
		281,458	262,471

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

Louis Vachon
President and Chief Executive Officer

Karen Kinsley
Director

(millions of Canadian dollars)

Consolidated Statements of Income

Year ended October 31		2019	2018
Interest income			
Loans		6,468	5,632
Securities at fair value through profit or loss		1,086	771
Securities at fair value through other comprehensive income		195	152
Securities at amortized cost		210	174
Deposits with financial institutions		215	206
		8,174	6,935
Interest expense			
Deposits		3,468	2,562
Liabilities related to transferred receivables		444	414
Subordinated debt		25	18
Other		641	559
		4,578	3,553
Net interest income(1)		3,596	3,382
Non-interest income			
Underwriting and advisory fees		314	388
Securities brokerage commissions		178	195
Mutual fund revenues		449	438
Trust service revenues		609	587
Credit fees		417	403
Card revenues		175	159
Deposit and payment service charges		271	280
Trading revenues (losses)	Note 21	829	840
Gains (losses) on non-trading securities, net		77	77
Insurance revenues, net		136	121
Foreign exchange revenues, other than trading		96	95
Share in the net income of associates and joint ventures	Note 9	34	28
Other	Notes 9 and 10	251	173
		3,836	3,784
Total revenues		7,432	7,166
Provisions for credit losses	Note 7	347	327
		7,085	6,839
Non-interest expenses			
Compensation and employee benefits		2,532	2,466
Occupancy	Note 14	298	236
Technology	Notes 10 and 11	704	620
Communications		62	63
Professional fees		249	244
Other		456	434
		4,301	4,063
Income before income taxes		2,784	2,776
Income taxes	Note 24	462	544
Net income		2,322	2,232
Net income attributable to			
Preferred shareholders		116	105
Common shareholders		2,140	2,040
Bank shareholders		2,256	2,145
Non-controlling interests		66	87
		2,322	2,232
Earnings per share *(dollars)*	Note 25		
Basic		6.39	6.01
Diluted		6.34	5.94
Dividends per common share *(dollars)*	Note 18	2.66	2.44

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

(1) *Net interest income* includes dividend income. For additional information, see Note 1 to these audited consolidated financial statements.

(millions of Canadian dollars)

Consolidated Statements of Comprehensive Income

Year ended October 31	2019	2018
Net income	**2,322**	2,232
Other comprehensive income, net of income taxes		
Items that may be subsequently reclassified to net income		
Net foreign currency translation adjustments		
Net unrealized foreign currency translation gains (losses) on investments in foreign operations	(9)	41
Net foreign currency translation (gains) losses on investments in foreign operations reclassified to net income	(2)	–
Impact of hedging net foreign currency translation gains (losses)	4	(13)
Impact of hedging net foreign currency translation (gains) losses reclassified to net income	–	–
	(7)	28
Net change in debt securities at fair value through other comprehensive income		
Net unrealized gains (losses) on debt securities at fair value through other comprehensive income	54	(11)
Net (gains) losses on debt securities at fair value through other comprehensive income reclassified to net income	(53)	(5)
	1	(16)
Net change in cash flow hedges		
Net gains (losses) on derivative financial instruments designated as cash flow hedges	(137)	51
Net (gains) losses on designated derivative financial instruments reclassified to net income	(20)	(46)
	(157)	5
Share in the other comprehensive income of associates and joint ventures	3	1
Items that will not be subsequently reclassified to net income		
Remeasurements of pension plans and other post-employment benefit plans	(135)	103
Net gains (losses) on equity securities designated at fair value through other comprehensive income	(21)	(2)
Net fair value change attributable to credit risk on financial liabilities designated at fair value through profit or loss	5	21
	(151)	122
Total other comprehensive income (loss), net of income taxes	(311)	140
Comprehensive income	2,011	2,372
Comprehensive income attributable to		
Bank shareholders	1,946	2,284
Non-controlling interests	65	88
	2,011	2,372

Income Taxes – Other Comprehensive Income

The following table presents the income tax expense or recovery for each component of other comprehensive income.

Year ended October 31	2019	2018
Net foreign currency translation adjustments		
Net unrealized foreign currency translation gains (losses) on investments in foreign operations	3	1
Net foreign currency translation (gains) losses on investments in foreign operations reclassified to net income	(1)	–
Impact of hedging net foreign currency translation gains (losses)	2	–
Impact of hedging net foreign currency translation (gains) losses reclassified to net income	2	–
	6	1
Net change in debt securities at fair value through other comprehensive income		
Net unrealized gains (losses) on debt securities at fair value through other comprehensive income	19	(4)
Net (gains) losses on debt securities at fair value through other comprehensive income reclassified to net income	(19)	(1)
	–	(5)
Net change in cash flow hedges		
Net gains (losses) on derivative financial instruments designated as cash flow hedges	(50)	19
Net (gains) losses on designated derivative financial instruments reclassified to net income	(7)	(17)
	(57)	2
Share in the other comprehensive income of associates and joint ventures	–	–
Remeasurements of pension plans and other post-employment benefit plans	(48)	37
Net gains (losses) on equity securities designated at fair value through other comprehensive income	(6)	(1)
Net fair value change attributable to credit risk on financial liabilities designated at fair value through profit or loss	2	7
	(103)	41

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

(millions of Canadian dollars)

Consolidated Statements of Changes in Equity

Year ended October 31		2019	2018
Preferred shares at beginning	Note 18	2,450	2,050
Issuances of Series 40 and 42 preferred shares		–	600
Redemption of Series 28 preferred shares for cancellation		–	(200)
Preferred shares at end		2,450	2,450
Common shares at beginning	Note 18	2,822	2,768
Issuances of common shares pursuant to the Stock Option Plan		122	128
Repurchases of common shares for cancellation		(40)	(64)
Impact of shares purchased or sold for trading		45	(10)
Common shares at end		2,949	2,822
Contributed surplus at beginning		57	58
Stock option expense	Note 22	11	12
Stock options exercised		(15)	(15)
Other		(2)	2
Contributed surplus at end		51	57
Retained earnings at beginning		8,472	7,706
Impact of adopting IFRS 15 on November 1, 2018 (IFRS 9 on November 1, 2017)		(4)	(139)
Net income attributable to the Bank's shareholders		2,256	2,145
Dividends on preferred shares	Note 18	(116)	(105)
Dividends on common shares	Note 18	(892)	(829)
Premium paid on common shares repurchased for cancellation	Note 18	(241)	(403)
Share issuance expenses, net of income taxes		–	(12)
Remeasurements of pension plans and other post-employment benefit plans		(135)	103
Net gains (losses) on equity securities designated at fair value through other comprehensive income		(21)	(2)
Net fair value change attributable to the credit risk on financial liabilities designated at fair value through profit or loss		5	21
Impact of a financial liability resulting from put options written to non-controlling interests		(12)	–
Other		–	(13)
Retained earnings at end		9,312	8,472
Accumulated other comprehensive income at beginning		175	168
Impact of adopting IFRS 9 on November 1, 2017			(10)
Net foreign currency translation adjustments		(6)	27
Net change in unrealized gains (losses) on debt securities at fair value through other comprehensive income		1	(16)
Net change in gains (losses) on cash flow hedges		(157)	5
Share in the other comprehensive income of associates and joint ventures		3	1
Accumulated other comprehensive income at end		16	175
Equity attributable to the Bank's shareholders		14,778	13,976
Non-controlling interests at beginning	Note 19	379	808
Impact of adopting IFRS 9 on November 1, 2017			(16)
Purchase of the non-controlling interest of the Advanced Bank of Asia Limited subsidiary	Note 31	(30)	–
Redemption of trust units issued by NBC Asset Trust		–	(400)
Net income attributable to non-controlling interests		66	87
Other comprehensive income attributable to non-controlling interests		(1)	1
Distributions to non-controlling interests		(56)	(101)
Non-controlling interests at end		358	379
Equity		15,136	14,355

Accumulated Other Comprehensive Income

As at October 31	2019	2018
Accumulated other comprehensive income		
Net foreign currency translation adjustments	8	14
Net unrealized gains (losses) on debt securities at fair value through other comprehensive income	14	13
Net gains (losses) on instruments designated as cash flow hedges	(6)	151
Share in the other comprehensive income of associates and joint ventures	–	(3)
	16	175

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

(millions of Canadian dollars)

Consolidated Statements of Cash Flows

Year ended October 31		2019	2018
Cash flows from operating activities			
Net income		2,322	2,232
Adjustments for			
Provisions for credit losses		347	327
Amortization of premises and equipment and intangible assets		328	302
Gains on disposals of investments in associates and joint ventures	Note 9	(79)	(4)
Remeasurement at fair value of an investment	Note 9	33	–
Provisions for onerous contracts	Note 14	45	–
Gain on disposal of premises and equipment	Note 10	(50)	–
Impairment losses on premises and equipment and on intangible assets	Notes 10 and 11	57	–
Deferred taxes		(207)	24
Losses (gains) on sales of non-trading securities, net		(77)	(77)
Share in the net income of associates and joint ventures		(34)	(28)
Stock option expense		11	12
Change in operating assets and liabilities			
Securities at fair value through profit or loss		(6,006)	(3,589)
Securities purchased under reverse repurchase agreements and securities borrowed		436	2,630
Loans and acceptances, net of securitization		(6,221)	(9,160)
Deposits		18,736	14,159
Obligations related to securities sold short		(4,931)	2,417
Obligations related to securities sold under repurchase agreements and securities loaned		1,902	(1,769)
Derivative financial instruments, net		1,295	(761)
Interest and dividends receivable and interest payable		(41)	53
Current tax assets and liabilities		(7)	(127)
Other items		421	(777)
		8,280	5,864
Cash flows from financing activities			
Issuances of preferred shares		–	600
Redemption of preferred shares for cancellation		–	(200)
Issuances of common shares (including the impact of shares purchased for trading)		152	103
Repurchases of common shares for cancellation		(281)	(467)
Issuance of subordinated debt		–	750
Purchase of the non-controlling interest of the Advanced Bank of Asia Limited subsidiary	Note 31	(84)	–
Redemption of trust units issued by NBC Asset Trust		–	(400)
Share issuance expenses		–	(12)
Dividends paid		(992)	(918)
Distributions to non-controlling interests		(56)	(101)
		(1,261)	(645)
Cash flows from investing activities			
Disposal of shares of an investment in an associate	Note 9	128	–
Disposal of premises and equipment	Note 10	187	–
Net change in investments in associates and joint ventures		(16)	(3)
Purchases of non-trading securities		(16,355)	(7,790)
Maturities of non-trading securities		1,893	509
Sales of non-trading securities		8,413	6,173
Net change in tangible assets leased under operating leases		–	69
Net change in premises and equipment		(144)	(233)
Net change in intangible assets		(359)	(256)
		(6,253)	(1,531)
Impact of currency rate movements on cash and cash equivalents		176	266
Increase (decrease) in cash and cash equivalents		942	3,954
Cash and cash equivalents at beginning		12,756	8,802
Cash and cash equivalents at end(1)		13,698	12,756
Supplementary information about cash flows from operating activities			
Interest paid		4,545	3,440
Interest and dividends received		8,100	6,875
Income taxes paid		520	596

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

(1) This item is the equivalent of Consolidated Balance Sheet item *Cash and deposits with financial institutions*. It includes an amount of $4.1 billion as at October 31, 2019 ($2.5 billion as at October 31, 2018) for which there are restrictions.

Notes to the Audited Consolidated Financial Statements

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies

National Bank of Canada (the Bank) is a financial institution incorporated and domiciled in Canada and whose shares are listed on the Toronto Stock Exchange. Its head office is located at 600 De La Gauchetière Street West in Montreal, Quebec, Canada. The Bank is a chartered bank under Schedule 1 of the *Bank Act* (Canada) and is regulated by the Office of the Superintendent of Financial Institutions Canada (OSFI).

National Bank of Canada offers financial services to individuals, businesses, institutional clients and governments throughout Canada as well as specialized services at the international level. It operates four business segments, namely, the Personal and Commercial segment, the Wealth Management segment, the Financial Markets segment, and the U.S. Specialty Finance and International (USSF&I) segment. Its full line of services includes banking and investing solutions for individuals and businesses, corporate banking and investment banking services, securities brokerage, insurance, and wealth management.

On December 3, 2019, the Board of Directors (the Board) authorized the publication of the Bank's audited annual consolidated financial statements (the consolidated financial statements) for the year ended October 31, 2019.

Basis of Presentation

The Bank's consolidated financial statements have been prepared in accordance with section 308(4) of the *Bank Act* (Canada), which states that, except as otherwise specified by OSFI, the financial statements are to be prepared in accordance with International Financial Reporting Standards (IFRS), as issued by the International Accounting Standards Board (IASB). IFRS represent Canadian generally accepted accounting principles (GAAP). None of the OSFI accounting requirements are exceptions to IFRS.

The accounting policies covered in the Summary of Significant Accounting Policies section have been applied consistently to all periods presented and include the changes described hereafter in the Accounting Policy Changes section, which have been applied since November 1, 2018 following adoption of IFRS 15 – *Revenue From Contracts With Customers* (IFRS 15). As permitted by IFRS 15, the Bank did not restate comparative consolidated financial statements.

Unless otherwise indicated, all amounts are expressed in Canadian dollars, which is the Bank's functional and presentation currency.

Accounting Policy Changes

Effective November 1, 2018, the Bank adopted IFRS 15, which replaces the previous revenue recognition standards and interpretations. Excluded from the scope of IFRS 15 are revenues related to lease contracts, insurance contracts, and financial instruments. Fees earned, which are an integral component of the effective interest rate of financial assets and liabilities measured at amortized cost, are within the scope of IFRS 9 – *Financial Instruments* and are therefore outside the scope of IFRS 15. Most of the Bank's revenues, including net interest income, are not impacted by the adoption of this standard.

IFRS 15 provides a single comprehensive model to use in accounting for revenue arising from contracts with customers. The new revenue recognition model is based on a control approach that differs from the risks and rewards approach applied under previous IFRS. The revenue streams that fall within the scope of IFRS 15 are fee and commission income, and the applicable significant accounting policies are described in the Summary of Significant Accounting Policies section. However, the adoption of IFRS 15 did not have a significant impact on the Bank's revenue recognition accounting policies.

The core principle of IFRS 15 is to recognize revenue when, or as, a performance obligation is satisfied, i.e., when control of a promised service is transferred to a customer and in an amount that reflects the consideration the entity expects to be entitled to receive in exchange for the service. Revenue may therefore be recognized at a point in time, upon completion of the service, or over time as services are provided.

The Bank has elected to apply IFRS 15 using the modified retrospective basis, recognizing the cumulative effect of initially applying the standard as an adjustment to the opening balance of *Retained earnings* without restating comparative figures. Adoption of IFRS 15 resulted in a $4 million decrease to opening *Retained earnings* as at November 1, 2018.

Summary of Significant Accounting Policies

Judgments, Estimates and Assumptions
In preparing consolidated financial statements in accordance with IFRS, management must exercise judgment and make estimates and assumptions that affect the reporting date carrying amounts of assets and liabilities, net income, and related information. Furthermore, certain accounting policies require complex judgments and estimates because they apply to matters that are inherently uncertain, in particular accounting policies applicable to the following: the fair value determination of financial instruments, the impairment of financial assets, the impairment of non-financial assets, pension plans and other post-employment benefits, income taxes, provisions, the consolidation of structured entities, and the classification of debt instruments. Descriptions of these judgments and estimates are provided in each of the notes related thereto in the consolidated financial statements. Actual results could therefore differ from these estimates, in which case the impacts are recognized in the consolidated financial statements of future fiscal periods. The accounting policies described in this note provide greater detail about the use of estimates and assumptions and reliance on judgment.

Basis of Consolidation
Subsidiaries
These consolidated financial statements include all the assets, liabilities, operating results and cash flows of the Bank and its subsidiaries, after elimination of intercompany transactions and balances. Subsidiaries are entities, including structured entities, controlled by the Bank. A structured entity is an entity created to accomplish a narrow and well-defined objective and is designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when voting rights relate solely to administrative tasks and the relevant activities are directed by means of contractual arrangements.

Management must exercise judgment in determining whether the Bank must consolidate an entity. The Bank controls an entity only if the following three conditions are met:

- it has decision-making authority regarding the entity's relevant activities;
- it has exposure or rights to variable returns from its involvement with the entity; and
- it has the ability to use its power to affect the amount of the returns.

When determining decision-making authority, the Bank considers many factors, including the existence and effect of actual and potential voting rights held by the Bank that can be exercised as well as the holding of instruments that are convertible into voting shares. In addition, the Bank must determine whether, as an investor with decision-making rights, it acts as a principal or agent.

Based on these principles, an assessment of control is performed at the inception of a relationship between any entity and the Bank. When performing this assessment, the Bank considers all facts and circumstances, and it must reassess whether it still controls an investee if facts and circumstances indicate that there are changes to one or more of the three conditions of control.

The Bank consolidates the entities it controls from the date on which control is obtained and ceases to consolidate them from the date control ceases. The Bank uses the acquisition method to account for the acquisition of a subsidiary from a third party on the date control is obtained.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

Non-Controlling Interests

Non-controlling interests in subsidiaries represent the equity interests held by third parties in the Bank's subsidiaries and are presented in total *Equity,* separately from *Equity attributable to the Bank's shareholders.* The non-controlling interests' proportionate shares of the net income and other comprehensive income of the Bank's subsidiaries are presented separately in the Consolidated Statement of Income and in the Consolidated Statement of Comprehensive Income, respectively.

With respect to units issued to third parties by mutual funds and certain other funds that are consolidated, they are presented at fair value in *Other liabilities* on the Consolidated Balance Sheet. Lastly, changes in ownership interests in subsidiaries that do not result in a loss of control are recognized as equity transactions. The difference between the adjustment in the carrying value of the non-controlling interest and the fair value of the consideration paid or received is recognized directly in *Equity attributable to the Bank's shareholders*.

Investments in Associates and Joint Ventures

The Bank exercises significant influence over an entity when it has the power to participate in the financial and operating policy decisions of the investee. The Bank has joint control when there's a contractually agreed sharing of control of an arrangement, and joint control exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

Investments in associates, i.e., entities over which the Bank exercises significant influence, and investments in joint ventures, i.e., entities over which the Bank has rights to the net assets and exercises joint control, are accounted for using the equity method. Under the equity method, the investment is initially recorded at cost and, following acquisition, the Bank's shares in the net income and in the other comprehensive income are recognized, respectively, in *Non-interest income* in the Consolidated Statement of Income and in *Other comprehensive income* in the Consolidated Statement of Comprehensive Income. The carrying value of the investment is adjusted by an equivalent amount on the Consolidated Balance Sheet and reduced by distributions received.

Translation of Foreign Currencies

The consolidated financial statements are presented in Canadian dollars, which is the Bank's functional and presentation currency. Each foreign operation of the Bank determines its own functional currency, and the items reported in the financial statements of each foreign operation are measured using that currency.

Monetary items and non-monetary items measured at fair value and denominated in foreign currencies are translated into the functional currency at exchange rates prevailing at the Consolidated Balance Sheet date. Non-monetary items not measured at fair value are translated into the functional currency at historical rates. Revenues and expenses denominated in foreign currencies are translated at the average exchange rates for the period. Translation gains and losses are recognized in *Non-interest income* in the Consolidated Statement of Income, except for equity instruments designated at fair value through other comprehensive income, for which unrealized gains and losses are recorded in *Other comprehensive income* and will not be subsequently reclassified to net income.

In the consolidated financial statements, the assets and liabilities of all foreign operations are translated into the Bank's functional currency at the exchange rates prevailing at the Consolidated Balance Sheet date, whereas the revenues and expenses of such foreign operations are translated into the Bank's functional currency at the average exchange rates for the period. Any goodwill resulting from the acquisition of a foreign operation that does not have the same functional currency as the parent company, and any fair value adjustments to the carrying amounts of assets and liabilities resulting from the acquisition, are treated as assets and liabilities of the foreign operation and translated at the exchange rates prevailing at the Consolidated Balance Sheet date. Unrealized translation gains and losses relating to foreign operations, along with the impact of hedges and income taxes on the related results, are presented in *Other comprehensive income*. On disposal of a foreign operation, any accumulated translation gains and losses, along with the related hedges, recorded in the *Accumulated other comprehensive income* item of this foreign operation, are reclassified to *Non-interest income* in the Consolidated Statement of Income.

Classification and Measurement of Financial Instruments

At initial recognition, all financial instruments are recorded at fair value on the Consolidated Balance Sheet. At initial recognition, financial assets must be classified as subsequently measured at fair value through other comprehensive income, at amortized cost, or at fair value through profit or loss. The Bank determines the classification based on the contractual cash flow characteristics of the financial assets and on the business model it uses to manage these financial assets. At initial recognition, financial liabilities are classified as subsequently measured at amortized cost or as at fair value through profit or loss.

For the purpose of classifying a financial asset, the Bank must determine whether the contractual cash flows associated with the financial asset are solely payments of principal and interest on the principal amount outstanding. The principal is generally the fair value of the financial asset at initial recognition. The interest consists of consideration for the time value of money, for the credit risk associated with the principal amount outstanding during a particular period, and for other basic lending risks and costs as well as of a profit margin. If the Bank determines that the contractual cash flows associated with a financial asset are not solely payments of principal and interest, the financial assets must be classified as measured at fair value through profit or loss.

When classifying financial assets, the Bank determines the business model used for each portfolio of financial assets that are managed together to achieve a same business objective. The business model reflects how the Bank manages its financial assets and the extent to which the financial asset cash flows are generated by the collection of the contractual cash flows, the sale of the financial assets, or both. The Bank determines the business model using scenarios that it reasonably expects to occur. Consequently, the business model determination is a matter of fact and requires the use of judgment and consideration of all the relevant evidence available at the date of determination.

A financial asset portfolio falls within a "hold to collect" business model when the Bank's primary objective is to hold these financial assets in order to collect contractual cash flows from them and not to sell them. When the Bank's objective is achieved both by collecting contractual cash flows and by selling the financial assets, the financial asset portfolio falls within a "hold to collect and sell" business model. In this type of business model, collecting contractual cash flows and selling financial assets are both integral components to achieving the Bank's objective for this financial asset portfolio. Financial assets are mandatorily measured at fair value through profit or loss if they do not fall within either a "hold to collect" business model or a "hold to collect and sell" business model.

Financial Instruments Designated at Fair Value Through Profit or Loss

A financial asset may be irrevocably designated at fair value through profit or loss at initial recognition if certain conditions are met. The Bank may apply this option if, consistent with a documented risk management strategy, doing so eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise from measuring financial assets or liabilities or recognizing gains and losses on them on different bases and if the fair values are reliable. Financial assets thus designated are recognized at fair value, and any change in fair value is recorded in *Non-interest income* in the Consolidated Statement of Income. Interest income arising from these financial instruments designated at fair value through profit or loss is recorded in *Net interest income* in the Consolidated Statement of Income.

A financial liability may be irrevocably designated at fair value through profit or loss when it is initially recognized. Financial liabilities thus designated are recognized at fair value, and any changes in fair value attributable to changes in the Bank's own credit risk are recognized in *Other comprehensive income* unless these changes offset the amounts recognized in *Net income.* Fair value changes not attributable to the Bank's own credit risk are recognized in *Non-interest income* in the Consolidated Statement of Income. The amounts recognized in *Other comprehensive income* will not be subsequently reclassified to *Net income*. Interest expense arising from these financial liabilities designated at fair value through profit or loss is recorded in the *Net interest income* item of the Consolidated Statement of Income. The Bank may use this option in the following cases:

- If, consistent with a documented risk management strategy, using this option allows the Bank to eliminate or significantly reduce a measurement or recognition inconsistency that would otherwise arise from measuring financial assets or liabilities on different bases, and if the fair values are reliable.
- If a group of financial assets and financial liabilities to which an instrument belongs is managed and its performance is evaluated on a fair value basis, in accordance with the Bank's documented risk management or investment strategy, and information is provided on that basis to senior management. Consequently, the Bank may use this option if it has implemented a documented risk management strategy to manage a group of financial instruments together on the fair value basis, if it can demonstrate that significant financial risks are eliminated or significantly reduced, and if the fair values are reliable.
- For hybrid financial instruments with one or more embedded derivatives that would significantly modify the cash flows of the financial instruments and that would otherwise be bifurcated and accounted for separately.

Financial Instruments Designated at Fair Value Through Other Comprehensive Income

At initial recognition, an investment in an equity instrument that is neither held for trading nor a contingent consideration recognized in a business combination may be irrevocably designated as being at fair value through other comprehensive income. In accordance with this designation, any change in fair value is recognized in *Other comprehensive income* with no subsequent reclassification to net income. Dividend income is recorded in *Interest income* in the Consolidated Statement of Income.

Securities Measured at Fair Value Through Other Comprehensive Income

Securities measured at fair value through other comprehensive income include: (i) debt securities for which the contractual terms of the financial asset give rise, on specified dates, to cash flows that are solely payments of principal and interest on the principal amount outstanding and that fall within a "hold to collect and sell" business model and (ii) equity securities designated at fair value through other comprehensive income with no subsequent reclassification of gains and losses to net income.

The Bank recognizes securities transactions at fair value through other comprehensive income on the trade date, and the transaction costs are capitalized. Interest income and dividend income are recognized in *Interest income* in the Consolidated Statement of Income.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

Debt Securities Measured at Fair Value Through Other Comprehensive Income
Debt securities measured at fair value through other comprehensive income are recognized at fair value. Unrealized gains and losses are recognized, net of expected credit losses and income taxes, and provided that they are not hedged by derivative financial instruments in a fair value hedging relationship, in *Other comprehensive income*. When the securities are sold, realized gains or losses, determined on an average cost basis, are reclassified to *Non-interest income – Gains (losses) on non-trading securities, net* in the Consolidated Statement of Income. Premiums, discounts and related transaction costs are amortized over the expected life of the instrument to interest income using the effective interest rate method.

Equity Securities Designated at Fair Value Through Other Comprehensive Income
Equity securities designated at fair value through other comprehensive income are recognized at fair value. Unrealized gains and losses are presented, net of income taxes, in *Other comprehensive income* with no subsequent reclassification of realized gains and losses to net income. Transaction costs incurred upon the purchase of such equity securities are not reclassified to net income upon the sale of the securities.

Securities Measured at Amortized Cost
Securities measured at amortized cost include debt securities for which the contractual terms give rise, on specified dates, to cash flows that are solely payments of principal and interest on the principal amount outstanding and that fall within a “hold to collect” business model.

The Bank recognizes these securities transactions at fair value on the trade date, and the transaction costs are capitalized. After initial recognition, debt securities in this category are recorded at amortized cost. Interest income is recognized in *Interest income* in the Consolidated Statement of Income. Premiums, discounts and related transaction costs are amortized over the expected life of the instrument to interest income using the effective interest rate method. Securities measured at amortized cost are presented net of allowances for credit losses on the Consolidated Balance Sheet.

Securities Measured at Fair Value Through Profit or Loss
Securities not classified or designated as measured at fair value through other comprehensive income or at amortized cost are classified as measured at fair value through profit or loss.

Securities measured at fair value through profit or loss include (i) securities held for trading, (ii) securities designated at fair value through profit or loss, (iii) all equity securities other than those designated as measured at fair value through other comprehensive income with no subsequent reclassifications of gains and losses to net income, and (iv) debt securities for which the contractual cash flows are not solely payments of principal and any interest on the principal amount outstanding.

The Bank recognizes securities transactions at fair value through profit or loss on the settlement date on the Consolidated Balance Sheet. Changes in fair value between the trade date and the settlement date are recognized in *Non-interest income* in the Consolidated Statement of Income.

Securities at fair value through profit or loss are recognized at fair value. Interest income, any transaction costs, as well as realized and unrealized gains or losses on securities held for trading are recognized in *Non-interest income – Trading revenues (losses)* in the Consolidated Statement of Income. Dividend income is recorded in *Interest income* in the Consolidated Statement of Income. Interest income on securities designated at fair value through profit or loss is recorded in *Interest income* in the Consolidated Statement of Income. Realized and unrealized gains or losses on these securities are recognized in *Non-interest income – Trading revenues (losses)* in the Consolidated Statement of Income.

Realized and unrealized gains or losses on equity securities at fair value through profit or loss, other than those held for trading, as well as debt securities for which the contractual cash flows are not solely payments of principal and interest on the principal amount outstanding, are recognized in *Non-interest income – Gains (losses) on non-trading securities, net* in the Consolidated Statement of Income. The dividend and interest income on these financial assets are recognized in *Interest income* in the Consolidated Statement of Income.

Securities Purchased Under Reverse Repurchase Agreements, Obligations Related to Securities Sold Under Repurchase Agreements, and Securities Borrowed and Loaned
The Bank recognizes these transactions at amortized cost using the effective interest rate method, except when they are designated at fair value through profit or loss and are recorded at fair value. These transactions are held within a business model whose objective is to collect contractual cash flows, i.e., cash flows that are solely payments of principal and interest on the principal amount outstanding. Securities sold under repurchase agreements remain on the Consolidated Balance Sheet, whereas securities purchased under reverse repurchase agreements are not recognized. Reverse repurchase agreements and repurchase agreements are treated as collateralized lending and borrowing transactions.

The Bank also borrows and lends securities. Securities loaned remain on the Consolidated Balance Sheet while securities borrowed are not recognized. As part of these transactions, the Bank pledges or receives collateral in the form of cash or securities. Collateral pledged in the form of securities remains on the Consolidated Balance Sheet. Collateral received in the form of securities is not recognized on the Consolidated Balance Sheet. Collateral pledged or received in the form of cash is recognized in financial assets or liabilities on the Consolidated Balance Sheet.

When the collateral is pledged or received in the form of cash, the interest income and expense are recorded in *Net interest income* in the Consolidated Statement of Income.

Loans

Loans Measured at Amortized Cost

Loans classified as measured at amortized cost include loans originated or purchased by the Bank that are not classified as measured at fair value through profit or loss or designated at fair value through profit or loss. These loans are held within a business model whose objective is to collect contractual cash flows, i.e., cash flows that are solely payments of principal and interest on the principal amount outstanding. All loans originated by the Bank are recognized when cash is advanced to a borrower. Purchased loans are recognized when the cash consideration is paid by the Bank.

All loans are initially recognized at fair value plus directly attributable costs and are subsequently measured at amortized cost using the effective interest rate method, net of an allowance for expected credit losses. For purchased performing loans, the acquisition date fair value adjustment on each loan is amortized to interest income over the expected remaining life of the loan using the effective interest rate method. For purchased credit-impaired loans, the acquisition date fair value adjustment on each loan consists of management's estimate of the shortfall of principal and interest cash flows that the Bank expects to collect and of the time value of money. The time value of money component of the fair value adjustment is amortized to interest income over the remaining life of the loan using the effective interest rate method. Loans are presented net of allowances for credit losses on the Consolidated Balance Sheet.

Loans Measured at Fair Value Through Profit or Loss

Loans classified as measured at fair value through profit or loss, loans designated at fair value through profit or loss, and loans for which the contractual cash flows are not solely payments of principal and interest on the principal amount outstanding are recognized at fair value on the Consolidated Balance Sheet. The interest income on loans at fair value through profit or loss is recorded in *Interest income* in the Consolidated Statement of Income.

Changes in the fair value of loans classified as at fair value through profit or loss and loans designated at fair value through profit or loss are recognized in *Non-interest income – Trading revenues (losses)* in the Consolidated Statement of Income. With respect to loans whose contractual cash flows are not solely payments of principal and interest on the principal amount outstanding, changes in fair value are recognized in *Non-interest income – Other* in the Consolidated Statement of Income.

Reclassification of Financial Assets

A financial asset, other than a derivative financial instrument or a financial asset that, at initial recognition, was designated as measured at fair value through profit or loss, is reclassified only in rare situations, i.e., when there is a change in the business model used to manage the financial asset. The reclassification is applied prospectively from the reclassification date.

Establishing Fair Value

The fair value of a financial instrument is the price that would be received to sell a financial asset or paid to transfer a financial liability in an orderly transaction in the principal market at the measurement date under current market conditions (i.e., an exit price).

Unadjusted quoted prices in active markets, based on bid prices for financial assets and offered prices for financial liabilities, provide the best evidence of fair value. A financial instrument is considered quoted in an active market when prices in exchange, dealer, broker or principal-to-principal markets are accessible at the measurement date. An active market is one where transactions occur with sufficient frequency and volume to provide quoted prices on an ongoing basis.

When there is no quoted price in an active market, the Bank uses another valuation technique that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs. The chosen valuation technique incorporates all the factors that market participants would consider when pricing a transaction. Judgment is required when applying a large number of acceptable valuation techniques and estimates to determine fair value. The estimated fair value reflects market conditions on the valuation date and, consequently, may not be indicative of future fair value.

The best evidence of the fair value of a financial instrument at initial recognition is the transaction price, i.e., the fair value of the consideration received or paid. If there is a difference between the fair value at initial recognition and the transaction price, and the fair value is determined using a valuation technique based on observable market inputs or, in the case of a derivative, if the risks are fully offset by other contracts entered into with third parties, this difference is recognized in the Consolidated Statement of Income. In other cases, the difference between the fair value at initial recognition and the transaction price is deferred on the Consolidated Balance Sheet. The amount of the deferred gain or loss is recognized over the term of the financial instrument. The unamortized balance is immediately recognized in net income when (i) observable market inputs can be obtained and support the fair value of the transaction, (ii) the risks associated with the initial contract are substantially offset by other contracts entered into with third parties, (iii) the gain or loss is realized through a cash receipt or payment, or (iv) the transaction matures or is cancelled before maturity.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

In certain cases, measurement adjustments are recognized to address factors that market participants would use at the measurement date to determine fair value but that are not included in the measurement technique due to system limitations or uncertainty surrounding the measure. These factors include, but are not limited to, the unobservable nature of inputs used in the valuation model, assumptions about risk such as market risk, credit risk, or risk related to the valuation model, and future administration costs. The Bank may also consider market liquidity risk when determining the fair value of financial instruments when it believes these instruments could be disposed of for a consideration below the fair value otherwise determined due to a lack of market liquidity or an insufficient volume of transactions in a given market.

As permitted when certain criteria are met, the Bank has elected to determine fair value based on net exposure to credit risk or market risk for certain portfolios of financial instruments, mainly derivative financial instruments.

Impairment of Financial Assets

At the end of each reporting period, the Bank applies a three-stage impairment approach to measure the expected credit losses (ECL) on all debt instruments measured at amortized cost or at fair value through other comprehensive income and on loan commitments and financial guarantees that are not measured at fair value. The ECL model is forward looking. Measurement of ECLs at each reporting period reflects reasonable and supportable information about past events, current conditions, and forecasts of future events and economic conditions.

Determining the Stage

The ECL three-stage impairment approach is based on the change in the credit quality of financial assets since initial recognition. If, at the reporting date, the credit risk of non-impaired financial instruments has not increased significantly since initial recognition, these financial instruments are classified in Stage 1, and an allowance for credit losses that is measured, at each reporting date, in an amount equal to 12-month expected credit losses is recorded. When there is a significant increase in credit risk since initial recognition, these non-impaired financial instruments are migrated to Stage 2, and an allowance for credit losses that is measured, at each reporting date, in an amount equal to lifetime expected credit losses is recorded. In subsequent reporting periods, if the credit risk of the financial instrument improves such that there is no longer a significant increase in credit risk since initial recognition, the ECL model requires reverting to Stage 1, i.e., recognition of 12-month expected credit losses. When one or more events that have a detrimental impact on the estimated future cash flows of a financial asset have occurred, the financial asset is considered credit-impaired and is migrated to Stage 3, and an allowance for credit losses equal to lifetime expected losses continues to be recorded or the financial asset is written off. Interest income is calculated on the gross carrying amount for financial assets in Stages 1 and 2 and on the net carrying amount for financial assets in Stage 3.

Assessment of Significant Increase in Credit Risk

In determining whether credit risk has increased significantly, the Bank uses an internal credit risk grading system, external risk ratings, and forward-looking information to assess deterioration in credit quality of a financial instrument. To assess whether or not the credit risk of a financial instrument has increased significantly, the Bank compares the probability of default (PD) occurring over its expected life as at the reporting date with the PD occurring over its expected life on the date of initial recognition and considers reasonable and supportable information indicative of a significant increase in credit risk since initial recognition. The Bank includes relative and absolute thresholds in the definition of significant increase in credit risk and a backstop of 30 days past due. All financial instruments that are 30 days past due are migrated to Stage 2 even if other metrics do not indicate that a significant increase in credit risk has occurred. The assessment of a significant increase in credit risk requires significant judgment.

Measurement of Expected Credit Losses

ECLs are measured as the probability-weighted present value of all expected cash shortfalls over the remaining expected life of the financial instrument, and reasonable and supportable information about past events, current conditions and forecasts of future events and economic conditions is considered. The estimation and application of forward-looking information requires significant judgment. The cash shortfall is the difference between all contractual cash flows owed to the Bank and all cash flows that the Bank expects to receive.

The measurement of ECLs is primarily based on the product of the financial instrument's PD, loss given default (LGD), and exposure at default (EAD). Forward-looking macroeconomic factors such as unemployment rates, housing price indices, interest rates, and GDP are incorporated into the risk parameters. The estimate of expected credit losses reflects an unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes. The Bank incorporates three forward-looking macroeconomic scenarios in its ECL calculation process: a base scenario, an upside scenario and a downside scenario. Probability weights are attributed to each scenario. The scenarios and probability weights are reassessed quarterly and are subject to management review. The Bank applies experienced credit judgment to adjust the modelled ECL results when it becomes evident that known or expected risk factors and information were not considered in the credit risk rating and modelling process.

ECLs for all financial instruments are recognized in *Provisions for credit losses* in the Consolidated Statement of Income. In the case of debt instruments measured at fair value through other comprehensive income, ECLs are recognized in *Provisions for credit losses* in the Consolidated Statement of Income, and a corresponding amount is recognized in *Other comprehensive income* with no reduction in the carrying amount of the asset on the Consolidated Balance Sheet. As for debt instruments measured at amortized cost, they are presented net of the related allowance for credit losses on the Consolidated Balance Sheet. Allowances for credit losses for off-balance-sheet credit exposures that are not measured at fair value are included in *Other liabilities* on the Consolidated Balance Sheet.

Purchased or Originated Credit-Impaired Financial Assets
On initial recognition of a financial asset, the Bank determines whether the asset is credit-impaired. For financial assets that are credit-impaired upon purchase or origination, the lifetime expected credit losses are reflected in the initial fair value. In subsequent reporting periods, the Bank recognizes only the cumulative changes in these lifetime ECLs since initial recognition as an allowance for credit losses. The Bank recognizes changes in ECLs in *Provisions for credit losses* in the Consolidated Statement of Income, even if the lifetime ECLs are less than ECLs that were included in the estimated cash flows on initial recognition.

Definition of Default
The definition of default used by the Bank to measure ECLs and transfer financial instruments between stages is consistent with the definition of default used for internal credit risk management purposes. The Bank considers a financial asset, other than a credit card receivable, to be credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred or when contractual payments are 90 days past due. Credit card receivables are considered credit-impaired and are fully written off at the earlier of the following: when a notice of bankruptcy is received, a settlement proposal is made, or contractual payments are 180 days past due.

Write-offs
A financial asset and its related allowance for credit losses are normally written off in whole or in part when the Bank considers the probability of recovery to be non-existent and when all guarantees and other remedies available to the Bank have been exhausted or if the borrower is bankrupt or winding up and balances owing are not likely to be recovered.

Derecognition of Financial Assets and Securitization
A financial asset is considered for derecognition when the Bank has transferred contractual rights to receive the cash flows or assumed an obligation to transfer these cash flows to a third party. The Bank derecognizes a financial asset when it considers that substantially all the risks and rewards of ownership of the asset have been transferred or when the contractual rights to the cash flows of the financial asset expire. When the Bank considers that it has retained substantially all the risks and rewards of ownership of the transferred asset, it continues to recognize the financial asset and, if applicable, recognizes a financial liability on the Consolidated Balance Sheet. If, due to a derivative financial instrument, the transfer of a financial asset does not result in derecognition, the derivative financial instrument is not recognized on the Consolidated Balance Sheet.

When the Bank has neither transferred nor retained substantially all the risks and rewards of ownership of the financial asset, it derecognizes the financial asset it no longer controls. Any rights and obligations retained following the asset transfer are recognized separately as an asset or liability. If the Bank retains control of the financial asset, it continues to recognize the asset to the extent of its continuing involvement in that asset, i.e., to the extent to which it is exposed to changes in the value of the transferred asset.

In order to diversify its funding sources, the Bank participates in two Canada Mortgage and Housing Corporation (CMHC) securitization programs: the Mortgage-Backed Securities Program under the *National Housing Act* (Canada) (NHA) and Canada Mortgage Bond (CMB) program. Under the first program, the Bank issues NHA securities backed by insured residential mortgages and, under the second, the Bank sells NHA securities to Canada Housing Trust (CHT). As part of these transactions, the Bank retains substantially all the risks and rewards related to ownership of the mortgage loans sold. Therefore, the insured mortgage loans securitized under the CMB program continue to be recognized in the *Loans* item of the Bank's Consolidated Balance Sheet and the liabilities for the considerations received from the transfer are recognized in *Liabilities related to transferred receivables* on the Consolidated Balance Sheet. Moreover, insured mortgage loans securitized and retained by the Bank continue to be recognized in *Loans* on the Consolidated Balance Sheet.

Derecognition of Financial Liabilities
A financial liability is derecognized when the obligation is discharged, cancelled or expires. The difference between the carrying value of the financial liability transferred and the consideration paid is recognized in the Consolidated Statement of Income.

Cash and Deposits With Financial Institutions
Cash and deposits with financial institutions consist of cash and cash equivalents, amounts pledged as collateral as well as amounts placed in escrow. Cash comprises cash and bank notes. Cash equivalents consist of deposits with the Bank of Canada, deposits with financial institutions, including net receivables related to cheques and other items in the clearing process as well as the net amount of cheques and other items in transit.

Acceptances and Customers' Liability Under Acceptances
The potential liability of the Bank under acceptances is recorded as a customer commitment liability on the Consolidated Balance Sheet. The Bank's potential recourse vis à vis clients is recorded as an equivalent offsetting asset. Fees are recorded in *Non-interest income* in the Consolidated Statement of Income.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

Obligations Related to Securities Sold Short
This financial liability represents the Bank's obligation to deliver the securities it sold but did not own at the time of sale. Obligations related to securities sold short are recorded at fair value and presented as liabilities on the Consolidated Balance Sheet. Realized and unrealized gains and losses are recognized in *Non-interest income* in the Consolidated Statement of Income.

Derivative Financial Instruments
In the normal course of business, the Bank uses derivative financial instruments to meet the needs of its clients, to generate trading activity revenues, and to manage its exposure to interest rate risk, foreign exchange risk, credit risk and other market risks.

All derivative financial instruments are measured at fair value on the Consolidated Balance Sheet. Derivative financial instruments with a positive fair value are included in assets, and derivative financial instruments with a negative fair value are included in liabilities on the Consolidated Balance Sheet. Where there are offsetting financial assets and financial liabilities, the net fair value of certain derivative financial instruments is reported either as an asset or as a liability.

<u>Embedded Derivative Financial Instruments</u>
An embedded derivative is a component of a hybrid contract that also includes a non-derivative host, the effect being that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative. An embedded derivative causes some or all of the cash flows that otherwise would be required by the contract to be modified according to a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to one of the parties to the contract.

A derivative embedded in a financial liability is separated from the host contract and treated as a separate derivative if, and only if, the following three conditions are met: the economic characteristics and risks of the embedded derivative are not closely related to those of the host contract, the embedded derivative is a separate instrument that meets the definition of a derivative financial instrument, and the hybrid contract is not measured at fair value through profit or loss.

Embedded derivatives that are separately accounted for are measured at fair value on the Consolidated Balance Sheet, and subsequent changes in fair value are recognized in *Non-interest income* in the Consolidated Statement of Income. In general, all embedded derivatives are presented on a combined basis with the host contract. However, certain embedded derivatives that are separated from the host contract are presented in *Derivative financial instruments* on the Consolidated Balance Sheet.

<u>Held-for-Trading Derivative Financial Instruments</u>
Derivative financial instruments are recognized at fair value, and the realized and unrealized gains and losses (including interest income and expense) are recorded in *Non-interest income* in the Consolidated Statement of Income.

<u>Derivative Financial Instruments Designated as Hedging Instruments</u>
Policy
The purpose of a hedging transaction is to modify the Bank's exposure to one or more risks by creating an offset between changes in the fair value of, or the cash flows attributable to, the hedged item and the hedging instrument. Hedge accounting ensures that offsetting gains, losses, revenues and expenses are recognized in the Consolidated Statement of Income in the same period or periods.

Documenting and Assessing Effectiveness
The Bank designates and formally documents each hedging relationship, at its inception, by detailing the risk management objective and the hedging strategy. The documentation identifies the specific asset, liability, or cash flows being hedged, the related hedging instrument, the nature of the specific risk exposure or exposures being hedged, the intended term of the hedging relationship, and the method for assessing the effectiveness or ineffectiveness of the hedging relationship. At the inception of the hedging relationship, and for every financial reporting period for which the hedge has been designated, the Bank ensures that the hedging relationship is highly effective and consistent with its originally documented risk management objective and strategy. When a hedging relationship meets the hedge accounting requirements, it is designated as either a fair value hedge, a cash flow hedge or a foreign exchange hedge of a net investment in a foreign operation.

Fair Value Hedges
For fair value hedges, the Bank mainly uses interest rate swaps to hedge changes in the fair value of a hedged item. The carrying amount of the hedged item is adjusted based on the effective portion of the gains or losses attributable to the hedged risk, which are recognized in the Consolidated Statement of Income, as well as the change in the fair value of the hedging instrument. The resulting ineffective portion is recognized in *Non-interest income* in the Consolidated Statement of Income.

The Bank prospectively discontinues hedge accounting if the hedging instrument is sold or expires or if the hedging relationship no longer qualifies for hedge accounting or if the Bank revokes the designation. When the designation is revoked, the hedged item is no longer adjusted to reflect changes in fair value, and the amounts previously recorded as cumulative adjustments with respect to the effective portion of gains and losses attributable to the hedged risk are amortized using the effective interest rate method and recognized in the Consolidated Statement of Income over the remaining useful life of the hedged item. If the hedged item is sold or terminated before maturity, the cumulative adjustments with respect to the effective portion of gains and losses attributable to the hedged risk are immediately recorded in the Consolidated Statement of Income.

Cash Flow Hedges
For cash flow hedges, the Bank mainly uses interest rate swaps and total return swaps to hedge variable cash flows attributable to the hedged risk related to a financial asset or liability (or to a group of financial assets or liabilities). The effective portion of changes in fair value of the hedging instrument is recognized in *Other comprehensive income* and the ineffective portion in *Non-interest income* in the Consolidated Statement of Income.

The amounts previously recorded in *Accumulated other comprehensive income* are reclassified to the Consolidated Statement of Income of the period or periods during which the cash flows of the hedged item affect the Consolidated Statement of Income. If the hedging instrument is sold or expires or if the hedging relationship no longer qualifies for hedge accounting or if the Bank cancels that designation, then the amounts previously recognized in *Accumulated other comprehensive income* are reclassified to the Consolidated Statement of Income in the period or periods during which the cash flows of the hedged item affect the Consolidated Statement of Income.

Hedges of Net Investments in Foreign Operations
Derivative and non-derivative financial instruments are used to hedge foreign exchange risk related to investments made in foreign operations whose functional currency is not the Canadian dollar. The effective portion of the gains and losses on the hedging instrument is recognized in *Other comprehensive income* and the ineffective portion in *Non-interest income* in the Consolidated Statement of Income. Upon the total or partial sale of a net investment in a foreign operation, amounts reported in *Accumulated other comprehensive income* are reclassified, in whole or in part, to *Non-interest income* in the Consolidated Statement of Income.

Offsetting of Financial Assets and Liabilities
Financial assets and liabilities are offset, and the net amount is presented on the Consolidated Balance Sheet when the Bank has a legally enforceable right to set off the recognized amounts and intends to settle on a net basis or to realize the asset and settle the liability simultaneously.

Premises and Equipment
Premises and equipment, except for land and the head office building under construction, are recognized at cost less accumulated amortization and accumulated impairment losses. Land and the head office building under construction are recorded at cost less any impairment losses.

Premises and equipment and the significant components of a building that have different useful lives or that provide economic benefits at a different pace are systematically amortized over their useful lives. Amortization methods and useful lives are reviewed on an annual basis. The amortization expense is recorded in *Non-interest expenses* in the Consolidated Statement of Income.

	Method	Useful life
Significant components of a building		
Exterior design	Straight-line	20 years
Interior design, roofing and electromechanical system	Straight-line	30 years
Structure	Straight-line	75 years
Other buildings	5% declining balance	
Computer equipment	Straight-line	3-4 years
Equipment and furniture	Straight-line	1-8 years
Leasehold improvements	Straight-line	(1)

(1) The average amortization period is 15 years, determined using the lesser of the useful life or the lease term plus the first renewal option.

Goodwill
The Bank uses the acquisition method to account for business combinations. The consideration transferred in a business combination is measured at the acquisition-date fair value, and the transaction costs related to the acquisition are expensed as incurred. When the Bank acquires control of a business, all of the identifiable assets and liabilities of the acquiree, including intangible assets, are recorded at fair value. The interests previously held in the acquiree are also measured at fair value. Goodwill represents the excess of the purchase consideration and all previously held interests over the fair value of the identifiable net assets of the acquiree. If the fair value of the identifiable net assets exceeds the purchase consideration and all previously held interests, the difference is immediately recognized as a gain on a bargain purchase.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

Non-controlling interests in the net assets of consolidated subsidiaries are identified separately from the Bank's ownership interest and can be initially measured at either fair value or at the non-controlling interest's proportionate share of the acquiree's identifiable net assets. The measurement basis is selected on a case-by-case basis. Following an acquisition, non-controlling interests consist of the value assigned to those interests at initial recognition plus the non-controlling interests' share of changes in equity since the date of the acquisition.

Intangible Assets

Intangible Assets With Finite Useful Lives

Software and certain other intangible assets are recognized at cost less accumulated amortization and accumulated impairment losses. These intangible assets are systematically amortized on a straight-line basis over their useful lives, which vary between four and ten years. The amortization expense is recorded in *Non-interest expenses* in the Consolidated Statement of Income.

Intangible Assets With Indefinite Useful Lives

The Bank's intangible assets with indefinite useful lives come from the acquisition of subsidiaries or groups of assets and consist of management contracts and a trademark. They are recognized at the acquisition-date fair value. The management contracts are for the management of open-ended funds. At the end of each reporting period, the Bank reviews the useful lives to determine whether events and circumstances continue to support an indefinite useful life assessment. Intangible assets are deemed to have an indefinite useful life following an examination of all relevant factors, in particular: (a) the contracts do not have contractual maturities; (b) the stability of the business segment to which the intangible assets belong; (c) the Bank's capacity to control the future economic benefits of the intangible assets; and (d) the continued economic benefits generated by the intangible assets.

Impairment of Non-Financial Assets

Premises and equipment and intangible assets with finite useful lives are tested for impairment when events or changes in circumstances indicate that their carrying value may not be recoverable. At the end of each reporting period, the Bank determines whether there is an indication that premises and equipment or intangible assets with finite useful lives may be impaired. Goodwill and intangible assets that are not yet available for use or that have indefinite useful lives are tested for impairment annually or more frequently if there is an indication that the asset might be impaired.

An asset is tested for impairment by comparing its carrying amount with its recoverable amount. The recoverable amount must be estimated for the individual asset. Where it is not possible to estimate the recoverable amount of an individual asset, the recoverable amount of the cash-generating unit (CGU) to which the asset belongs will be determined. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The Bank uses judgment to identify CGUs.

An asset's recoverable amount is the higher of fair value less costs to sell and the value in use of the asset or CGU. Value in use is the present value of expected future cash flows from the asset or CGU. The recoverable amount of the CGU is determined using valuation models that consider various factors such as projected future cash flows, discount rates, and growth rates. The use of different estimates and assumptions in applying the impairment tests could have a significant impact on income.

Corporate assets, such as the head office building and computer equipment, do not generate cash inflows that are largely independent of the cash inflows generated by other assets or groups of assets. Therefore, the recoverable amount of an individual corporate asset cannot be determined unless management has decided to dispose of the asset. However, if there is an indication that a corporate asset may be impaired, the recoverable amount is determined for the CGU or group of CGUs to which the corporate asset belongs, and that recoverable amount is compared with the carrying amount of this CGU or group of CGUs.

Goodwill is always tested for impairment at the level of a CGU or group of CGUs. For impairment testing purposes, from the acquisition date, goodwill resulting from a business combination must be allocated to the CGU or group of CGUs expected to benefit from the synergies of the business combination. Each CGU or group of CGUs to which goodwill is allocated must represent the lowest level for which the goodwill is monitored internally at the Bank and must not be larger than an operating segment. The allocation of goodwill to a CGU or group of CGUs involves management's judgment. If an impairment loss is to be recognized, the Bank does so by first reducing the carrying amount of goodwill allocated to the CGU or group of CGUs and then reducing the carrying amounts of the other assets of the CGU or group of CGUs in proportion to the carrying amount of each asset in the CGU or group of CGUs.

If the recoverable amount of an asset or a CGU is less than its carrying amount, the carrying amount is reduced to its recoverable amount and an impairment loss is recognized in *Non-interest expenses* in the Consolidated Statement of Income. An impairment loss recognized in prior periods for an asset other than goodwill must be reversed if, and only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment was recognized. If this is the case, the carrying amount of the asset is increased, given that the impairment loss was reversed, but shall not exceed the carrying amount that would have been determined, net of amortization, had no impairment loss been recognized for this asset in previous years.

Leases

A lease is an agreement whereby the lessor conveys to the lessee the right to use an asset for an agreed period of time in return for a payment or series of payments. A finance lease is a lease that transfers substantially all the risks and rewards incidental to ownership of the leased asset to the lessee. Title may or may not eventually be transferred. An operating lease is a lease other than a finance lease. The Bank primarily enters into operating leases.

When the Bank is the lessee under an operating lease, the rental expense is recognized on a straight-line basis over the lease term in *Non-interest expenses* in the Consolidated Statement of Income. When the Bank is the lessor, the lease assets remain on the Consolidated Balance Sheet and are reported in premises and equipment, and the rental income is recognized net of related expenses in *Non-interest income* in the Consolidated Statement of Income.

Provisions

Provisions are liabilities of uncertain timing and amount. A provision is recognized when the Bank has a present obligation (legal or constructive) arising from a past event, when it is probable that an outflow of economic resources will be required to settle the obligation and when the amount of the obligation can be reliably estimated. Provisions are based on the Bank's best estimates of the economic resources required to settle the present obligation, given all relevant risks and uncertainties, and, when it is significant, the effect of the time value of money. Provisions are reviewed at the end of each reporting period. Provisions are presented in *Other liabilities* on the Consolidated Balance Sheet.

Interest Income and Expense

Interest income and expense, except for the interest income on securities classified as at fair value through profit or loss, are recognized in *Net interest income* and calculated using the effective interest rate method.

The effective interest rate is the rate that exactly discounts estimated future cash inflows and outflows through the expected life of the financial asset or financial liability to the gross carrying amount of a financial asset or to the amortized cost of a financial liability. When calculating the effective interest rate, the Bank estimates expected cash flows by considering all the contractual terms of the financial instrument but does not consider expected credit losses. The calculation includes all fees and points paid or received between the parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts. Interest income is calculated by applying the effective interest rate to the gross carrying amount of a financial asset except for purchased or originated credit-impaired financial assets and financial assets that were not impaired upon their purchase or origination but became impaired thereafter. For purchased or originated credit-impaired financial assets, the Bank applies the credit-adjusted effective interest rate to the amortized cost of the financial asset from initial recognition. The credit-adjusted effective interest rate reflects expected credit losses. As for loans that have subsequently become credit-impaired, interest income is calculated by applying the effective interest rate to the net carrying amount (net of allowances for credit losses) rather than to the carrying amount.

Loan origination fees, including commitment, restructuring, and renegotiation fees, are considered an integral part of the yield earned on the loan. They are deferred and amortized using the effective interest rate method, and the amortization is recognized in *Interest income* over the term of the loan. Direct costs for originating a loan are netted against the loan origination fees. If it is likely that a commitment will result in a loan, commitment fees receive the same accounting treatment, i.e., they are deferred and amortized using the effective interest rate method and the amortization is recognized in *Interest income* over the term of the loan. Otherwise, they are recorded in *Non-interest income* over the term of the commitment.

Loan syndication fees are recorded in *Non-interest income* unless the yield on the loan retained by the Bank is less than that of other comparable lenders involved in the financing. In such cases, an appropriate portion of the fees is deferred and amortized using the effective interest rate method, and the amortization is recognized in *Interest income* over the term of the loan. Certain mortgage loan prepayment fees are recognized in *Interest income* in the Consolidated Statement of Income when earned.

Dividend Income

Dividends from an equity instrument are recognized in *Net interest income* in the Consolidated Statement of Income when the Bank's right to receive payment is established.

Fee and Commission Income

Fee and commission income is recognized when, or as, a performance obligation is satisfied, i.e., when control of a promised service is transferred to a customer and in an amount that reflects the consideration that the entity expects to be entitled to receive in exchange for the service. The revenue may therefore be recognized at a point in time, upon completion of the service, or over time as services are provided.

The Bank must also determine whether its performance obligation is to provide the service itself or to arrange for another party to provide the service (in other words, whether the Bank is acting as a principal or agent). A principal may itself satisfy its performance obligation to provide the specified good or service or it may engage another party to satisfy some or all of the performance obligation on its behalf. A principal also has the primary responsibility for fulfilling the promise to provide the good or service to the customer and has discretion in establishing the price for the service. If the Bank is acting as a principal, revenue is recognized on a gross basis in an amount corresponding to the consideration to which the Bank expects to be entitled. If the Bank is acting as an agent, then revenue is recognized net of the service fees and other costs incurred in relation to the commission and fees earned.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

Underwriting and Advisory Fees
Underwriting and advisory fees include underwriting fees, financial advisory fees, and loan syndication fees. These fees are mainly earned in the Financial Markets segment and are recognized at a point in time as revenue upon successful completion of the engagement. Financial advisory fees are fees earned for assisting customers with transactions related to mergers and acquisitions and financial restructurings. Loan syndication fees represent fees earned as the agent or lead lender responsible for structuring, arranging, and administering a loan syndication and are recorded in *Non-interest income* unless the yield on the loan retained by the Bank is less than that of other comparable lenders involved in the financing. In such cases, an appropriate portion of the fees is deferred and amortized using the effective interest rate method, and the amortization is recognized in *Interest income* over the term of the loan.

Securities Brokerage Commissions
Securities brokerage commissions are earned in the Wealth Management segment and are recognized at a point in time when the transaction is executed.

Mutual Fund and Trust Service Revenues
Mutual fund and trust service revenues include management and administration fees. These fees are earned in the Wealth Management segment. Management fees are primarily calculated on assets under management and are recorded over the period the services are performed. Administration fees are generally based on assets under administration or management and are recorded over the period the services are performed.

Card Revenues
Card revenues are earned in the Personal and Commercial segment and include card fees such as annual and transactional fees as well as interchange fees. Interchange fees are recognized when a card transaction is settled. Card fees are recognized on the transaction date except for annual fees, which are recorded evenly throughout the year. Reward costs are recorded as a reduction to interchange fees.

Credit Fees and Deposit and Payment Service Charges
Credit fees and deposit and payment service charges are earned in the Personal and Commercial, Financial Markets, and U.S. Specialty Finance and International segments. Credit fees are generally recognized in income over the period the services are provided. Deposit and payment service charges include fees related to account maintenance activities and transaction-based service charges. Fees related to account maintenance activities are recognized over the period the services are provided, whereas transaction-based service charges are recognized at a point in time when the transaction is completed.

Insurance Revenues
Insurance contracts, including reinsurance contracts, are arrangements under which one party accepts significant insurance risk by agreeing to compensate the policyholder if a specified uncertain future event was to occur. Gross premiums, net of premiums transferred under reinsurance contracts, are recognized when they become due. Royalties received from reinsurers are recognized when earned. Claims are recognized when received and an amount is estimated as they are being processed. All these amounts are recognized on a net basis in *Non-interest income* in the Consolidated Statement of Income.

Upon recognition of a premium, a reinsurance asset and insurance liability are recognized, respectively, in *Other assets* and in *Other liabilities* on the Consolidated Balance Sheet. Subsequent changes in the carrying value of the reinsurance asset and insurance liability are recognized on a net basis in *Non-interest income* in the Consolidated Statement of Income.

Income Taxes
Income taxes include current taxes and deferred taxes and are recorded in net income except for income taxes generated by items recognized in *Other comprehensive income* or directly in equity.

Current tax is the amount of income tax payable on the taxable income for a period. It is calculated using the enacted or substantively enacted tax rates prevailing on the reporting date, and any adjustments recognized in the period for the current tax of prior periods. Current tax assets and liabilities are offset, and the net balance is presented in either *Other assets* or *Other liabilities* on the Consolidated Balance Sheet when the Bank has a legally enforceable right to set off the recognized amounts and intends to settle on a net basis or to simultaneously realize the asset and settle the liability.

Deferred tax is established based on temporary differences between the carrying values and the tax bases of assets and liabilities, in accordance with enacted or substantively enacted income tax laws and rates that will apply on the date the differences will reverse. Deferred tax is not recognized for temporary differences related to the following:

- the initial accounting of goodwill;
- the initial accounting of an asset or liability in a transaction that is not a business combination and that, at the time of the transaction, affects neither accounting income nor taxable income;
- investments in subsidiaries, associates and joint ventures when it is probable that the temporary difference will not reverse in the foreseeable future and that the Bank controls the timing of the reversal of the temporary difference;
- investments in subsidiaries, associates and joint ventures when it is probable that the temporary difference will not reverse in the foreseeable future and that there will not be taxable income to which the temporary difference can be recognized.

Deferred tax assets are tax benefits in the form of deductions that the Bank may claim to reduce its taxable income in future years. At the end of each reporting period, the carrying amount of deferred tax assets is revised, and it is reduced to the extent that it is no longer probable that sufficient taxable income will be available to allow the benefit of the deferred tax asset to be utilized.

Deferred tax assets and liabilities are offset, and the net balance is presented in either *Other assets* or *Other liabilities* on the Consolidated Balance Sheet when the Bank has a legally enforceable right to set off the current tax assets and liabilities and if the deferred tax assets and liabilities relate to taxes levied by the same taxation authority on the same taxable entity or on different taxable entities that intend to settle current tax assets and liabilities based on their net amount.

The Bank makes assumptions to estimate income taxes as well as deferred tax assets and liabilities. This process includes estimating the actual amount of current taxes and evaluating tax loss carryforwards and temporary differences arising from differences between the values of items reported for accounting and for income tax purposes. Deferred tax assets and liabilities presented on the Consolidated Balance Sheet are calculated according to the tax rates to be applied in future periods. Previously recorded deferred tax assets and liabilities must be adjusted when the date of the future event is revised based on current information.

The Bank is subject to the jurisdictions of various tax authorities. In the normal course of its business, the Bank is involved in a number of transactions for which the tax impacts are uncertain. As a result, the Bank accounts for provisions for uncertain tax positions that adequately represent the tax risk stemming from tax matters under discussion or being audited by tax authorities or from other matters involving uncertainty. The amounts of these provisions reflect the best possible estimates of the amounts that may have to be paid based on qualitative assessments of all relevant factors. The provisions are estimated at the end of each reporting period. However, it is possible that, at a future date, a provision might need to be adjusted following an audit by the tax authorities. When the final assessment differs from the initially provisioned amounts, the difference will impact the income taxes of the period in which the assessment was made.

Financial Guarantee Contracts

A financial guarantee contract is a contract or indemnification agreement that could require the Bank to make specified payments (in cash, financial instruments, other assets, Bank shares, or provisions of services) to reimburse a beneficiary in the event of a loss resulting from a debtor defaulting on the original or amended terms of a debt instrument.

To reflect the fair value of the obligation assumed at the inception of a financial guarantee, a liability is recorded in *Other liabilities* on the Consolidated Balance Sheet. After initial recognition, the Bank must measure financial guarantee contracts at the higher of the allowance for credit losses determined using the ECL model and of the initially recognized amount less, where applicable, the cumulative amount of income recognized. This revenue is recognized in *Credit fees* in the Consolidated Statement of Income.

Employee Benefits – Pension Plans and Other Post-Employment Benefits

The Bank offers defined benefit pension plans and other post-employment benefit plans to eligible employees. Other post-employment benefit plans include post-employment medical, dental, and life insurance coverage. While pension plans are funded, the other plans are not.

Plan expenses and obligations are actuarially determined based on the projected benefit method prorated on service. The calculations use management's best estimates of various actuarial assumptions such as discount rates, rates of compensation increase, health care cost trend rates, mortality rates, and retirement age.

The net asset or net liability of pension plans and other post-employment benefit plans are calculated separately for each plan as the difference between the present value of the future benefits earned by employees in respect of current- and prior-period service and the fair value of plan assets. The net asset or net liability is included in either the *Other assets* or *Other liabilities* item of the Consolidated Balance Sheet.

Note 1 – Basis of Presentation and Summary of Significant Accounting Policies (cont.)

The expense related to pension plans and other post-employment benefit plans consists of the following items: current service cost, net interest on the net plan asset or liability, administration costs, and past service cost, if any, recognized when a plan is amended. This expense is recognized in *Compensation and employee benefits* in the Consolidated Statement of Income. The net amount of interest income and expense is determined by applying a discount rate to the net plan asset or liability amount.

Remeasurements resulting from pension plans and other post-employment benefit plans represent actuarial gains and losses related to the defined benefit obligation and the actual return on plan assets, excluding net interest determined by applying a discount rate to the net asset or liability of the plans. Remeasurements are immediately recognized in *Other comprehensive income* and will not be subsequently reclassified to net income; these cumulative gains and losses are reclassified to *Retained earnings.*

Share-Based Payments

The Bank has several share-based compensation plans: the Stock Option Plan, the Stock Appreciation Rights (SAR) Plan, the Deferred Stock Unit (DSU) Plan, the Restricted Stock Unit (RSU) Plan, the Performance Stock Unit (PSU) Plan, the Deferred Compensation Plan (DCP) of National Bank Financial, and the Employee Share Ownership Plan.

Compensation expense is recognized over the service period required for employees to become fully entitled to the award. This period is generally the same as the vesting period, except where the required service period begins before the award date. Compensation expense related to awards granted to employees eligible to retire on the award date is immediately recognized on the award date. Compensation expense related to awards granted to employees who will become eligible to retire during the vesting period is recognized over the period from the award date to the date the employee becomes eligible to retire. For all of these plans, as of the first year of recognition, the expense includes cancellation and forfeiture estimates. These estimates are subsequently revised as necessary. The Bank uses derivative financial instruments to hedge the risks associated with some of these plans. The compensation expense for these plans, net of related hedges, is recognized in the Consolidated Statement of Income.

Under the Stock Option Plan, the Bank uses the fair value method to account for stock options awarded. The options vest at 25% per year, and each tranche is treated as though it was a separate award. The fair value of each of the tranches is measured on the award date using the Black-Scholes model, and this fair value is recognized in *Compensation and employee benefits* and *Contributed surplus.* When the options are exercised, the *Contributed surplus* amount is credited to *Equity – Common shares* on the Consolidated Balance Sheet. The proceeds received from the employees when these options are exercised are also credited to *Equity – Common shares* on the Consolidated Balance Sheet.

SARs are recorded at fair value when awarded and their fair value is remeasured at the end of each reporting period until they are exercised. The cost is recognized in *Compensation and employee benefits* in the Consolidated Statement of Income and in *Other liabilities* on the Consolidated Balance Sheet. The obligation that results from the change in fair value at each period is recognized in net income gradually over the vesting period, and periodically thereafter, until the SARs are exercised. When a SAR is exercised, the Bank makes a cash payment equal to the increase in the stock price since the date of the award.

The obligation that results from the award of a DSU, RSU, PSU and DCP unit is recognized in net income, and the corresponding amount is included in *Other liabilities* on the Consolidated Balance Sheet. For the DSU, RSU and DCP plans, the change in the obligation attributable to variations in the share price and dividends paid on common shares for these plans is recognized in *Compensation and employee benefits* in the Consolidated Statement of Income for the period in which the variations occur. On the redemption date, the Bank makes a cash payment equal to the value of the common shares on that date. For the PSU Plan, the change in the obligation attributable to changes in the stock price, adjusted upward or downward depending on the relative result of the performance criteria, and the change in the obligation attributable to dividends paid on the shares awarded under the plan, are recognized in *Compensation and employee benefits* in the Consolidated Statement of Income for the period in which the changes occur. On the redemption date, the Bank makes a cash payment equal to the value of the common shares on that date, adjusted upward or downward according to the performance criteria.

The Bank's contributions to the employee share ownership plan are expensed as incurred.

Note 2 – Future Accounting Policy Changes

The IASB issues revisions and amendments to a number of standards, some of which have already had an impact on the Bank and others that could have an impact in the future. The Bank is currently assessing the impact that adoption of the following standards will have on its consolidated financial statements. A summary of these amendments and the effective dates applicable to the Bank are presented below.

Effective Date – November 1, 2019

IFRS 16 – *Leases*

In January 2016, the IASB issued IFRS 16 – *Leases*. The new standard replaces the previous lease accounting standard, IAS 17 – *Leases,* and related interpretations. Under IAS 17, lessees and lessors were required to classify their leases as either finance leases or operating leases and to account for these two types of leases differently. IFRS 16 provides a single accounting model for lessees, requiring lessees to recognize a right-of-use asset as well as a liability that reflects the present value of future lease payments. Lessees will also recognize depreciation expense on the right-of-use asset and interest expense on the lease liability in the Consolidated Statement of Income. As for lessors, IFRS 16 substantially carries forward the lessor accounting in IAS 17, with the distinction between finance and operating leases being retained.

The Bank has elected to apply IFRS 16 using the modified retrospective basis by adjusting the Consolidated Balance Sheet as at November 1, 2019, the date of initial application, with no restatement of comparative periods. The most significant impact to the Bank will be related to real estate leases, which are currently classified as operating leases.

On transition, the Bank will apply, on a lease-by-lease basis, certain practical expedients. More specifically, it will measure the right-of-use assets at an amount equal to the lease liability, it will rely on the Bank's assessment about whether leases are onerous as at October 31, 2019 as an alternative to performing an impairment test as at November 1, 2019, and it will exclude initial direct costs from the measurement of the right-of-use assets as at November 1, 2019. Furthermore, on transition and thereafter, the Bank will exclude leases for which the underlying asset is of low value, will exclude short-term leases and, for real estate leases, will elect not to separate non-lease components from lease components.

As at October 31, 2019, the Bank's best estimate of the impact of adopting IFRS 16 is an increase in total assets of approximately $653 million representing leased premises, an increase in total liabilities of approximately $653 million primarily representing lease liabilities, and a decrease of approximately 9 basis points in the Common Equity Tier 1 (CET 1) capital ratio as at November 1, 2019.

IFRIC Interpretation 23 – *Uncertainty Over Income Tax Treatments*

In June 2017, the IASB issued IFRIC Interpretation 23, which addresses how to reflect tax treatment uncertainty in accounting for income taxes. This interpretation will not have an impact on the Bank's Consolidated Balance Sheet as at November 1, 2019.

Effective Date – November 1, 2020

Conceptual Framework for Financial Reporting

On March 29, 2018, the IASB published *Conceptual Framework for Financial Reporting* to replace its 2010 conceptual framework. For the IASB, the revised conceptual framework has been in effect since its publication date. Early application is permitted.

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

In September 2019, in response to uncertainty arising from the phasing-out of benchmark interest rates such as interbank offered rates (IBORs), the IASB issued amendments to its new and former financial instrument standards, IFRS 9 – *Financial Instruments* and IAS 39 – *Financial Instruments: Recognition and Measurement* as well as to the related standard on disclosures, IFRS 7 – *Financial Instruments: Disclosures.*

The amendments modify certain hedge accounting requirements in IFRS 9 and IAS 39 to provide relief from the potential effects of the uncertainty caused by the IBOR reform. In addition, the amendments to IFRS 7 require additional disclosure about hedging relationships directly affected by this uncertainty. When the Bank adopted IFRS 9 on November 1, 2017, it made an accounting policy choice to continue applying the IAS 39 hedge accounting requirements.

For the Bank, the effective date of these amendments is November 1, 2020. However, early adoption is permitted.

Effective Date – November 1, 2021

IFRS 17 – *Insurance Contracts*

In May 2017, the IASB issued IFRS 17 – *Insurance Contracts*, a new standard that replaces IFRS 4, the current insurance contract accounting standard. IFRS 17 introduces a new accounting framework that will improve the comparability and quality of financial information. At its meeting on November 14, 2018, the IASB tentatively decided to defer the IFRS 17 effective date to fiscal years beginning on or after January 1, 2022.

(millions of Canadian dollars)

Note 3 – Fair Value of Financial Instruments

Fair Value and Carrying Value of Financial Instruments by Category

Financial assets and financial liabilities are recognized on the Consolidated Balance Sheet at fair value or at amortized cost in accordance with the categories set out in the accounting framework for financial instruments.

								As at October 31, 2019
				Carrying value and fair value	Carrying value	Fair value		
	Financial instruments classified as at fair value through profit or loss	Financial instruments designated at fair value through profit or loss	Debt securities classified as at fair value through other comprehensive income	Equity securities designated at fair value through other comprehensive income	Financial instruments at amortized cost, net	Financial instruments at amortized cost, net	Total carrying value	Total fair value
Financial assets								
Cash and deposits with financial institutions	–	–	–	–	13,698	13,698	13,698	13,698
Securities	58,556	3,267	10,026	622	9,755	9,824	82,226	82,295
Securities purchased under reverse repurchase agreements and securities borrowed	–	87	–	–	17,636	17,636	17,723	17,723
Loans and acceptances, net of allowances	6,798	–	–	–	146,453	147,051	153,251	153,849
Other								
Derivative financial instruments	8,129	–	–	–	–	–	8,129	8,129
Other assets	–	–	–	–	1,193	1,193	1,193	1,193
Financial liabilities								
Deposits	–	11,203			178,363 (1)	178,861	189,566	190,064
Other								
Acceptances	–	–			6,893	6,893	6,893	6,893
Obligations related to securities sold short	12,849	–			–	–	12,849	12,849
Obligations related to securities sold under repurchase agreements and securities loaned	–	–			21,900	21,900	21,900	21,900
Derivative financial instruments	6,852	–			–	–	6,852	6,852
Liabilities related to transferred receivables	–	8,215			13,097	13,186	21,312	21,401
Other liabilities	24	–			3,018	3,019	3,042	3,043
Subordinated debt	–	–			773	765	773	765

(1) Includes embedded derivative financial instruments.

(millions of Canadian dollars)

								As at October 31, 2018
				Carrying value and fair value	Carrying value	Fair value		
	Financial instruments classified as at fair value through profit or loss	Financial instruments designated at fair value through profit or loss	Debt securities classified as at fair value through other comprehensive income	Equity securities designated at fair value through other comprehensive income	Financial instruments at amortized cost, net	Financial instruments at amortized cost, net	Total carrying value	Total fair value
Financial assets								
Cash and deposits with financial institutions	–	–	–	–	12,756	12,756	12,756	12,756
Securities	51,927	3,890	5,317	351	8,298	8,237	69,783	69,722
Securities purchased under reverse repurchase agreements and securities borrowed	–	479	–	–	17,680	17,680	18,159	18,159
Loans and acceptances, net of allowances	6,108	–	–	–	139,974	139,551	146,082	145,659
Other								
Derivative financial instruments	8,608	–	–	–	–	–	8,608	8,608
Other assets	–	–	–	–	1,804	1,804	1,804	1,804
Financial liabilities								
Deposits	–	10,126			160,704 (1)	160,938	170,830	171,064
Other								
Acceptances	–	–			6,801	6,801	6,801	6,801
Obligations related to securities sold short	17,780	–			–	–	17,780	17,780
Obligations related to securities sold under repurchase agreements and securities loaned	–	–			19,998	19,998	19,998	19,998
Derivative financial instruments	6,036	–			–	–	6,036	6,036
Liabilities related to transferred receivables	–	7,714			12,386	12,361	20,100	20,075
Other liabilities	21	–			3,163	3,152	3,184	3,173
Subordinated debt	–	–			747	734	747	734

(1) Includes embedded derivative financial instruments.

Establishing Fair Value

The fair value of a financial instrument is the price that would be received to sell a financial asset or paid to transfer a financial liability in an orderly transaction in the principal market at the measurement date under current market conditions (i.e., an exit price).

Unadjusted quoted prices in active markets provide the best evidence of fair value. When there is no quoted price in an active market, the Bank applies other valuation techniques that maximize the use of relevant observable inputs and that minimize the use of unobservable inputs. Such valuation techniques include the following: using information available from recent market transactions, referring to the current fair value of a comparable financial instrument, applying discounted cash flow analysis, applying option pricing models, or relying on any other valuation technique that is commonly used by market participants and has proven to yield reliable estimates. Judgment is required when applying many of the valuation techniques. The Bank's valuation was based on its assessment of the conditions prevailing as at October 31, 2019 and may change in the future. Furthermore, there may be valuation uncertainty resulting from the choice of valuation model used.

Note 3 – Fair Value of Financial Instruments (cont.)

Valuation Governance
Fair value is established in accordance with a rigorous control framework. The Bank has policies and procedures that govern the process for determining fair value. These policies are documented and periodically reviewed by the Risk Management Group. All valuation models are validated, and controls have been implemented to ensure that they are applied.

The fair value of existing or new products is determined and validated by functions independent of the risk-taking team. Complex fair value matters are reviewed by valuation committees made up of experts from various specialized functions.

For financial instruments classified in Level 3 of the fair value hierarchy, the Bank has documented the classification policies to determine the hierarchy, and there are controls in place to ensure that fair value is measured appropriately, reliably, and consistently. Valuation methods and the underlying assumptions are reviewed on a regular basis.

Valuation Methods and Assumptions
Financial Instruments Whose Fair Value Equals Carrying Value
The carrying value of the following financial instruments is a reasonable approximation of fair value:

- cash and deposits with financial institutions;
- securities purchased under reverse repurchase agreements and securities borrowed;
- obligations related to securities sold under repurchase agreements and securities loaned;
- customers' liability under acceptances;
- acceptances;
- certain items of other assets and other liabilities.

Securities and Obligations Related to Securities Sold Short
These financial instruments, except for securities at amortized cost, are recognized at fair value on the Consolidated Balance Sheet. Their fair value is based on quoted prices in active markets, i.e., bid prices for financial assets and offered prices for financial liabilities. If there are no quoted prices in an active market, fair value is estimated using prices for securities that, in substance, are identical. If such prices are not available, fair value is determined using valuation techniques that incorporate assumptions based primarily on observable market inputs such as current market prices, the contractual prices of the underlying instruments, the time value of money, credit risk, interest rate yield curves and currency rates.

When one or more significant inputs are not observable in the markets, fair value is established primarily on the basis of internal estimates and data that consider the valuation policies in effect at the Bank, economic conditions, the specific characteristics of the financial asset or liability, and other relevant factors.

Securities Issued or Guaranteed by Governments
Securities issued or guaranteed by governments include government debt securities of the governments of Canada (federal, provincial and municipal) as well as debt securities of the U.S. government (U.S. Treasury), of other U.S. agencies and of other foreign governments. The fair value of these securities is based on unadjusted quoted prices in active markets. For those classified in Level 2, quoted prices for identical or similar instruments in active markets are used to determine fair value. In the absence of an observable market, valuation techniques such as the discounted cash flow method could be used, incorporating assumptions on benchmark yields (CDOR, LIBOR and other) and the risk spreads of similar securities.

Equity Securities and Other Debt Securities
The fair value of equity securities is determined primarily by using quoted prices in active markets. For equity securities and other debt securities classified in Level 2, a valuation technique based on quoted prices of identical and similar instruments in an active market is used to determine fair value. In the absence of observable inputs, valuation techniques such as the discounted cash flow method could be used, incorporating assumptions on benchmark yields (CDOR, LIBOR and other) and the risk spreads of similar securities. For those classified in Level 3, fair value can be determined based on the net asset value, which represents the estimated value of a security based on valuations received from investment or fund managers or the general partners of the limited partnerships. Fair value can also be determined using internal valuation techniques adjusted for risk factors related to the financial instruments and for economic conditions.

Derivative Financial Instruments

Derivative financial instruments are recorded at fair value on the Consolidated Balance Sheet. For exchange-traded derivative financial instruments, fair value is based on the quoted price in an active market, i.e., bid prices for financial assets or offered prices for financial liabilities.

For over-the-counter (OTC) derivative financial instruments, fair value is determined using well established valuation techniques that incorporate assumptions based primarily on observable market inputs such as current market prices and the contractual prices of the underlying instruments, the time value of money, interest rate yield curves, credit curves, currency rates as well as price and rate volatility factors. In establishing the fair value of OTC derivative financial instruments, the Bank also incorporates the following factors:

Credit Valuation Adjustment (CVA)

The CVA is a valuation adjustment applied to derivative financial instruments to reflect the credit risk of the counterparty. For each counterparty, the CVA is based on the expected positive exposure and probabilities of default through time. The exposures are determined by incorporating relevant factors such as current and potential future market values, master netting arrangements, collateral agreements and expected recovery rates. The default probabilities are inferred using credit default swap (CDS) spreads. When unavailable, relevant proxies are used. While the general methodology currently assumes independence between expected positive exposures and probabilities of default, adjustments are applied to certain types of transactions where there is a direct link between the exposure at default and the default probabilities.

Debit Valuation Adjustment (DVA)

The DVA reflects the Bank's own credit risk in the valuation of derivative financial instruments. The DVA is based on the expected negative exposure and probabilities of default of the Bank over time. The exposures are determined by incorporating relevant factors such as current and potential future market values, master netting arrangements, collateral agreements and expected recovery rates. The market-implied spreads of the Bank are used in the calculation of the DVA.

Funding Valuation Adjustment (FVA)

The FVA is a valuation adjustment applied to derivative financial instruments to reflect the market-implied cost or benefits of funding collateral for uncollateralized or partly collateralized transactions. The expected exposures are determined using methodologies consistent with the CVA and DVA framework. The funding level used to determine the FVA is based on the average funding level of relevant market participants.

When the valuation techniques incorporate one or more significant inputs that are not observable in the markets, the fair value of OTC derivative financial instruments is established primarily on the basis of internal estimates and data that consider the valuation policies in effect at the Bank, economic conditions, the specific characteristics of the financial asset or financial liability and other relevant factors.

Loans

The fair value of fixed-rate mortgage loans is determined by discounting expected future contractual cash flows, adjusted for several factors, including prepayment options, current market interest rates for similar loans, and other relevant variables where applicable. The fair value of variable-rate mortgage loans is deemed to equal carrying value.

The fair value of other fixed-rate loans is determined by discounting expected future contractual cash flows using current market interest rates charged for similar new loans. The fair value of other variable-rate loans is deemed to equal carrying value.

Deposits

The fair value of fixed-term deposits is determined primarily by discounting expected future contractual cash flows and considering several factors such as redemption options and market interest rates currently offered for financial instruments with similar conditions. For certain term funding instruments, fair value is determined using market prices for similar instruments. The fair value of demand deposits and notice deposits is deemed to equal carrying value.

The fair value of structured deposit notes is established using valuation models that maximize the use of observable inputs when available, such as benchmark indices, and also incorporates the DVA, which reflects the Bank's own credit risk. In calculating DVA, the market implied spreads of the Bank are used to infer its probabilities of default. Lastly, when fair value is determined using option pricing models, the valuation techniques are similar to those described for derivative financial instruments.

Liabilities Related to Transferred Receivables

These liabilities arise from sale transactions to Canada Housing Trust (CHT) of securities backed by insured residential mortgages and other securities under the Canada Mortgage Bond (CMB) program. These transactions do not qualify for derecognition. They are recorded as guaranteed borrowings, which results in the recording of liabilities on the Consolidated Balance Sheet. The fair value of these liabilities is established using valuation techniques based on observable market inputs such as Canada Mortgage Bond prices.

Note 3 – Fair Value of Financial Instruments (cont.)

Other Liabilities and Subordinated Debt
The fair value of these financial liabilities is based on quoted market prices in an active market. If there is no active market, fair value is determined by discounting contractual cash flows using the current market interest rates offered for similar financial instruments that have the same term to maturity.

Hierarchy of Fair Value Measurements

Determining the Levels of the Fair Value Measurement Hierarchy
IFRS establishes a fair value hierarchy that classifies the inputs used in financial instrument fair value measurement techniques according to three levels. This fair value hierarchy requires observable market inputs to be used whenever such inputs exist. According to the hierarchy, the highest level of inputs are unadjusted quoted prices in active markets for identical instruments and the lowest level of inputs are unobservable inputs. If inputs from different levels of the hierarchy are used, the financial instrument is classified in the same level as the lowest level input that is significant to the fair value measurement. The fair value hierarchy has the following levels:

Level 1
Inputs corresponding to unadjusted quoted prices in active markets for identical assets and liabilities and accessible to the Bank at the measurement date. These instruments consist primarily of equity securities, derivative financial instruments traded in active markets, and certain highly liquid debt securities actively traded in over-the-counter markets.

Level 2
Valuation techniques based on inputs, other than the quoted prices included in Level 1 inputs, that are directly or indirectly observable in the market for the asset or liability. These inputs are quoted prices of similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; inputs other than quoted prices used in a valuation model that are observable for that instrument; and inputs that are derived principally from or corroborated by observable market inputs by correlation or other means. These instruments consist primarily of certain loans, certain deposits, derivative financial instruments traded in over-the-counter markets, certain debt securities, certain equity securities whose value is not directly observable in an active market, liabilities related to transferred receivables and certain other liabilities.

Level 3
Valuation techniques based on one or more significant inputs that are not observable in the market for the asset or liability. The Bank classifies financial instruments in Level 3 when the valuation technique is based on at least one significant input that is not observable in the markets. The valuation technique may also be partly based on observable market inputs.

Financial instruments whose fair values are classified in Level 3 consist of the following:

- financial instruments measured at fair value through profit or loss: investments in hedge funds for which there are certain restrictions on unit or security redemptions, equity securities and debt securities of private companies, as well as certain derivative financial instruments whose fair value is established using internal valuation models that are based on significant unobservable market inputs;
- securities at fair value through other comprehensive income: equity and debt securities of private companies;
- certain loans and certain deposits (structured deposit notes) whose fair value is established using internal valuation models that are based on significant unobservable market inputs.

Transfers Between the Fair Value Hierarchy Levels
Transfers of financial instruments between Levels 1 and 2 and transfers to (or from) Level 3 are deemed to have taken place at the beginning of the quarter in which the transfer occurred. Significant transfers can occur between the fair value hierarchy levels due to new information on inputs used to determine fair value and the observable nature of those inputs.

During fiscal 2019, $50 million in securities classified as at fair value through profit or loss and $1 million in obligations related to securities sold short were transferred from Level 2 to Level 1 resulting from changing market conditions ($324 million in securities classified as at fair value through profit or loss and $33 million in obligations related to securities sold short in fiscal 2018). In addition, during fiscal 2019, $20 million in securities classified as at fair value through profit or loss and $2 million in obligations related to securities sold short were transferred from Level 1 to Level 2 (for fiscal 2018, $37 million in securities classified as at fair value through profit or loss and $3 million in obligations related to securities sold short).

During fiscal years 2019 and 2018, financial instruments were transferred to (or from) Level 3 due to changes in the availability of observable market inputs resulting from changing market conditions.

(millions of Canadian dollars)

Financial Instruments Recorded at Fair Value on the Consolidated Balance Sheet

The following tables show financial instruments recorded at fair value on the Consolidated Balance Sheet according to the fair value hierarchy.

				As at October 31, 2019
	Level 1	Level 2	Level 3	Total financial assets/liabilities at fair value
Financial assets				
Securities				
At fair value through profit or loss				
Securities issued or guaranteed by				
Canadian government	2,102	8,321	–	10,423
Canadian provincial and municipal governments	–	6,762	–	6,762
U.S. Treasury, other U.S. agencies and other foreign governments	1,770	90	–	1,860
Other debt securities	–	2,666	27	2,693
Equity securities	38,836	818	431	40,085
	42,708	18,657	458	61,823
At fair value through other comprehensive income				
Securities issued or guaranteed by				
Canadian government	196	4,236	–	4,432
Canadian provincial and municipal governments	–	1,674	–	1,674
U.S. Treasury, other U.S. agencies and other foreign governments	3,471	75	–	3,546
Other debt securities	–	374	–	374
Equity securities	53	207	362	622
	3,720	6,566	362	10,648
Securities purchased under reverse repurchase agreements and securities borrowed	–	87	–	87
Loans	–	6,438	360	6,798
Other				
Derivative financial instruments	179	7,924	26	8,129
	46,607	39,672	1,206	87,485
Financial liabilities				
Deposits	–	11,383	–	11,383
Other				
Obligations related to securities sold short	8,352	4,497	–	12,849
Derivative financial instruments	156	6,674	22	6,852
Liabilities related to transferred receivables	–	8,215	–	8,215
Other liabilities	–	24	–	24
	8,508	30,793	22	39,323

(millions of Canadian dollars)

Note 3 – Fair Value of Financial Instruments (cont.)

As at October 31, 2018	Level 1	Level 2	Level 3	Total financial assets/liabilities at fair value
Financial assets				
Securities				
At fair value through profit or loss				
Securities issued or guaranteed by				
Canadian government	5,469	9,130	–	14,599
Canadian provincial and municipal governments	–	10,628	–	10,628
U.S. Treasury, other U.S. agencies and other foreign governments	314	249	–	563
Other debt securities	–	3,391	25	3,416
Equity securities	25,928	395	288	26,611
	31,711	23,793	313	55,817
At fair value through other comprehensive income				
Securities issued or guaranteed by				
Canadian government	265	2,320	–	2,585
Canadian provincial and municipal governments	–	2,184	–	2,184
U.S. Treasury, other U.S. agencies and other foreign governments	123	–	–	123
Other debt securities	–	425	–	425
Equity securities	–	118	233	351
	388	5,047	233	5,668
Securities purchased under reverse repurchase agreements and securities borrowed	–	479	–	479
Loans	–	5,722	386	6,108
Other				
Derivative financial instruments	97	8,491	20	8,608
	32,196	43,532	952	76,680
Financial liabilities				
Deposits	–	10,210	11	10,221
Other				
Obligations related to securities sold short	12,524	5,256	–	17,780
Derivative financial instruments	211	5,798	27	6,036
Liabilities related to transferred receivables	–	7,714	–	7,714
Other liabilities	–	21	–	21
	12,735	28,999	38	41,772

(millions of Canadian dollars)

Financial Instruments Classified in Level 3

The Bank classifies financial instruments in Level 3 when the valuation technique is based on at least one significant input that is not observable in the markets. The valuation technique may also be based, in part, on observable market inputs. The following table shows the significant unobservable inputs used for the fair value measurements of financial instruments classified in Level 3 of the hierarchy.

As at October 31, 2019

	Fair value	Primary valuation techniques	Significant unobservable inputs	Range of input values Low	High
Financial assets					
Securities					
Equity securities and other debt securities	820	Net asset value	Net asset value	100 %	100 %
		Market comparable	EV/EBITDA[1] multiple	13 x	16 x
		Discounted cash flows	Credit spread	460 Bps[2]	705 Bps[2]
		Discounted cash flows	Discount Rate	4.50 %	14.38 %
Loans					
Loans at fair value through profit or loss	360	Discounted cash flows	Discount rate	5.26 %	8.89 %
		Discounted cash flows	Liquidity premium	3.56 %	7.34 %
Other					
Derivative financial instruments					
Interest rate contracts	6	Discounted cash flows	Discount rate	2.20 %	2.20 %
Equity contracts	20	Option pricing model	Long-term volatility	4 %	35 %
			Market correlation	21 %	31 %
	1,206				
Financial liabilities					
Other					
Derivative financial instruments					
Equity contracts	22	Option pricing model	Long-term volatility	5 %	49 %
			Market correlation	(29) %	89 %
	22				

As at October 31, 2018

	Fair value	Primary valuation techniques	Significant unobservable inputs	Range of input values Low	High
Financial assets					
Securities					
Equity securities and other debt securities	546	Net asset value	Net asset value	100 %	100 %
		Market comparable	EV/EBITDA[1] multiple	11 x	16 x
		Discounted cash flows	Credit spread	460 Bps[2]	690 Bps[2]
Loans					
Loans at fair value through profit or loss	386	Discounted cash flows	Discount rate	5.81 %	8.92 %
		Discounted cash flows	Liquidity premium	2.68 %	5.80 %
Other					
Derivative financial instruments					
Equity contracts	20	Option pricing model	Long-term volatility	7 %	21 %
	952				
Financial liabilities					
Deposits					
Structured deposit notes	11	Option pricing model	Long-term volatility	3 %	52 %
			Market correlation	(36) %	82 %
Other					
Derivative financial instruments					
Interest rate contracts	2	Discounted cash flows	Discount rate	2.20 %	2.20 %
Equity contracts	25	Option pricing model	Long-term volatility	7 %	70 %
			Market correlation	(34) %	83 %
	38				

(1) EV/EBITDA means Enterprise Value/Earnings Before Interest, Taxes, Depreciation and Amortization.
(2) Bps or basis point is a unit of measure equal to 0.01%.

Note 3 – Fair Value of Financial Instruments (cont.)

Significant Unobservable Inputs Used for Fair Value Measurements of Financial Instruments Classified in Level 3

Net Asset Value

Net asset value is the estimated value of a security based on valuations received from the investment or fund managers, the administrators of the conduits or the general partners of the limited partnerships. The net asset value of a fund is the total fair value of assets less liabilities.

EV/EBITDA (Enterprise Value/Earnings Before Interest, Taxes, Depreciation and Amortization) Multiple and Price Equivalent

Private equity valuation inputs include earnings multiples, which are determined based on comparable companies, and a higher multiple will translate into a higher fair value. Price equivalent is a percentage of the market price based on the liquidity of the security.

Discount Rate

When discounted cash flow methods are used, the discount rate is the input used to bring future cash flows to their present value. A higher discount rate will translate into a lower fair value.

Long-Term Volatility

Volatility is a measure of the expected future variability of market prices. Volatility is generally observable in the market through options prices. However, the long-term volatility of options with a longer maturity might not be observable. An increase (decrease) in long-term volatility is generally associated with an increase (decrease) in long-term correlation. Higher long-term volatility may increase or decrease an instrument's fair value depending on its terms.

Market Correlation

Correlation is a measure of the inter-relationship between two different variables. A positive correlation means that the variables tend to move in the same direction; a negative correlation means that the variables tend to move in opposite directions. Correlation is used to measure financial instruments whose future returns depend on several variables. Changes in correlation will either increase or decrease a financial instrument's fair value depending on the terms of its contractual payout.

Sensitivity Analysis of Financial Instruments Classified in Level 3

The Bank performs sensitivity analyses for the fair value measurements of financial instruments classified in Level 3, substituting unobservable inputs with one or more reasonably possible alternative assumptions.

For equity securities and other debt securities, the Bank varies significant unobservable inputs such as net asset values, EV/EBITDA multiples, or price equivalents and establishes a reasonable fair value range that could result in a $121 million increase or decrease in the fair value recorded as at October 31, 2019 (a $70 million increase or decrease as at October 31, 2018).

For the loans, the Bank varies unobservable inputs such as a liquidity premium and establishes a reasonable fair value range that could result in a $54 million increase or decrease in the fair value recorded as at October 31, 2019 ($43 million increase or decrease as at October 31, 2018).

For derivative financial instruments and embedded derivatives related to structured deposit notes, the Bank varies long-term volatility and market correlation inputs and establishes a reasonable fair value range. As at October 31, 2019, for derivative financial instruments, the net fair value could result in a $1 million increase or decrease ($5 million increase or decrease as at October 31, 2018), whereas for structured deposit notes, the fair value could have resulted in a $1 million increase or decrease as at October 31, 2018.

For all Level 3 financial instruments, the reasonable fair value ranges could result in an 8% increase or decrease in net income as at October 31, 2019 (a 5 % increase or decrease in net income as at October 31, 2018).

(millions of Canadian dollars)

Change in the Fair Value of Financial Instruments Classified in Level 3

The Bank may hedge the fair value of financial instruments classified in the various levels through offsetting hedge positions. Gains and losses for financial instruments classified in Level 3 presented in the following tables do not reflect the inverse gains and losses on financial instruments used for economic hedging purposes that may have been classified in Level 1 or 2 by the Bank. In addition, the Bank may hedge the fair value of financial instruments classified in Level 3 using other financial instruments classified in Level 3. The effect of these hedges is not included in the net amount presented in the following tables. The gains and losses presented hereafter may comprise changes in fair value based on observable and unobservable inputs.

					Year ended October 31, 2019
	Securities at fair value through profit or loss	**Securities at fair value through other comprehensive income**	**Loans**	**Derivative financial instruments[1]**	**Deposits**
Fair value as at October 31, 2018	**313**	**233**	**386**	**(7)**	**(11)**
Total realized and unrealized gains (losses) included in *Net income*[2]	**(69)**	**–**	**12**	**16**	**–**
Total realized and unrealized gains (losses) included in *Other comprehensive income*	**–**	**(4)**	**–**	**–**	**–**
Purchases	**253**	**133**	**–**	**–**	**–**
Sales	**(39)**	**–**	**–**	**–**	**–**
Issuances	**–**	**–**	**6**	**–**	**–**
Settlements and other	**–**	**–**	**(44)**	**3**	**–**
Financial instruments transferred into Level 3	**–**	**–**	**–**	**(10)**	**–**
Financial instruments transferred out of Level 3	**–**	**–**	**–**	**2**	**11**
Fair value as at October 31, 2019	**458**	**362**	**360**	**4**	**–**
Change in unrealized gains and losses included in *Net income* with respect to financial assets and financial liabilities held as at October 31, 2019[3]	**(76)**	**–**	**12**	**16**	**–**

					Year ended October 31, 2018
	Securities at fair value through profit or loss	Securities at fair value through other comprehensive income	Loans	Derivative financial instruments[1]	Deposits
Fair value as at November 1, 2017	184	158	428	20	(1)
Total realized and unrealized gains (losses) included in *Net income*[4]	29	–	16	–	–
Total realized and unrealized gains (losses) included in *Other comprehensive income*	–	–	–	–	–
Purchases	117	75	–	–	–
Sales	(21)	–	–	–	–
Issuances	–	–	8	–	(8)
Settlements and other	–	–	(66)	(8)	–
Financial instruments transferred into Level 3	4	–	–	(1)	(3)
Financial instruments transferred out of Level 3	–	–	–	(18)	1
Fair value as at October 31, 2018	313	233	386	(7)	(11)
Change in unrealized gains and losses included in *Net income* with respect to financial assets and financial liabilities held as at October 31, 2018[5]	7	–	16	–	–

(1) The derivative financial instruments include assets and liabilities presented on a net basis.
(2) Total gains (losses) included in *Non-interest income* was a loss of $41 million.
(3) Total unrealized gains (losses) included in *Non-interest income* was an unrealized loss of $48 million.
(4) Total gains (losses) included in *Non-interest income* was a gain of $45 million.
(5) Total unrealized gains (losses) included in *Non-interest income* was an unrealized gain of $23 million.

(millions of Canadian dollars)

Note 3 – Fair Value of Financial Instruments (cont.)

Financial Instruments Not Recorded at Fair Value on the Consolidated Balance Sheet

The following tables show the financial instruments that have not been recorded at fair value on the Consolidated Balance Sheet according to the fair value hierarchy, except for those whose carrying value is a reasonable approximation of fair value.

				As at October 31, 2019
	Level 1	Level 2	Level 3	Total
Financial assets				
Securities at amortized cost				
Securities issued or guaranteed by				
Canadian government	–	5,292	–	5,292
Canadian provincial and municipal governments	–	1,805	–	1,805
U.S. Treasury, other U.S. agencies and other foreign governments	–	138	–	138
Other debt securities	–	2,589	–	2,589
	–	9,824	–	9,824
Loans, net of allowances	–	59,857	80,301	140,158
Financial liabilities				
Deposits	–	178,861	–	178,861
Other				
Liabilities related to transferred receivables	–	13,186	–	13,186
Other liabilities	–	912	–	912
Subordinated debt	–	765	–	765
	–	193,724	–	193,724

				As at October 31, 2018
	Level 1	Level 2	Level 3	Total
Financial assets				
Securities at amortized cost				
Securities issued or guaranteed by				
Canadian government	–	4,914	–	4,914
Canadian provincial and municipal governments	–	1,667	–	1,667
U.S. Treasury, other U.S. agencies and other foreign governments	–	21	–	21
Other debt securities	–	1,635	–	1,635
	–	8,237	–	8,237
Loans, net of allowances	–	56,938	75,812	132,750
Financial liabilities				
Deposits	–	160,938	–	160,938
Other				
Liabilities related to transferred receivables	–	12,361	–	12,361
Other liabilities	–	899	–	899
Subordinated debt	–	734	–	734
	–	174,932	–	174,932

(millions of Canadian dollars)

Note 4 – Financial Instruments Designated at Fair Value Through Profit or Loss

The Bank chose to designate certain financial instruments at fair value through profit or loss according to the criteria presented in Note 1 to these consolidated financial statements. Consistent with its risk management strategy and in accordance with the fair value option, which permits the designation if it eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise from measuring financial assets and liabilities or recognizing the gains and losses thereon on different bases, the Bank designated at fair value through profit or loss certain securities, certain securities purchased under reverse repurchase agreements, and certain liabilities related to transferred receivables. The fair value of liabilities related to transferred receivables does not include credit risk, as the holders of these liabilities are not exposed to the Bank's credit risk. The Bank also designated certain deposits that include embedded derivative financial instruments at fair value through profit or loss.

To determine a change in fair value arising from a change in the credit risk of deposits designated at fair value through profit or loss, the Bank calculates, at the beginning of the period, the present value of the instrument's contractual cash flows using the following rates: first, using an observed discount rate for similar securities that reflects the Bank's credit spread and, then, using a rate that excludes the Bank's credit spread. The difference obtained between the two values is then compared to the difference obtained using the same rates at the end of the period.

Information about the financial assets and financial liabilities designated at fair value through profit or loss is provided in the following tables.

	Carrying value as at October 31, 2019	**Unrealized gains (losses) for the year ended October 31, 2019**	**Unrealized gains (losses) since the initial recognition of the instrument**
Financial assets designated at fair value through profit or loss			
Securities	**3,267**	**86**	**26**
Securities purchased under reverse repurchase agreements	**87**	**–**	**–**
	3,354	**86**	**26**
Financial liabilities designated at fair value through profit or loss			
Deposits[(1)(2)]	**11,203**	**(789)**	**(204)**
Liabilities related to transferred receivables	**8,215**	**(163)**	**(75)**
	19,418	**(952)**	**(279)**

	Carrying value as at October 31, 2018	Unrealized gains (losses) for the year ended October 31, 2018	Unrealized gains (losses) since the initial recognition of the instrument
Financial assets designated at fair value through profit or loss			
Securities	3,890	(55)	(92)
Securities purchased under reverse repurchase agreements	479	–	–
	4,369	(55)	(92)
Financial liabilities designated at fair value through profit or loss			
Deposits[(1)(2)]	10,126	518	551
Liabilities related to transferred receivables	7,714	172	87
	17,840	690	638

(1) For the year ended October 31, 2019, the change in the fair value of deposits designated at fair value through profit or loss attributable to credit risk, and recorded in *Other comprehensive income*, resulted in a gain of $7 million ($28 million gain for the year ended October 31, 2018).
(2) The amount at maturity that the Bank will be contractually required to pay to the holders of these deposits varies and will differ from the reporting date fair value.

(millions of Canadian dollars)

Note 5 – Offsetting Financial Assets and Financial Liabilities

Financial assets and liabilities are offset and the net amount is presented on the Consolidated Balance Sheet when the Bank has a legally enforceable right to set off the recognized amounts and intends to settle on a net basis or to realize the asset and settle the liability simultaneously.

Generally, over-the-counter financial derivatives subject to master netting arrangements of the International Swaps & Derivatives Association, Inc. or other similar agreements do not meet the netting criteria on the Consolidated Balance Sheet because the right of set-off is legally enforceable only in the event of default, insolvency or bankruptcy.

Generally, securities purchased under reverse repurchase agreements and securities borrowed as well as obligations related to securities sold under repurchase agreements and securities loaned, subject to master agreements, do not meet the netting criteria since they confer a right of set-off that is enforceable only in the event of default, insolvency or bankruptcy.

However, the above-mentioned transactions may be subject to contractual netting agreements concluded with clearing houses. If the netting criteria are met, these transactions are netted on the Consolidated Balance Sheet. In addition, as part of these transactions, the Bank may give or receive cash or other financial instruments used as collateral.

The following tables present information on financial assets and financial liabilities that are netted on the Consolidated Balance Sheet because they meet the netting criteria and on those that are not netted and are subject to an enforceable master netting arrangement or similar agreement.

						As at October 31, 2019
				Associated amounts not set off on the Consolidated Balance Sheet		
	Gross amounts recognized	Amounts set off on the Consolidated Balance Sheet	Net amounts reported on the Consolidated Balance Sheet	Financial instruments[1]	Financial assets received/pledged as collateral[2]	Net amounts
Financial assets						
Securities purchased under reverse repurchase agreements and securities borrowed	20,889	3,166	17,723	4,493	13,192	38
Derivative financial instruments	10,947	2,818	8,129	3,415	2,529	2,185
	31,836	5,984	25,852	7,908	15,721	2,223
Financial liabilities						
Obligations related to securities sold under repurchase agreements and securities loaned	25,066	3,166	21,900	4,493	17,327	80
Derivative financial instruments	9,670	2,818	6,852	3,415	2,051	1,386
	34,736	5,984	28,752	7,908	19,378	1,466

						As at October 31, 2018
				Associated amounts not set off on the Consolidated Balance Sheet		
	Gross amounts recognized	Amounts set off on the Consolidated Balance Sheet	Net amounts reported on the Consolidated Balance Sheet	Financial instruments[1]	Financial assets received/pledged as collateral[2]	Net amounts
Financial assets						
Securities purchased under reverse repurchase agreements and securities borrowed	18,446	287	18,159	3,156	14,943	60
Derivative financial instruments	10,923	2,315	8,608	3,151	3,748	1,709
	29,369	2,602	26,767	6,307	18,691	1,769
Financial liabilities						
Obligations related to securities sold under repurchase agreements and securities loaned	20,285	287	19,998	3,156	16,752	90
Derivative financial instruments	8,351	2,315	6,036	3,151	1,381	1,504
	28,636	2,602	26,034	6,307	18,133	1,594

(1) Carrying amount of financial instruments that are subject to an enforceable master netting agreement or similar agreement but that do not satisfy offsetting criteria.
(2) Excludes non-financial instruments collateral.

(millions of Canadian dollars)

Note 6 – Securities

Residual Contractual Maturities of Securities

As at October 31					2019	2018
	1 year or less	Over 1 year to 5 years	Over 5 years	No specified maturity	Total	Total
Securities at fair value through profit or loss						
Securities issued or guaranteed by						
Canadian government	600	7,672	2,151	–	10,423	14,599
Canadian provincial and municipal governments	607	2,585	3,570	–	6,762	10,628
U.S. Treasury, other U.S. agencies and other foreign governments	1,679	82	99	–	1,860	563
Other debt securities	314	1,327	1,052	–	2,693	3,416
Equity securities	–	–	–	40,085	40,085	26,611
	3,200	11,666	6,872	40,085	61,823	55,817
Securities at fair value through other comprehensive income						
Securities issued or guaranteed by						
Canadian government	45	3,627	760	–	4,432	2,585
Canadian provincial and municipal governments	36	909	729	–	1,674	2,184
U.S. Treasury, other U.S. agencies and other foreign governments	–	3,341	205	–	3,546	123
Other debt securities	1	85	288	–	374	425
Equity securities	–	–	–	622	622	351
	82	7,962	1,982	622	10,648	5,668
Securities at amortized cost(1)						
Securities issued or guaranteed by						
Canadian government	506	4,742	–	–	5,248	4,952
Canadian provincial and municipal governments	122	1,428	238	–	1,788	1,680
U.S. Treasury, other U.S. agencies and other foreign governments	118	20	1	–	139	21
Other debt securities	69	1,367	1,144	–	2,580	1,645
	815	7,557	1,383	–	9,755	8,298

(1) As at October 31, 2019, securities at amortized cost are presented net of $1 million in allowances for credit losses ($1 million as at October 31, 2018).

Credit Quality

As at October 31, 2019 and 2018, securities at fair value through other comprehensive income and securities at amortized cost are classified in Stage 1, with their credit quality falling mainly in the "Excellent" category according to the Bank's internal risk-rating categories. For additional information on the reconciliation of allowances for credit losses, see Note 7 to these consolidated financial statements.

(millions of Canadian dollars)

Note 6 – Securities (cont.)

Gross Gains (Losses) on Securities at Fair Value Through Other Comprehensive Income

				As at October 31, 2019
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Carrying value[1]
Securities issued or guaranteed by				
Canadian government	4,411	26	(5)	4,432
Canadian provincial and municipal governments	1,614	60	–	1,674
U.S. Treasury, other U.S. agencies and other foreign governments	3,521	25	–	3,546
Other debt securities	364	11	(1)	374
Equity securities	649	2	(29)	622
	10,559	124	(35)	10,648

				As at October 31, 2018
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Carrying value[1]
Securities issued or guaranteed by				
Canadian government	2,624	1	(40)	2,585
Canadian provincial and municipal governments	2,196	22	(34)	2,184
U.S. Treasury, other U.S. agencies and other foreign governments	123	–	–	123
Other debt securities	434	1	(10)	425
Equity securities	356	–	(5)	351
	5,733	24	(89)	5,668

(1) The allowances for credit losses on securities at fair value through other comprehensive income, representing a negligible amount as at October 31, 2019 and 2018, are reported in *Other comprehensive income*. For additional information, see Note 7 to these consolidated financial statements.

Equity Securities Designated at Fair Value Through Other Comprehensive Income

The Bank designated certain equity securities, the main business objective of which is to generate dividend income, at fair value through other comprehensive income without subsequent reclassification of gains and losses to net income.

During the year ended October 31, 2019, an amount of $25 million in dividend income was recognized for these investments ($17 million for the year ended October 31, 2018), including $1 million for investments that were sold during the year ended October 31, 2019 (negligible amounts for the year ended October 31, 2018).

	Year ended October 31, 2019			Year ended October 31, 2018		
	Equity securities of private companies	Equity securities of public companies	Total	Equity securities of private companies	Equity securities of public companies	Total
Fair value at beginning	233	118	351	158	122	280
Change in fair value	(4)	(23)	(27)	–	(2)	(2)
Designated at fair value through other comprehensive income[1][2]	133	253	386	75	34	109
Sales[3]	–	(88)	(88)	–	(36)	(36)
Fair value at end	362	260	622	233	118	351

(1) On June 30, 2019, the Bank concluded that it had lost significant influence over NSIA Participations (NSIA) and therefore ceased using the equity method to account for this investment. The Bank designated its investment in NSIA as a financial asset measured at fair value through other comprehensive income. For additional information, see Note 9 to these consolidated financial statements.
(2) On May 9, 2019, after disposing of a portion of its investment in Fiera Capital Corporation, the Bank designated the retained interest as a financial asset measured at fair value through other comprehensive income. For additional information, see Note 9 to these consolidated financial statements.
(3) The Bank disposed of public company equity securities for economic reasons.

Gains (Losses) on Disposals of Securities at Amortized Cost

During the years ended October 31, 2019 and 2018, the Bank sold certain debt securities measured at amortized cost. The carrying value of these securities upon disposal was $461 million for the year ended October 31, 2019 ($134 million for the year ended October 31, 2018), and the Bank recognized gains of $9 million for the year ended October 31, 2019 (negligible amounts for the year ended October 31, 2018) in *Non-interest income – Gains (losses) on non-trading securities, net* in the Consolidated Statement of Income.

Note 7 – Loans and Allowances for Credit Losses

Loans are recognized either at fair value through profit or loss or at amortized cost using the financial asset classification criteria defined in IFRS 9.

Determining and Measuring Expected Credit Losses (ECL)

Determining Expected Credit Losses
Expected credit losses are determined using a three-stage impairment approach that is based on the change in the credit quality of financial assets since initial recognition.

Stage 1
Financial assets that have experienced no significant increase in credit risk between initial recognition and the reporting date and for which 12-month expected credit losses are recorded at the reporting date are classified in Stage 1.

Stage 2
Financial assets that have experienced a significant increase in credit risk between initial recognition and the reporting date, and for which lifetime expected credit losses are recorded at the reporting date, are classified in Stage 2.

Stage 3
Financial assets for which there is objective evidence of impairment, for which one or more events have had a detrimental impact on the estimated future cash flows of these financial assets at the reporting date, and for which lifetime expected credit losses are recorded, are classified in Stage 3.

POCI
Financial assets that are credit-impaired when purchased or originated (POCI) are classified in the POCI category.

Impairment Governance
A rigorous control framework is applied to the determination of expected credit losses. The Bank has policies and procedures that govern impairments arising from credit risk. These policies are documented and periodically reviewed by the Risk Management group. All models used to calculate expected credit losses are validated, and controls are in place to ensure they are applied.

These models are validated by groups that are independent of the team that prepares the calculations. Complex questions on measurement methodologies and assumptions are reviewed by a group of experts from various functions. Furthermore, the inputs and assumptions used to determine expected credit losses are reviewed on a regular basis.

Measurement of Expected Credit Losses (ECL)
Expected credit losses are estimated using three main variables: (1) probability of default (PD), (2) loss given default (LGD) and (3) exposure at default (EAD). For accounting purposes, 12-month PD and lifetime PD are the probabilities of a default occurring over the next 12 months or over the life of a financial instrument, respectively, based on conditions existing at the balance sheet date and on future economic conditions that have, or will have, an impact on credit risk. LGD reflects the losses expected should default occur and considers such factors as the mitigating effects of collateral, the realizable value thereof, and the time value of money. EAD is the expected balance owing at default and considers such factors as repayments of principal and interest between the balance sheet date and the time of default as well as any amounts expected to be drawn on a committed facility. Twelve-month expected credit losses are estimated by multiplying 12-month PD by LGD and by EAD. Lifetime expected credit losses are estimated using the lifetime PD.

For most financial instruments, expected credit losses are measured on an individual basis. Financial instruments that have credit losses measured on a collective basis are grouped according to similar credit risk characteristics such as type of instrument, geographic location, comparable risk level, and business sector or industry.

Inputs, Assumptions and Estimation Techniques
The Bank's approach to calculating expected credit losses consists essentially of leveraging existing regulatory models and then adjusting their parameters for IFRS 9 purposes. These models have the advantage of having been thoroughly tested and validated. In addition, using the same base models, regardless of the purpose, provides consistency across risk assessments. These models use inputs, assumptions and estimation techniques that require a high degree of management judgment. The main factors that contribute to changes in ECL that are subject to significant judgment include the following:

- calibration of regulatory parameters in order to obtain point-in-time and forward-looking parameters;
- forecasts of macroeconomic variables for multiple scenarios and the probability weighting of the scenarios;
- determination of the significant increases in credit risk (SICR) of a loan.

Note 7 – Loans and Allowances for Credit Losses (cont.)

Main Parameters

PD Estimates

Since the objective of the regulatory calibration of PD is to align historical data to the long-run default rate, adjustments are required to obtain a point-in-time, forward-looking PD, as required by IFRS 9. The Bank performs the following: (1) A point-in-time calibration, where the PD of the portfolio is aligned with the appropriate default rate. The resulting PD estimate generally equals the prior-year default rate. The prior-year default rate is selected for the calibration performed at this stage, as it often reflects one of the most accurate and appropriate estimates of the current-year default rate; (2) Forward-looking adjustments are incorporated through, among other measures, a calibration factor based on forecasts produced by the stress testing team's analyses. The team considers three macroeconomic scenarios, and, for each scenario, produces a forward-looking assessment covering the three upcoming years.

LGD Estimates

The LGD estimation method consists of using, for each of the three macroeconomic scenarios, expected LGD based on the LGD values observed using backtesting, the economic LGD estimated and used to calculate economic capital, and lastly, the estimated downturn LGD used to calculate regulatory capital.

EAD Estimates

For term loans, the Bank uses expected EAD, which is the outstanding balance anticipated at each point in time. Expected EAD decreases over time according to contractual repayments and to prepayments. For revolving loans, the EAD percentage is based on the percentage estimated by the corresponding regulatory model and, thereafter, is converted to dollars according to the authorized balance.

Expected Life

For most financial instruments, the expected life used when measuring expected credit losses is the remaining contractual life. For revolving financial instruments where there is no contractual maturity, such as credit cards or lines of credit, the expected life is based on the behavioural life of clients who have defaulted or closed their account.

Incorporation of Forward-Looking Information

The Bank's Economy and Strategy Group is responsible for developing three macroeconomic scenarios and for recommending probability weights for each scenario. Macroeconomic scenarios are not developed for specific portfolios, as the Economy and Strategy Group provides a set of variables for each of the defined scenarios for the next three years. The PDs are also adjusted to incorporate economic assumptions (interest rates, unemployment rates, GDP forecasts, oil prices, housing price indices, etc.) that can be statistically tied to PD changes that will have an impact beyond the next 12 months. These statistical relationships are determined using the processes developed for stress testing. In addition, the group considers other relevant factors that may not be adequately reflected in the information used to calculate the PDs (including late payments and whether the financial asset is subject to additional monitoring within the watchlist process for business and government loan portfolios).

Determination of a Significant Increase in the Credit Risk of a Financial Instrument

At each reporting period, the Bank determines whether credit risk has increased significantly since initial recognition by examining the change in the risk of default occurring over the remaining life of the financial instrument. First, the Bank compares the point-in-time forward-looking remaining lifetime PD at the reporting date with the expected point-in-time forward-looking remaining lifetime PD established at initial recognition. Based on this comparison, the Bank determines whether the loan has deteriorated when compared to the initial conditions. Because the comparison includes an adjustment based on origination-date forward-looking information and reporting-date forward-looking information, the deterioration may be caused by the following factors: (i) deterioration of the economic outlook used in the forward-looking assessment; (ii) deterioration of the borrower's conditions (payment defaults, worsening financial ratios, etc.); or (iii) a combination of both factors. The quantitative criteria used to determine a significant increase in credit risk are a series of relative and absolute thresholds, and a backstop is also applied. All financial instruments that are over 30 days past due but below 90 days past due are migrated to Stage 2, even if the other criteria do not indicate a significant increase in credit risk.

Credit Quality of Loans

The following tables present the gross carrying amounts of loans as at October 31, 2019 and 2018, according to credit quality and ECL impairment stage of each loan category at amortized cost, and according to credit quality for loans at fair value through profit or loss. For additional information on credit quality according to the Advanced Internal Rating-Based (AIRB) categories, see the Internal Default Risk Ratings table on page 69 in the Credit Risk Management section of the MD&A for the year ended October 31, 2019.

(millions of Canadian dollars)

						As at October 31, 2019
	Non-impaired loans		Impaired loans		Loans at fair value through profit or loss[1]	
	Stage 1	Stage 2	Stage 3	POCI		Total
Residential mortgage						
Excellent	21,840	–	–	–	–	21,840
Good	14,375	11	–	–	–	14,386
Satisfactory	8,178	674	–	–	–	8,852
Special mention	413	497	–	–	–	910
Substandard	101	248	–	–	–	349
Default	–	–	117	–	–	117
AIRB approach	44,907	1,430	117	–	–	46,454
Standardized approach	3,686	19	27	553	6,432	10,717
Gross carrying amount	48,593	1,449	144	553	6,432	57,171
Allowances for credit losses[2]	37	12	25	(53)	–	21
Carrying amount	48,556	1,437	119	606	6,432	57,150
Personal						
Excellent	14,331	–	–	–	–	14,331
Good	10,119	206	–	–	–	10,325
Satisfactory	4,973	1,477	–	–	–	6,450
Special mention	416	711	–	–	–	1,127
Substandard	109	199	–	–	–	308
Default	–	–	139	–	–	139
AIRB approach	29,948	2,593	139	–	–	32,680
Standardized approach	3,545	83	23	613	–	4,264
Gross carrying amount	33,493	2,676	162	613	–	36,944
Allowances for credit losses[2]	64	103	69	(4)	–	232
Carrying amount	33,429	2,573	93	617	–	36,712
Credit card						
Excellent	370	–	–	–	–	370
Good	316	–	–	–	–	316
Satisfactory	786	20	–	–	–	806
Special mention	421	241	–	–	–	662
Substandard	22	112	–	–	–	134
Default	–	–	–	–	–	–
AIRB approach	1,915	373	–	–	–	2,288
Standardized approach	34	–	–	–	–	34
Gross carrying amount	1,949	373	–	–	–	2,322
Allowances for credit losses[2]	26	102	–	–	–	128
Carrying amount	1,923	271	–	–	–	2,194
Business and government[3]						
Excellent	4,783	–	–	–	112	4,895
Good	22,951	4	–	–	53	23,008
Satisfactory	22,367	1,346	–	–	72	23,785
Special mention	87	1,131	–	–	–	1,218
Substandard	45	255	–	–	–	300
Default	–	–	306	–	–	306
AIRB approach	50,233	2,736	306	–	237	53,512
Standardized approach	3,779	–	72	–	129	3,980
Gross carrying amount	54,012	2,736	378	–	366	57,492
Allowances for credit losses[2]	58	99	140	–	–	297
Carrying amount	53,954	2,637	238	–	366	57,195
Total loans						
Gross carrying amount	138,047	7,234	684	1,166	6,798	153,929
Allowances for credit losses[2]	185	316	234	(57)	–	678
Carrying amount	137,862	6,918	450	1,223	6,798	153,251

(1) Not subject to expected credit losses.
(2) The allowances for credit losses do not include the amounts related to undrawn commitments reported in the *Other liabilities* item of the Consolidated Balance Sheet.
(3) Includes customers' liability under acceptances.

(millions of Canadian dollars)

Note 7 – Loans and Allowances for Credit Losses (cont.)

As at October 31, 2018

	Non-impaired loans		Impaired loans			
	Stage 1	Stage 2	Stage 3	POCI	Loans at fair value through profit or loss(1)	Total
Residential mortgage						
Excellent	19,035	–	–	–	–	19,035
Good	14,928	10	–	–	–	14,938
Satisfactory	8,838	348	–	–	–	9,186
Special mention	421	621	–	–	–	1,042
Substandard	81	300	–	–	–	381
Default	–	–	128	–	–	128
AIRB approach	43,303	1,279	128	–	–	44,710
Standardized approach	2,546	27	23	487	5,858	8,941
Gross carrying amount	45,849	1,306	151	487	5,858	53,651
Allowances for credit losses(2)	31	13	21	(64)	–	1
Carrying amount	45,818	1,293	130	551	5,858	53,650
Personal						
Excellent	13,625	2	–	–	–	13,627
Good	10,089	52	–	–	–	10,141
Satisfactory	5,430	902	–	–	–	6,332
Special mention	456	694	–	–	–	1,150
Substandard	91	204	–	–	–	295
Default	–	–	137	–	–	137
AIRB approach	29,691	1,854	137	–	–	31,682
Standardized approach	4,421	140	27	1,087	–	5,675
Gross carrying amount	34,112	1,994	164	1,087	–	37,357
Allowances for credit losses(2)	71	120	71	(3)	–	259
Carrying amount	34,041	1,874	93	1,090	–	37,098
Credit card						
Excellent	416	–	–	–	–	416
Good	306	–	–	–	–	306
Satisfactory	888	37	–	–	–	925
Special mention	294	249	–	–	–	543
Substandard	12	96	–	–	–	108
Default	–	–	–	–	–	–
AIRB approach	1,916	382	–	–	–	2,298
Standardized approach	27	–	–	–	–	27
Gross carrying amount	1,943	382	–	–	–	2,325
Allowances for credit losses(2)	24	105	–	–	–	129
Carrying amount	1,919	277	–	–	–	2,196
Business and government(3)						
Excellent	4,736	–	–	–	111	4,847
Good	24,005	6	–	–	55	24,066
Satisfactory	18,986	1,068	–	–	84	20,138
Special mention	493	758	–	–	–	1,251
Substandard	55	121	–	–	–	176
Default	–	–	276	–	–	276
AIRB approach	48,275	1,953	276	–	250	50,754
Standardized approach	2,611	1	39	2	–	2,653
Gross carrying amount	50,886	1,954	315	2	250	53,407
Allowances for credit losses(2)	48	86	134	1	–	269
Carrying amount	50,838	1,868	181	1	250	53,138
Total loans						
Gross carrying amount	132,790	5,636	630	1,576	6,108	146,740
Allowances for credit losses(2)	174	324	226	(66)	–	658
Carrying amount	132,616	5,312	404	1,642	6,108	146,082

(1) Not subject to expected credit losses.
(2) The allowances for credit losses do not include the amounts related to undrawn commitments reported in the *Other liabilities* item of the Consolidated Balance Sheet.
(3) Includes customers' liability under acceptances.

(millions of Canadian dollars)

The following table presents the credit risk exposures of off-balance-sheet commitments as at October 31, 2019 and 2018 according to credit quality and ECL impairment stage.

	As at October 31, 2019				As at October 31, 2018			
	Stage 1	**Stage 2**	**Stage 3**	**Total**	Stage 1	Stage 2	Stage 3	Total
Off-balance-sheet commitments[1]								
Retail								
Excellent	12,088	2	–	12,090	11,440	9	–	11,449
Good	3,585	51	–	3,636	2,450	13	–	2,463
Satisfactory	1,328	180	–	1,508	969	117	–	1,086
Special mention	114	82	–	196	79	77	–	156
Substandard	5	19	–	24	2	13	–	15
Default	–	–	4	4	–	–	2	2
Non-retail								
Excellent	10,050	–	–	10,050	5,881	–	–	5,881
Good	14,640	1	–	14,641	13,570	–	–	13,570
Satisfactory	6,165	513	–	6,678	4,302	353	–	4,655
Special mention	17	161	–	178	133	142	–	275
Substandard	167	29	–	196	3	6	–	9
Default	–	–	16	16	–	–	4	4
AIRB approach	48,159	1,038	20	49,217	38,829	730	6	39,565
Standardized approach	6,154	–	1	6,155	6,434	–	5	6,439
Total exposure	54,313	1,038	21	55,372	45,263	730	11	46,004
Allowances for credit losses	53	20	1	74	38	15	1	54
Total exposure, net of allowances	54,260	1,018	20	55,298	45,225	715	10	45,950

(1) Represent letters of guarantee and documentary letters of credit, undrawn commitments, and backstop liquidity and credit enhancement facilities.

(millions of Canadian dollars)

Note 7 – Loans and Allowances for Credit Losses (cont.)

Loans Past Due But Not Impaired[1]

	As at October 31, 2019				As at October 31, 2018			
	Residential mortgage	Personal	Credit card	Business and government[2]	Residential mortgage	Personal	Credit card	Business and government[2]
Past due but not impaired								
31 to 60 days	92	82	27	31	105	102	27	36
61 to 90 days	34	34	13	21	41	59	13	41
Over 90 days[3]	–	–	28	–	–	–	27	–
	126	116	68	52	146	161	67	77

(1) Loans less than 31 days past due are not presented as they are not considered past due from an administrative standpoint.
(2) Includes customers' liability under acceptances.
(3) All loans more than 90 days past due, except for credit card receivables, are considered impaired (Stage 3).

Impaired Loans

	As at October 31, 2019			As at October 31, 2018		
	Gross	Allowances for credit losses	Net	Gross	Allowances for credit losses	Net
Loans – Stage 3						
Residential mortgage	144	25	119	151	21	130
Personal	162	69	93	164	71	93
Credit card[1]	–	–	–	–	–	–
Business and government[2]	378	140	238	315	134	181
	684	234	450	630	226	404
Loans – POCI	1,166	(57)	1,223	1,576	(66)	1,642
	1,850	177	1,673	2,206	160	2,046

(1) Credit card receivables are considered impaired, at the latest, when payment is 180 days past due, and they are written off at that time.
(2) Includes customers' liability under acceptances.

Maximum Exposure to Credit Risk on Impaired Loans

The following table presents the maximum exposure to credit risk of impaired loans, the percentage of exposure covered by guarantees, and the main types of collateral and guarantees held for each loan category.

As at October 31	2019		2018		
	Gross impaired loans	Percentage covered by guarantees[1]	Gross impaired loans	Percentage covered by guarantees[1]	Types of collateral and guarantees
Loans – Stage 3					
Residential mortgage	144	100 %	151	100 %	Residential buildings
Personal	162	46 %	164	44 %	Buildings and automobiles
Business and government[2]	378	53 %	315	54 %	Buildings, equipment, government and bank guarantees
Loans – POCI	1,166	28 %	1,576	14 %	Buildings and automobiles

(1) For gross impaired loans, the ratio is calculated on a weighted average basis using the estimated value of the collateral and guarantees held for each loan category presented. The value of the collateral and guarantees held for a specific loan may exceed the balance of the loan; when this is the case, the ratio is capped at 100%.
(2) Includes customers' liability under acceptances.

(millions of Canadian dollars)

Allowances for Credit Losses

The tables below present a reconciliation of the allowances for credit losses by Consolidated Balance Sheet item and by type of off-balance-sheet commitment.

	Year ended October 31, 2019					
	Allowances for credit losses as at October 31, 2018	Provisions for credit losses	Write-offs[1]	Disposals	Recoveries and other	Allowances for credit losses as at October 31, 2019
Balance sheet						
Cash and deposits with financial institutions[2][3]	1	1	–	–	–	2
Securities[3]						
At fair value through other comprehensive income[4]	–	–	–	–	–	–
At amortized cost[2]	1	–	–	–	–	1
Securities purchased under reverse repurchase agreements and securities borrowed[2][3]	–	–	–	–	–	–
Loans[5]						
Residential mortgage	1	26	(7)	–	1	21
Personal	259	137	(188)	–	24	232
Credit card	129	88	(104)	–	15	128
Business and government	249	66	(52)	(1)	6	268
Customers' liability under acceptances	20	9	–	–	–	29
	658	326	(351)	(1)	46	678
Other assets[2][3]	–	–	–	–	–	–
Off-balance-sheet commitments[6]						
Letters of guarantee and documentary letters of credit	3	3	–	–	–	6
Undrawn commitments	49	17	–	–	–	66
Backstop liquidity and credit enhancement facilities	2	–	–	–	–	2
	54	20	–	–	–	74
	714	347	(351)	(1)	46	755

	Year ended October 31, 2018					
	Allowances for credit losses as at November 1, 2017	Provisions for credit losses	Write-offs[1]	Disposals	Recoveries and other	Allowances for credit losses as at October 31, 2018
Balance sheet						
Cash and deposits with financial institutions[2][3]	1	–	–	–	–	1
Securities[3]						
At fair value through other comprehensive income[4]	–	–	–	–	–	–
At amortized cost[2]	3	(2)	–	–	–	1
Securities purchased under reverse repurchase agreements and securities borrowed[2][3]	–	–	–	–	–	–
Loans[5]						
Residential mortgage	18	(3)	(9)	(6)	1	1
Personal	261	179	(196)	(5)	20	259
Credit card	128	91	(98)	–	8	129
Business and government	250	68	(64)	(13)	8	249
Customers' liability under acceptances	16	4	–	–	–	20
	673	339	(367)	(24)	37	658
Other assets[2][3]	–	–	–	–	–	–
Off-balance-sheet commitments[6]						
Letters of guarantee and documentary letters of credit	3	–	–	–	–	3
Undrawn commitments	54	(11)	–	–	6	49
Backstop liquidity and credit enhancement facilities	1	1	–	–	–	2
	58	(10)	–	–	6	54
	735	327	(367)	(24)	43	714

(1) The contractual amount outstanding on financial assets that were written off during the year ended October 31, 2019 and that are still subject to enforcement activity was $166 million ($152 million for the year ended October 31, 2018).
(2) These financial assets are presented net of the allowances for credit losses on the Consolidated Balance Sheet.
(3) As at October 31, 2019 and 2018, these financial assets were mainly classified in Stage 1 and their credit quality fell within the *Excellent* category.
(4) The allowances for credit losses are reported in the *Accumulated other comprehensive income* item of the Consolidated Balance Sheet.
(5) The allowances for credit losses are reported in the *Allowances for credit losses* item of the Consolidated Balance Sheet.
(6) The allowances for credit losses are reported in the *Other liabilities* item of the Consolidated Balance Sheet.

(millions of Canadian dollars)

Note 7 – Loans and Allowances for Credit Losses (cont.)

The following tables present the reconciliation of allowances for credit losses for each loan category at amortized cost according to ECL impairment stage.

	Year ended October 31, 2019					Year ended October 31, 2018				
	Allowances for credit losses on non-impaired loans		Allowances for credit losses on impaired loans			Allowances for credit losses on non-impaired loans		Allowances for credit losses on impaired loans		
	Stage 1	Stage 2	Stage 3	POCI[1]	Total	Stage 1	Stage 2	Stage 3	POCI[1]	Total
Residential mortgage										
Balance at beginning	31	13	21	(64)	1	22	10	17	(31)	18
Originations or purchases	17	–	–	–	17	14	–	–	–	14
Transfers[2]:										
to Stage 1	13	(10)	(3)	–	–	12	(10)	(2)	–	–
to Stage 2	(1)	2	(1)	–	–	–	2	(2)	–	–
to Stage 3	–	(4)	4	–	–	–	(4)	4	–	–
Net remeasurement of loss allowances[3]	(22)	12	10	11	11	(15)	17	14	(26)	(10)
Derecognitions[4]	(1)	(1)	–	–	(2)	(1)	(2)	(4)	–	(7)
Changes to models	–	–	–	–	–	–	–	–	–	–
Provisions for credit losses	6	(1)	10	11	26	10	3	10	(26)	(3)
Write-offs	–	–	(7)	–	(7)	–	–	(9)	–	(9)
Disposals	–	–	–	–	–	–	–	–	(6)	(6)
Recoveries	–	–	2	–	2	–	–	4	–	4
Foreign exchange movements and other	–	–	(1)	–	(1)	(1)	–	(1)	(1)	(3)
Balance at end	37	12	25	(53)	21	31	13	21	(64)	1
Includes:										
Amounts drawn	37	12	25	(53)	21	31	13	21	(64)	1
Undrawn commitments[5]	–	–	–	–	–	–	–	–	–	–
Personal										
Balance at beginning	72	121	71	(3)	261	91	107	59	7	264
Originations or purchases	48	–	–	–	48	48	–	–	–	48
Transfers[2]:										
to Stage 1	72	(64)	(8)	–	–	80	(76)	(4)	–	–
to Stage 2	(19)	23	(4)	–	–	(29)	35	(6)	–	–
to Stage 3	(7)	(91)	98	–	–	(8)	(123)	131	–	–
Net remeasurement of loss allowances[3]	(91)	127	81	(1)	116	(100)	203	71	(4)	170
Derecognitions[4]	(11)	(11)	(5)	–	(27)	(15)	(14)	(2)	–	(31)
Changes to models	–	–	–	–	–	4	(13)	–	–	(9)
Provisions for credit losses	(8)	(16)	162	(1)	137	(20)	12	190	(4)	178
Write-offs	–	–	(188)	–	(188)	–	–	(196)	–	(196)
Disposals	–	–	–	–	–	–	–	–	(5)	(5)
Recoveries	–	–	27	–	27	–	–	20	–	20
Foreign exchange movements and other	1	(1)	(3)	–	(3)	1	2	(2)	(1)	–
Balance at end	65	104	69	(4)	234	72	121	71	(3)	261
Includes:										
Amounts drawn	64	103	69	(4)	232	71	120	71	(3)	259
Undrawn commitments[5]	1	1	–	–	2	1	1	–	–	2

(1) The total amount of undiscounted initially expected credit losses on the POCI loans acquired for the year ended October 31, 2019 was $92 million ($258 million for the year ended October 31, 2018). The expected credit losses reflected in the purchase price were discounted.
(2) Represent stage transfers deemed to have taken place at the beginning of the quarter in which the transfer occurred.
(3) Includes the net remeasurement of loss allowances (after transfers) attributable mainly to changes in volumes and in the credit quality of existing loans as well as to changes in risk parameters.
(4) Represent reversals to loss allowances arising from full loan repayments (excluding write-offs and disposals).
(5) The allowances for credit losses on undrawn commitments are reported in the *Other liabilities* item of the Consolidated Balance Sheet.

(millions of Canadian dollars)

	Year ended October 31, 2019					Year ended October 31, 2018				
	Allowances for credit losses on non-impaired loans		Allowances for credit losses on impaired loans			Allowances for credit losses on non-impaired loans		Allowances for credit losses on impaired loans		
	Stage 1	Stage 2	Stage 3	POCI[1]	Total	Stage 1	Stage 2	Stage 3	POCI[1]	Total
Credit card										
Balance at beginning	40	115	–	–	155	41	112	–	–	153
Originations or purchases	8	–	–	–	8	8	–	–	–	8
Transfers[2]:										
to Stage 1	97	(97)	–	–	–	95	(95)	–	–	–
to Stage 2	(15)	15	–	–	–	(14)	14	–	–	–
to Stage 3	(2)	(39)	41	–	–	–	(53)	53	–	–
Net remeasurement of loss allowances[3]	(89)	128	48	–	87	(89)	172	31	–	114
Derecognitions[4]	(4)	(2)	–	–	(6)	(1)	(35)	–	–	(36)
Changes to models	12	(7)	–	–	5	–	–	–	–	–
Provisions for credit losses	7	(2)	89	–	94	(1)	3	84	–	86
Write-offs	–	–	(104)	–	(104)	–	–	(98)	–	(98)
Disposals	–	–	–	–	–	–	–	–	–	–
Recoveries	–	–	15	–	15	–	–	14	–	14
Foreign exchange movements and other	–	–	–	–	–	–	–	–	–	–
Balance at end	47	113	–	–	160	40	115	–	–	155
Includes:										
Amounts drawn	26	102	–	–	128	24	105	–	–	129
Undrawn commitments[5]	21	11	–	–	32	16	10	–	–	26
Business and government[6]										
Balance at beginning	65	89	135	1	290	53	74	165	–	292
Originations or purchases	29	–	–	–	29	32	–	–	–	32
Transfers[2]:										
to Stage 1	27	(19)	(8)	–	–	21	(16)	(5)	–	–
to Stage 2	(8)	18	(10)	–	–	(4)	7	(3)	–	–
to Stage 3	(1)	(4)	5	–	–	–	(2)	2	–	–
Net remeasurement of loss allowances[3]	(19)	26	75	–	82	(26)	30	55	1	60
Derecognitions[4]	(10)	(5)	(10)	–	(25)	(12)	(4)	(9)	–	(25)
Changes to models	–	–	–	–	–	–	–	–	–	–
Provisions for credit losses	18	16	52	–	86	11	15	40	1	67
Write-offs	–	–	(52)	–	(52)	–	–	(64)	–	(64)
Disposals	–	–	–	(1)	(1)	–	–	(13)	–	(13)
Recoveries	–	–	8	–	8	–	–	7	–	7
Foreign exchange movements and other	–	–	(2)	–	(2)	1	–	–	–	1
Balance at end	83	105	141	–	329	65	89	135	1	290
Includes:										
Amounts drawn	58	99	140	–	297	48	86	134	1	269
Undrawn commitments[5]	25	6	1	–	32	17	3	1	–	21
Total allowances for credit losses at end[7]	232	334	235	(57)	744	208	338	227	(66)	707
Includes:										
Amounts drawn	185	316	234	(57)	678	174	324	226	(66)	658
Undrawn commitments[5]	47	18	1	–	66	34	14	1	–	49

(1) The total amount of undiscounted initially expected credit losses on the POCI loans acquired during the year ended October 31, 2019 was $92 million ($258 million for the year ended October 2018). The expected credit losses reflected in the purchase price were discounted.
(2) Represent stage transfers deemed to have taken place at the beginning of the quarter in which the transfer occurred.
(3) Includes the net remeasurement of loss allowances (after transfers) attributable mainly to changes in volumes and in the credit quality of existing loans as well as to changes in risk parameters.
(4) Represent reversals to loss allowances arising from full loan repayments (excluding write-offs and disposals).
(5) The allowances for credit losses on undrawn commitments are reported in the *Other liabilities* item of the Consolidated Balance Sheet.
(6) Includes customers' liability under acceptances.
(7) Excludes allowances for credit losses on other financial assets at amortized cost and on off-balance-sheet commitments other than undrawn commitments.

(millions of Canadian dollars)

Note 7 – Loans and Allowances for Credit Losses (cont.)

Distribution of Gross and Impaired Loans by Borrower Category Under the Basel Asset Classes

					2019
			As at October 31		Year ended October 31
	Gross loans[1]	Impaired loans[1]	Allowances for credit losses on impaired loans[1][2]	Provisions for credit losses	Write-offs
Retail					
Residential mortgage[3]	74,448	183	28	10	8
Qualifying revolving retail[4]	4,099	24	15	112	127
Other retail[5]	11,606	84	49	139	164
	90,153	291	92	261	299
Non-retail					
Agriculture	6,308	77	4	(3)	–
Oil and gas and pipelines	4,329	63	32	4	21
Mining	758	–	–	–	–
Utilities	3,372	–	–	–	–
Non-real-estate construction[6]	1,168	–	–	–	–
Manufacturing	6,303	50	28	7	3
Wholesale	2,221	28	10	7	3
Retail	3,289	4	2	(1)	1
Transportation	1,682	9	1	7	6
Communications	1,614	27	11	5	7
Finance and insurance	4,335	12	1	–	–
Real estate services and real estate construction[7]	11,635	32	14	10	3
Professional services	1,846	8	5	1	3
Education and health care	3,520	62	21	14	–
Other services	4,937	20	12	(1)	5
Government	1,071	–	–	–	–
Other	4,222	1	1	1	–
	62,610	393	142	51	52
Stages 1 and 2[8]			578	25	
POCI	1,166	1,166	(57)	10	
	153,929	1,850	755	347	351

(1) Includes customers' liability under acceptances.
(2) Allowances for credit losses on drawn amounts.
(3) Includes residential mortgages on one-to-four-unit dwellings (Basel definition) and home equity lines of credit.
(4) Includes lines of credit and credit card receivables.
(5) Includes consumer loans and other retail loans but excludes SME loans.
(6) Includes civil engineering loans, public-private partnership loans, and project finance loans.
(7) Includes residential mortgages on dwellings of five or more units and SME loans.
(8) Includes other financial assets at amortized cost and off-balance-sheet commitments; the allowances for credit losses on off-balance-sheet commitments include an amount of $1 million for undrawn Stage 3 commitments related to business and government loans.

(millions of Canadian dollars)

					2018
			As at October 31	Year ended October 31	
	Gross loans[1]	Impaired loans[1]	Allowances for credit losses on impaired loans[1][2]	Provisions for credit losses	Write-offs
Retail					
Residential mortgage[3]	70,591	190	22	10	9
Qualifying revolving retail[4]	4,211	23	14	108	123
Other retail[5]	12,246	91	53	165	171
	87,048	304	89	283	303
Non-retail					
Agriculture	5,759	63	7	1	–
Oil and gas and pipelines[6]	4,056	97	53	12	12
Mining	1,032	–	–	–	–
Utilities	2,715	–	–	–	3
Non-real-estate construction[6][7]	1,049	1	1	–	–
Manufacturing[6]	5,303	48	22	11	2
Wholesale	2,163	13	6	–	1
Retail	3,069	11	4	11	22
Transportation[6]	1,452	2	1	1	2
Communications	1,597	19	12	3	–
Finance and insurance	4,732	19	1	–	–
Real estate services and real estate construction[6][8]	11,629	18	5	(3)	16
Professional services	1,582	6	3	1	1
Education and health care[6]	3,284	4	4	3	–
Other services	4,715	24	17	5	3
Government	1,445	–	–	–	–
Other	2,534	1	1	(4)	2
	58,116	326	137	41	64
Stages 1 and 2[9]			554	32	
POCI	1,576	1,576	(66)	(29)	
	146,740	2,206	714	327	367

(1) Includes customers' liability under acceptances.
(2) Allowances for credit losses on drawn amounts.
(3) Includes residential mortgages on one-to-four-unit dwellings (Basel definition) and home equity lines of credit.
(4) Includes lines of credit and credit card receivables.
(5) Includes consumer loans and other retail loans but excludes SME loans.
(6) The presentation of certain borrower categories was changed during fiscal 2019. Comparative figures have been reclassified.
(7) Includes civil engineering loans, public-private partnership loans, and project finance loans.
(8) Includes residential mortgages on dwellings of five or more units and SME loans.
(9) Includes other financial assets at amortized cost and off-balance-sheet commitments; the allowances for credit losses on off-balance-sheet commitments include an amount of $1 million for undrawn Stage 3 commitments related to business and government loans.

(millions of Canadian dollars)

Note 7 – Loans and Allowances for Credit Losses (cont.)

Main Macroeconomic Factors

The following tables show the main macroeconomic factors used to estimate the allowances for credit losses on loans. For each scenario, namely, the base case, upside scenario and downside scenario, the average values of the factors over the next 12 months (used for Stage 1 credit loss calculations) and over the remaining forecast period (used for Stage 2 credit loss calculations) are presented.

						As at October 31, 2019
		Base scenario		Upside scenario		Downside scenario
	Next 12 months	Remaining forecast period	Next 12 months	Remaining forecast period	Next 12 months	Remaining forecast period
Macroeconomic factors(1)						
GDP growth(2)	1.5 %	1.6 %	2.0 %	2.1 %	(2.0) %	1.6 %
Unemployment rate	5.8 %	5.7 %	5.6 %	5.3 %	6.8 %	7.5 %
Housing price index growth(2)	3.1 %	3.1 %	6.1 %	2.3 %	(10.9) %	(0.3) %
BBB spread(3)	1.6 %	1.6 %	1.5 %	1.4 %	2.7 %	2.6 %
S&P/TSX growth(2)(4)	4.9 %	2.4 %	8.5 %	2.9 %	(14.1) %	6.6 %
WTI oil price(5) *(US$ per barrel)*	61	60	71	69	39	39

						As at October 31, 2018
		Base scenario		Upside scenario		Downside scenario
	Next 12 months	Remaining forecast period	Next 12 months	Remaining forecast period	Next 12 months	Remaining forecast period
Macroeconomic factors(1)						
GDP growth(2)	1.9 %	1.5 %	2.5 %	2.0 %	(2.3) %	1.5 %
Unemployment rate	5.7 %	5.5 %	5.6 %	5.3 %	7.0 %	7.8 %
Housing price index growth(2)	2.8 %	0.8 %	3.4 %	2.1 %	(10.6) %	(0.3) %
BBB spread(3)	1.6 %	1.5 %	1.4 %	1.2 %	2.6 %	2.6 %
S&P/TSX growth(2)(4)	3.5 %	2.4 %	6.4 %	3.8 %	(18.5) %	6.9 %
WTI oil price(5) *(US$ per barrel)*	71	68	75	81	46	36

(1) All macroeconomic factors are based on the Canadian economy unless otherwise indicated.
(2) Growth rate is annualized.
(3) Yield on corporate BBB bonds less yield on Canadian federal government bonds with 10-year maturity.
(4) Main stock index in Canada.
(5) The West Texas Intermediate (WTI) oil price index is commonly used as a benchmark.

The main macroeconomic factors used for the personal credit portfolio are unemployment rate and housing price index growth, based on the economy of Canada or Quebec. The main macroeconomic factors used for the business and government credit portfolio are unemployment rate, BBB spread, S&P/TSX growth, and WTI oil price.

An increase in unemployment rate or BBB spread will generally correlate with higher allowances for credit losses, whereas an increase in the other macroeconomic factors (GDP growth, S&P/TSX growth, housing price index growth, and WTI oil price) will generally correlate with lower allowances for credit losses.

(millions of Canadian dollars)

Sensitivity Analysis of Allowances for Credit Losses on Non-Impaired Loans

Scenarios

The following table shows a comparison of the Bank's allowances for credit losses on non-impaired loans (Stages 1 and 2) as at October 31, 2019 based on the probability weightings of three scenarios with allowances for credit losses resulting from simulations of each scenario weighted at 100%.

	Allowances for credit losses on non-impaired loans
Balance as at October 31, 2019	**566**
Simulations	
100% upside scenario	**467**
100% base scenario	**494**
100% downside scenario	**774**

Migration

The following table shows a comparison of the Bank's allowances for credit losses on non-impaired loans (Stages 1 and 2) as at October 31, 2019 with the estimated allowances for credit losses that would result if all these non-impaired loans were in Stage 1.

	Allowances for credit losses on non-impaired loans
Balance as at October 31, 2019	**566**
Simulations	
Non-impaired loans if they were all in Stage 1	**439**

(millions of Canadian dollars)

Note 8 – Financial Assets Transferred But Not Derecognized

In the normal course of its business, the Bank enters into transactions in which it transfers financial assets such as securities or loans directly to third parties, in particular structured entities. According to the terms of some of those transactions, the Bank retains substantially all of the risks and rewards related to those financial assets. The risks include credit risk, interest rate risk, foreign exchange risk, prepayment risk and other price risks, whereas the rewards include income streams associated with the financial assets. As such, those financial assets are not derecognized and the transactions are treated as collateralized or secured borrowings. The nature of those transactions is described below.

Securities Sold Under Repurchase Agreements and Securities Loaned

When securities are sold under repurchase agreements and securities loaned under securities lending agreements, the Bank transfers financial assets to third parties in accordance with the standard terms for such transactions. These third parties may have an unlimited right to resell or repledge the financial assets received. If cash collateral is received, the Bank records the cash along with an obligation to return the cash, which is included in *Obligations related to securities sold under repurchase agreements and securities loaned* on the Consolidated Balance Sheet. Where securities are received as collateral, the Bank does not record the collateral on the Consolidated Balance Sheet.

Financial Assets Transferred to Structured Entities

Under the Canada Mortgage Bond (CMB) program, the Bank sells securities backed by insured residential mortgages and other securities to Canada Housing Trust (CHT), which finances the purchase through the issuance of insured mortgage bonds. Third-party CMB investors have legal recourse only to the transferred assets. The cash received for these transferred assets is treated as a secured borrowing, and a corresponding liability is recorded in *Liabilities related to transferred receivables* on the Consolidated Balance Sheet.

The following table provides additional information about the nature of the transferred financial assets that do not qualify for derecognition and the associated liabilities.

As at October 31	**2019**	2018
Carrying value of financial assets transferred but not derecognized		
Securities(1)	**47,297**	44,125
Residential mortgages	**20,142**	20,064
	67,439	64,189
Carrying value of associated liabilities(2)	**36,625**	32,834
Fair value of financial assets transferred but not derecognized		
Securities(1)	**47,297**	44,125
Residential mortgages	**20,308**	19,993
	67,605	64,118
Fair value of associated liabilities(2)	**36,714**	32,809

(1) The amount related to the securities loaned is the maximum amount of Bank securities that can be lent. For the obligations related to securities sold under repurchase agreements, the amount includes the Bank's own financial assets as well as those of third parties.

(2) Associated liabilities include obligations related to securities sold under repurchase agreements before the offsetting impact of $3,166 million as at October 31, 2019 ($287 million as at October 31, 2018) and liabilities related to transferred receivables. Liabilities related to securities loaned are not included, as the Bank can lend its own financial assets and those of third parties. The carrying value and fair value of liabilities related to securities loaned were $9,753 million as at October 31, 2019 ($7,550 million as at October 31, 2018).

The following table specifies the nature of the transactions related to financial assets transferred but not derecognized.

As at October 31	**2019**	2018
Carrying value of financial assets transferred but not derecognized		
Securities backed by insured residential mortgages and other securities sold to CHT	**21,035**	20,576
Securities sold under repurchase agreements	**16,294**	12,927
Securities loaned	**30,110**	30,686
	67,439	64,189

(millions of Canadian dollars)

Note 9 – Investments in Associates and Joint Ventures

As at October 31		2019	2018 (1)
	Business segment	Carrying value	Carrying value
Listed associates(2)			
TMX Group Limited(3)	Other	273	264
Fiera Capital Corporation(4)	Wealth Management	–	140
		273	404
Unlisted associates			
NSIA Participations(5)	USSF&I	–	140
Other		112	101
		112	241
		385	645

(1) During fiscal 2018, the Bank had disposed of its entire interest in an unlisted joint venture.
(2) The fair value of investments in associates based on quoted prices in active markets was $544 million as at October 31, 2019 ($611 million as at October 31, 2018).
(3) The Bank exercises significant influence over TMX Group Limited mainly through its equity interest, debt financing, and presence on TMX Group Limited's board of directors. As at October 31, 2019, the Bank's ownership interest in TMX Group Limited was 8.5%.
(4) On May 9, 2019, through one of its subsidiaries, the Bank disposed of 10,680,000 Class A subordinate voting shares of Fiera Capital Corporation (Fiera Capital) at a per-share price of $12.00 for gross proceeds of $128 million. Before the transaction, the Bank's investment in Fiera Capital stood at 18% and was accounted for using the equity method. After the transaction, the Bank's ownership percentage was 7%. A gain on disposal of Fiera Capital shares of $79 million, including a $31 million gain on remeasurement at fair value of the retained interest was recognized in the *Non-interest income – Other* item of the Consolidated Statement of Income for the year ended October 31, 2019 and reported in the *Other* heading of segment results. After the transaction, the Bank designated the 7% retained interest as a financial asset measured at fair value through other comprehensive income. As at October 31, 2019, the Bank's ownership interest in Fiera Capital was 5.0%.
(5) On June 30, 2019, the Bank concluded that it had lost significant influence over NSIA Participations (NSIA), an associate entity in the Ivory Coast, and therefore ceased using the equity method to account for this investment. The Bank designated its investment in NSIA as a financial asset measured at fair value through other comprehensive income in an amount of $128 million. Following the fair value measurement, a $33 million loss was recorded in the *Non-interest income – Other* item of the Consolidated Statement of Income and reported in the *Other* heading of segment results. As at October 31, 2019, the Bank's ownership interest in NSIA was 22.1%.

As at October 31, 2019 and 2018, there were no significant restrictions limiting the ability of associates and joint ventures to transfer funds to the Bank in the form of dividends or to repay any loans or advances. Furthermore, the Bank has not made any specific commitment or contracted any contingent liability with respect to associates or joint ventures.

TMX Group Limited
TMX Group Limited is a Canadian corporation that directly or indirectly controls a number of entities that operate stock exchanges and clearing houses and provide clearing and settlement services. During the year ended October 31, 2019, TMX Group Limited paid $12 million in dividends to the Bank ($10 million for the year ended October 31, 2018).

Fiera Capital Corporation (Fiera Capital)
Fiera Capital is an independent Canadian investment management firm. During the year ended October 31, 2019, Fiera Capital paid $10 million in dividends to the Bank, of which $7 million as dividends from an investment in an associate ($13 million for the year ended October 31, 2018).

NSIA Participations
NSIA Participations is a financial group headquartered in Abidjan, Ivory Coast. During the fiscal years ended October 31, 2019 and 2018, NSIA Participations did not pay any dividends to the Bank.

(millions of Canadian dollars)

Note 9 – Investments in Associates and Joint Ventures (cont.)

The following table provides summarized financial information on the Bank's listed associates.

As at October 31	2019[1]	2018[1]		
	TMX Group Limited	TMX Group Limited	Fiera Capital Corporation	Total
Balance sheet				
Current assets	31,099	20,433	210	20,643
Non-current assets	5,215	5,160	1,201	6,361
Current liabilities	31,164	20,653	138	20,791
Non-current liabilities	1,711	1,624	634	2,258
Income statement				
Total revenues	812	780	524	1,304
Net income	270	419	(2)	417
Other comprehensive income (loss)	(38)	(23)	21	(2)
Comprehensive income	232	396	19	415

(1) The balance sheet amounts are the balances reported in the unaudited financial statements as at September 30, 2019 and 2018, which are the most recent available, and the income statement amounts are based on the cumulative balances for the 12-month periods ended September 30, 2019 and 2018.

The table below provides summarized financial information related to the Bank's proportionate share in unlisted associates that are not individually significant.

Year ended October 31	2019[1]	2018[1]
Net income	12	6
Other comprehensive income	1	–
Comprehensive income	13	6

(1) The amounts are based on the cumulative balances for the 12-month periods ended September 30, 2019 and 2018.

(millions of Canadian dollars)

Note 10 – Premises and Equipment

	Land	Head office building under construction(1)	Buildings	Computer equipment	Equipment and furniture	Leasehold improvements	Total
Cost							
As at October 31, 2017	17		255	235	278	292	1,077
Acquisitions	66		6	90	18	59	239
Disposals	(4)		(2)	(4)	(170)	(1)	(181)
Fully amortized assets			(3)	(1)	(8)	(10)	(22)
As at October 31, 2018	79	–	256	320	118	340	1,113
Acquisitions	**1**	**48**	**4**	**39**	**18**	**34**	**144**
Disposals(2)	**(10)**	**–**	**(185)**	**–**	**(26)**	**(52)**	**(273)**
Impairment losses(3)	**–**	**–**	**–**	**(36)**	**–**	**–**	**(36)**
As at October 31, 2019	**70**	**48**	**75**	**323**	**110**	**322**	**948**
Accumulated amortization							
As at October 31, 2017			154	92	146	127	519
Amortization for the year			5	74	16	26	121
Disposals			(1)	(5)	(99)	(1)	(106)
Fully amortized assets			(3)	(1)	(8)	(10)	(22)
As at October 31, 2018			155	160	55	142	512
Amortization for the year			**6**	**57**	**15**	**27**	**105**
Disposals(2)			**(103)**	**–**	**(13)**	**(20)**	**(136)**
Impairment losses(3)			**–**	**(23)**	**–**	**–**	**(23)**
As at October 31, 2019			**58**	**194**	**57**	**149**	**458**
Carrying value as at October 31, 2018	79	–	101	160	63	198	601
Carrying value as at October 31, 2019	**70**	**48**	**17**	**129**	**53**	**173**	**490**

(1) As at October 31, 2019, contractual commitments related to the head office building under construction stood at $312 million and cover a period up to 2023.
(2) On July 30, 2019, the Bank completed the sale of its head office land and building located at 600 De La Gauchetière Street West, Montreal, Quebec, Canada, for gross proceeds of $187 million. At the same time, the Bank entered into a four-year operating lease with the purchaser. This sale-leaseback transaction resulted in a gain of $50 million, which was recognized in the *Non-Interest Income – Other* item of the Consolidated Statement of Income and reported in the *Other* heading of segment results.
(3) During the year ended October 31, 2019, the Bank decided to stop using certain computer equipment. Consequently, an amount of $13 million in impairment losses related to this equipment was recognized in the *Non-interest expenses – Technology* item of the Consolidated Statement of Income and reported in the *Other* heading of segment results.

Assets Leased Under Operating Leases

The Bank is a lessor under operating lease agreements for certain buildings. These leases have terms varying from one year to five years and do not contain any bargain purchase options or contingent rent.

The following table breaks down the future minimum payments receivable under these operating leases.

	As at October 31, 2019
1 year or less	**2**
Over 1 year to 5 years	**6**
Over 5 years	**1**
	9

(millions of Canadian dollars)

Note 11 – Goodwill and Intangible Assets

Goodwill

The following table presents changes in the carrying amounts of goodwill by cash-generating unit (CGU) and by business segment for the years ended October 31, 2019 and 2018.

	Personal and Commercial(1)				Wealth Management	Financial Markets(1)			USSF&I	Total
		Third-Party Solutions(1)	Securities Brokerage(1)	Managed Solutions(1)	Total		Credigy Ltd.(1)	Advanced Bank of Asia Limited(1)	Total	
Balance as at October 31, 2017	54	256	434	269	959	235	32	129	161	1,409
Impact of foreign currency translation	–	–	–	–	–	–	1	2	3	3
Balance as at October 31, 2018	54	256	434	269	959	235	33	131	164	1,412
Impact of foreign currency translation	–	–	–	–	–	–	–	–	–	–
Balance as at October 31, 2019	**54**	**256**	**434**	**269**	**959**	**235**	**33**	**131**	**164**	**1,412**

(1) Constitutes a CGU.

Goodwill Impairment Testing and Significant Assumptions

For impairment testing purposes, goodwill resulting from a business combination must be allocated, as of the acquisition date, to a CGU or a group of CGUs expected to benefit from the synergies of the business combination. Goodwill is tested for impairment annually or more frequently if events or circumstances indicate that the recoverable value of the CGU or group of CGUs may have fallen below its carrying amount.

Goodwill was tested for impairment during the years ended October 31, 2019 and 2018, and no impairment loss was recognized.

The recoverable value of a CGU or group of CGUs is based on the value in use that is calculated based on discounted pre-tax cash flows. Future pre-tax cash flows are estimated based on a five-year period, which is the reference period used for the most recent financial forecasts approved by management. Cash flows beyond that period are extrapolated using a long-term growth rate.

The discount rate used for each CGU or group of CGUs is calculated using the cost of debt financing and the cost related to the Bank's equity. This rate corresponds to the Bank's weighted average cost of capital and reflects the risk specific to the CGU. The long-term growth rate used in calculating discounted cash flow estimates is based on the forecasted growth rate plus a risk premium. The rate is constant over the entire five-year period for which the cash flows were determined. Growth rates are determined, among other factors, based on past growth rates, economic trends, inflation, competition and the impact of the Bank's strategic initiatives. As at October 31, 2019, for each CGU or CGU group, the discount rate used was 12.9% (12.8% as at October 31, 2018) and the long-term growth rate was between 2% and 5%, depending on the CGU, as at October 31, 2019 and 2018.

Estimating a CGU's value in use requires significant judgment regarding the inputs used in applying the discounted cash flow method. The Bank conducts sensitivity analyses by varying the after-tax discount rate upward by 1% and the terminal growth rates down by 1%. Such sensitivity analyses demonstrate that a reasonable change in assumptions would not result in a CGU's carrying value exceeding its value in use.

(millions of Canadian dollars)

Intangible Assets

	Indefinite useful life			Finite useful life				Total
	Management contracts[(1)]	Trademark	Total	Internally-generated software[(2)]	Other software	Other intangible assets	Total	
Cost								
As at October 31, 2017	161	11	172	1,267	115	108	1,490	1,662
Acquisitions	–	–	–	242	13	1	256	256
Fully amortized intangible assets				–	(2)	(6)	(8)	(8)
As at October 31, 2018	161	11	172	1,509	126	103	1,738	1,910
Acquisitions	**–**	**–**	**–**	**329**	**30**	**–**	**359**	**359**
Impairment losses[(3)]	**–**	**–**	**–**	**(85)**	**–**	**–**	**(85)**	**(85)**
Fully amortized intangible assets				**(50)**	**–**	**–**	**(50)**	**(50)**
As at October 31, 2019	**161**	**11**	**172**	**1,703**	**156**	**103**	**1,962**	**2,134**
Accumulated amortization								
As at October 31, 2017				295	61	67	423	423
Amortization for the year				149	23	9	181	181
Fully amortized intangible assets				–	(2)	(6)	(8)	(8)
As at October 31, 2018				444	82	70	596	596
Amortization for the year				**194**	**23**	**6**	**223**	**223**
Impairment losses[(3)]				**(41)**	**–**	**–**	**(41)**	**(41)**
Fully amortized intangible assets				**(50)**	**–**	**–**	**(50)**	**(50)**
As at October 31, 2019				**547**	**105**	**76**	**728**	**728**
Carrying value as at October 31, 2018	161	11	172	1,065	44	33	1,142	1,314
Carrying value as at October 31, 2019	**161**	**11**	**172**	**1,156**	**51**	**27**	**1,234**	**1,406**

(1) For annual impairment testing purposes, management contracts are allocated to the Managed Solutions CGU.
(2) The remaining amortization period for significant internally-generated software is four years.
(3) The Bank wrote off certain technology developments due to obsolescence and decided to discontinue them. The recoverable amount of those technology developments was estimated to be nil. During the year ended October 31, 2019, an amount of $44 million in impairment losses was recognized in the *Non-interest expenses – Technology* item of the Consolidated Statement of Income and reported in the *Other* heading of segment results.

Note 12 – Other Assets

As at October 31	**2019**	2018
Receivables, prepaid expenses and other items	**696**	775
Interest and dividends receivable	**623**	549
Due from clients, dealers and brokers	**570**	1,255
Defined benefit asset (Note 23)	**38**	64
Deferred tax assets (Note 24)	**562**	324
Current tax assets	**216**	113
Reinsurance assets	**33**	31
	2,738	3,111

(millions of Canadian dollars)

Note 13 – Deposits

As at October 31				2019	2018
	On demand[1]	After notice[2]	Fixed term[3]	Total	Total
Personal	4,325	27,271	28,469	60,065	55,688
Business and government	38,680	21,823	64,763	125,266	110,321
Deposit-taking institutions	1,707	1,314	1,214	4,235	4,821
	44,712	50,408	94,446	189,566	170,830

(1) Demand deposits are deposits for which the Bank does not have the right to require notice of withdrawal and consist essentially of deposits in chequing accounts.
(2) Notice deposits are deposits for which the Bank may legally require a notice of withdrawal and consist mainly of deposits in savings accounts.
(3) Fixed-term deposits are deposits that can be withdrawn by the holder on a specified date and include term deposits, guaranteed investment certificates, savings accounts and plans, covered bonds, and similar instruments.

The *Deposits – Business and government* item includes, among other items, covered bonds, as described below and includes a $3.5 billion amount of deposits as at October 31, 2019 that are subject to the bank bail-in conversion regulations issued by the Government of Canada. These regulations provide certain powers to the Canada Deposit Insurance Corporation (CDIC), notably the power to convert certain eligible Bank shares and liabilities into common shares should the Bank become non-viable.

Covered Bonds

NBC Covered Bond Guarantor (Legislative) Limited Partnership

In December 2013, the Bank established the covered bond legislative program under which covered bonds are issued. It therefore created NBC Covered Bond Guarantor (Legislative) Limited Partnership (the Guarantor) to guarantee payment of the principal and interest owed to the bondholders. The Bank sold uninsured residential mortgages to the Guarantor and granted it loans to facilitate the acquisition of these assets. During the year ended October 31, 2019, an amount of 1.0 billion euros in covered bonds matured, and the Bank issued covered bonds in amounts of US$1.3 billion and 750 million euros (US$750 million in covered bonds matured, and the Bank issued covered bonds in an amount of 1.5 billion euros during the year ended October 31, 2018). The covered bonds totalled $9.5 billion as at October 31, 2019 ($8.3 billion as at October 31, 2018). For additional information, see Note 27 to these consolidated financial statements.

The Bank has limited access to the assets owned by this structured entity according to the terms of the agreements that apply to this transaction. The assets owned by this entity totalled $16.5 billion as at October 31, 2019 ($13.2 billion as at October 31, 2018), of which $16.2 billion ($12.9 billion as at October 31, 2018) is presented in *Residential mortgage* loans on the Bank's Consolidated Balance Sheet.

Note 14 – Other Liabilities

As at October 31	2019	2018
Accounts payable and accrued expenses	1,883	1,790
Subsidiaries' debts to third parties	1,225	1,033
Interest and dividends payable	1,061	1,012
Due to clients, dealers and brokers	548	796
Defined benefit liability (Note 23)	374	186
Allowances for credit losses — Off-balance-sheet commitments (Note 7)	74	54
Deferred tax liabilities (Note 24)	5	25
Current tax liabilities	144	48
Insurance liabilities	24	50
Other items[(1)(2)(3)]	839	830
	6,177	5,824

(1) As at October 31, 2019, *Other items* included $6 million in restructuring provisions ($14 million as at October 31, 2018).
(2) As at October 31, 2019, *Other items* included $19 million in litigation provisions ($9 million as at October 31, 2018).
(3) During the year ended October 31, 2019, the Bank reviewed all of the leases for its corporate buildings and recorded $45 million in provisions for onerous contracts in the *Non-interest expenses – Occupancy* item of the Consolidated Statement of Income and reported in the *Other* heading of segment results. As at October 31, 2019, other items included $48 million in provisions for onerous contracts ($3 million as at October 31, 2018).

(millions of Canadian dollars)

Note 15 – Subordinated Debt

The subordinated debt represents direct unsecured obligations, in the form of notes and debentures, to the Bank's debt holders. The rights of the Bank's note and debenture holders are subordinate to the claims of depositors and certain other creditors. Approval from OSFI is required before the Bank can redeem its subordinated notes and debentures in whole or in part.

On February 1, 2018, the Bank had issued medium-term notes for a total amount of $750 million, bearing interest at 3.183% and maturing on February 1, 2028.

As at October 31				**2019**	2018
Maturity date		**Interest rate**	**Characteristics**		
February	2028	3.183%[1]	Redeemable[2]	**750**	750
February	2087	Variable[3]	Redeemable at the Bank's option since February 28, 1993	**9**	9
				759	759
Fair value hedge adjustment				**15**	(10)
Unamortized issuance costs[4]				**(1)**	(2)
Total				**773**	747

(1) Bearing interest at a rate of 3.183%, payable semi-annually until February 1, 2023, and thereafter bearing interest at a floating rate equal to the rate on three-month CDOR plus 0.72%, payable quarterly.
(2) With the prior approval of OSFI, the Bank may, at its option, redeem these notes as of February 1, 2023, in whole or in part, at their nominal value plus accrued and unpaid interest. These notes contain non-viability contingent capital (NVCC) provisions and qualify for the purposes of calculating regulatory capital under Basel III. In the case of a trigger event as defined by OSFI, each note will be automatically and immediately converted, on a full and permanent basis, without the consent of the holder, into a specified number of common shares of the Bank as determined using an automatic conversion formula with a multiplier of 1.5 and a conversion price based on the greater of: (i) a floor price of $5.00; (ii) the current market price of common shares, which represents the volume weighted average price of common shares for the ten trading days ending on the trading day preceding the date of the trigger event. If the common shares are not listed on an exchange when this price is being established, the price will be the fair value reasonably determined by the Bank's Board. The number of shares issued is determined by dividing the par value of the note (plus accrued and unpaid interest on such note) by the conversion price and then applying the multiplier.
(3) Debentures denominated in foreign currency totalling US$7 million as at October 31, 2019 (2018: US$7 million) and bearing interest at a rate of 1/8% above six-month LIBOR.
(4) The unamortized costs related to the issuance of the subordinated debt represent the initial cost, net of accumulated amortization, calculated using the effective interest rate method.

Note 16 – Derivative Financial Instruments

Derivative financial instruments are financial contracts whose value is derived from an underlying interest rate, exchange rate, equity price, commodity price, credit spread or index.

The main types of derivative financial instruments used are presented below.

Forwards and Futures
Forwards and futures are contractual obligations to buy or deliver a specified amount of currency, interest rate, commodity, or financial instrument on a specified future date at a specified price. Forwards are tailor-made agreements transacted in the over-the-counter market. Futures are traded on organized exchanges and are subject to cash margining calculated daily by clearing houses.

Swaps
Swaps are over-the-counter contracts in which two parties agree to exchange cash flows. The Bank uses the following types of swap contracts:

- Cross-currency swaps are transactions in which counterparties exchange fixed-rate interest payments and principal payments in different currencies.
- Interest rate swaps are transactions in which counterparties exchange fixed and floating rate interest payments based on the notional principal value in the same currency.
- Commodity swaps are transactions in which counterparties exchange fixed and floating rate payments based on the notional principal value of a commodity.
- Equity swaps are transactions in which counterparties agree to exchange the return on one equity or group of equities for a payment based on a benchmark interest rate.
- Credit default swaps are transactions in which one of the parties agrees to pay returns to the other party so that the latter can make a payment if a credit event occurs.

Options
Options are agreements between two parties in which the writer of the option grants the buyer the right, but not the obligation, to buy or sell, either at a specified date or dates or at any time prior to a predetermined expiry date, a specific amount of currency, commodity, or financial instrument at an agreed-upon price upon the sale of the option. The writer receives a premium for the sale of this instrument.

(millions of Canadian dollars)

Note 16 – Derivative Financial Instruments (cont.)

Notional Amounts[1]

As at October 31							2019	2018
	Term to maturity							
	3 months or less	Over 3 months to 12 months	Over 1 year to 5 years	Over 5 years	Total contracts	Contracts held for trading purposes	Contracts designated as hedges	Total contracts
Interest rate contracts								
OTC contracts								
Forward rate agreements								
Not settled by central counterparties	4,241	1,028	–	–	5,269	5,269	–	1,680
Settled by central counterparties	–	174	580	–	754	754	–	2,172
Swaps								
Not settled by central counterparties	8,831	15,315	60,765	42,462	127,373	124,832	2,541	129,201
Settled by central counterparties	157,753	157,638	207,824	66,612	589,827	552,774	37,053	408,729
Options purchased	28	1,777	3,668	2,989	8,462	8,252	210	5,438
Options written	114	207	1,253	4,021	5,595	4,506	1,089	2,018
	170,967	176,139	274,090	116,084	737,280	696,387	40,893	549,238
Exchange-traded contracts								
Futures								
Long positions	25,576	8,179	785	–	34,540	34,540	–	27,498
Short positions	9,020	7,750	4,479	–	21,249	21,249	–	26,556
Options purchased	15,400	2,698	–	–	18,098	18,098	–	26,189
Options written	165	1,698	–	–	1,863	1,863	–	–
	50,161	20,325	5,264	–	75,750	75,750	–	80,243
Foreign exchange contracts								
OTC contracts								
Forwards	12,960	8,731	6,090	1,167	28,948	28,948	–	32,178
Swaps	149,811	61,660	75,791	25,622	312,884	295,110	17,774	199,911
Options purchased	6,075	6,065	1,511	–	13,651	13,651	–	12,322
Options written	6,018	6,434	1,114	–	13,566	13,566	–	11,115
	174,864	82,890	84,506	26,789	369,049	351,275	17,774	255,526
Exchange-traded contracts								
Futures								
Long positions	80	–	–	–	80	80	–	59
Short positions	35	–	–	–	35	35	–	238
	115	–	–	–	115	115	–	297
Equity, commodity and credit derivative contracts[2]								
OTC contracts								
Forwards	24	61	1,551	197	1,833	1,833	–	1,976
Swaps								
Not settled by central counterparties	45,955	20,859	7,250	342	74,406	74,406	–	46,874
Settled by central counterparties	220	154	4,054	2,026	6,454	6,454	–	2,438
Options purchased	269	40	797	2	1,108	1,108	–	1,523
Options written	83	174	984	117	1,358	1,358	–	1,436
	46,551	21,288	14,636	2,684	85,159	85,159	–	54,247
Exchange-traded contracts								
Futures								
Long positions	5,153	314	390	158	6,015	6,015	–	7,699
Short positions	11,865	1,605	777	–	14,247	14,247	–	11,691
Options purchased	2,902	305	220	–	3,427	3,427	–	2,243
Options written	2,224	703	942	4	3,873	3,873	–	3,468
	22,144	2,927	2,329	162	27,562	27,562	–	25,101
	464,802	303,569	380,825	145,719	1,294,915	1,236,248	58,667	964,652

(1) Notional amounts are not presented in assets or liabilities on the Consolidated Balance Sheet. They represent the reference amount of the contract to which a rate or price is applied to determine the amount of cash flows to be exchanged.
(2) Includes precious metal contracts.

(millions of Canadian dollars)

Credit Risk

Credit risk on derivative financial instruments is the risk of financial loss that the Bank will have to assume if a counterparty fails to honour its contractual obligations. Credit risk related to derivative financial instruments is subject to the same credit approval, credit limit and credit monitoring standards as those applied to the Bank's other credit transactions. Consequently, the Bank evaluates the creditworthiness of counterparties and manages the size of the portfolios as well as the diversification and maturity profiles of these financial instruments.

The Bank limits the credit risk of over-the-counter contracts by dealing with creditworthy counterparties and entering into contracts that provide for the exchange of collateral between parties where the fair value of the outstanding transactions exceeds an agreed threshold. The Bank also negotiates master netting agreements that provide for the simultaneous close-out and settling of all transactions with a given counterparty in the event of default, insolvency, or bankruptcy. However, overall exposure to credit risk, reduced through master netting agreements, may change substantially after the balance sheet date because it is affected by all transactions subject to a contract as well as by changes in the market rates of the underlying instruments.

The Bank also uses financial intermediaries to have access to established clearing houses in order to minimize the settlement risk arising from financial derivative transactions. In some cases, the Bank has direct access to clearing houses for settling derivative financial instruments. In addition, certain derivative financial instruments traded over the counter are settled directly or indirectly by central counterparties.

In the case of exchange-traded contracts, exposure to credit risk is limited because these transactions are standardized contracts executed on established exchanges, each of which is associated with a well-capitalized clearing house that assumes the obligations of both counterparties and guarantees their performance obligations. All exchange-traded contracts are subject to initial margins and daily settlement.

Terms Used

Replacement Cost

Replacement cost is the Bank's maximum credit risk associated with derivative financial instruments as at the Consolidated Balance Sheet date. This amount is the positive fair value of all derivative financial instruments, before all master netting agreements and collateral held.

Credit Risk Equivalent

The credit risk equivalent amount is the total replacement cost plus an amount representing the potential future credit risk exposure, as outlined in OSFI's *Capital Adequacy Requirements Guideline*.

Risk-Weighted Amount

The risk-weighted amount is determined by applying the OSFI guidance to the credit risk equivalent.

Credit Risk Exposure of the Derivative Financial Instrument Portfolio

As at October 31			2019			2018
	Replacement cost	**Credit risk equivalent**[1]	**Risk-weighted amount**[1]	Replacement cost[2]	Credit risk equivalent	Risk-weighted amount
Interest rate contracts	**2,603**	**6,685**	**968**	1,943	7,961	649
Foreign exchange contracts	**3,103**	**4,570**	**1,515**	3,533	11,043	1,853
Equity, commodity and credit derivative contracts	**2,423**	**2,917**	**1,119**	3,034	6,919	673
	8,129	**14,172**	**3,602**	8,510	25,923	3,175
Impact of master netting agreements	**(3,415)**			(3,151)	(8,300)	(863)
	4,714	**14,172**	**3,602**	5,359	17,623	2,312

(1) After application of the Standardized Approach for Measuring Counterparty Credit Risk on November 1, 2018, the amounts are presented net of the *Impact of master netting agreements*.
(2) As at October 31, 2018, the total positive fair value of exchange-traded contracts amounting to $98 million was excluded.

Credit Risk Exposure of the Derivative Financial Instrument Portfolio by Counterparty

As at October 31		2019		2018
	Replacement cost	**Credit risk equivalent**	Replacement cost	Credit risk equivalent
OECD[1] governments	**1,048**	**2,077**	1,051	1,855
Banks of OECD member countries	**670**	**3,720**	816	4,197
Other	**2,996**	**8,375**	3,492	11,571
	4,714	**14,172**	5,359	17,623

(1) Organisation for Economic Co-operation and Development.

(millions of Canadian dollars)

Note 16 – Derivative Financial Instruments (cont.)

Fair Value of Derivative Financial Instruments

As at October 31			2019			2018
	Positive	Negative	Net	Positive	Negative	Net
Contracts held for trading purposes						
Interest rate contracts						
Forwards	36	59	(23)	16	10	6
Swaps	1,808	1,742	66	1,392	1,486	(94)
Options	97	70	27	61	41	20
	1,941	1,871	70	1,469	1,537	(68)
Foreign exchange contracts						
Forwards	298	180	118	428	243	185
Swaps	2,618	2,263	355	2,892	1,956	936
Options	127	109	18	157	139	18
	3,043	2,552	491	3,477	2,338	1,139
Equity, commodity and credit derivative contracts						
Forwards	1,050	72	978	854	62	792
Swaps	1,030	1,439	(409)	1,929	997	932
Options	343	405	(62)	336	431	(95)
	2,423	1,916	507	3,119	1,490	1,629
Total – Contracts held for trading purposes	7,407	6,339	1,068	8,065	5,365	2,700
Contracts designated as hedges						
Interest rate contracts						
Forwards	–	–	–	–	–	–
Swaps	662	252	410	487	403	84
Options	–	206	(206)	–	81	(81)
	662	458	204	487	484	3
Foreign exchange contracts						
Forwards	–	–	–	–	–	–
Swaps	60	55	5	56	187	(131)
Options	–	–	–	–	–	–
	60	55	5	56	187	(131)
Equity, commodity and credit derivative contracts						
Forwards	–	–	–	–	–	–
Swaps	–	–	–	–	–	–
Options	–	–	–	–	–	–
	–	–	–	–	–	–
Total – Contracts designated as hedges	722	513	209	543	671	(128)
Designated as fair value hedges	461	320	141	197	476	(279)
Designated as cash flow hedges	261	193	68	346	195	151
Designated as a hedge of a net investment in a foreign operation	–	–	–	–	–	–
Total fair value	8,129	6,852	1,277	8,608	6,036	2,572
Impact of master netting agreements	(3,415)	(3,415)	–	(3,151)	(3,151)	–
	4,714	3,437	1,277	5,457	2,885	2,572

Note 17 – Hedging Activities

The Bank's market risk exposure, risk management objectives, policies and procedures, and risk measurement methods are presented in the Risk Management section of the MD&A for the year ended October 31, 2019.

The Bank has elected, as permitted under IFRS 9, to continue applying the hedge accounting requirements of IAS 39. Some of the tables present information on currencies, specifically, the Canadian dollar (CAD), the Chinese yuan renminbi (CNH), the Hong Kong dollar (HKD), the U.S. dollar (USD), the euro (EUR), the pound sterling (GBP) and the Brazilian real (BRL).

(millions of Canadian dollars)

The following table shows the notional amounts and the weighted average rates by term to maturity of the designated derivative instruments and their fair value by type of hedging relationship.

As at October 31	2019							2018		
	Term to maturity					Fair value			Fair value	
	1 year or less	Over 1 year to 2 years	Over 2 years to 5 years	Over 5 years	Total	Assets	Liabilities	Total	Assets	Liabilities
Fair value hedges										
Interest rate risk										
Interest rate swaps						451	114	14,019	193	357
Notional amount – LIBOR reform(1)			554	1,768	2,322					
Notional amount – Other	1,061	3,381	6,541	3,600	14,583					
Average fixed interest rate – Pay fixed	– %	1.7 %	2.0 %	1.9 %	1.9 %			1.8 %		
Average fixed interest rate – Receive fixed	0.8 %	0.8 %	2.2 %	2.6 %	2.1 %			2.2 %		
Cross-currency swaps						10	–	888	4	38
Notional amount – LIBOR reform(1)			–	–	–					
Notional amount – Other	112	–	116	–	228					
Average CAD-CNH exchange rate	$ 0.1864	–	–	–	$ 0.1864			$ 0.1955		
Average CAD-HKD exchange rate	–	–	$ 0.1621	–	$ 0.1621			$ 0.1621		
Options						–	206	1,454	–	81
Notional amount – LIBOR reform(1)			40	395	435					
Notional amount – Other	314	35	22	493	864					
Average fixed interest rate – Purchased	0.1 %	0.1 %	(0.8) %	– %	0.1 %			– %		
Average fixed interest rate – Written	2.4 %	2.4 %	2.7 %	2.8 %	2.7 %			2.7 %		
	1,487	3,416	7,273	6,256	18,432	461	320	16,361	197	476
Cash flow hedges										
Interest rate risk										
Interest rate swaps						211	138	17,419	294	46
Notional amount – LIBOR reform(1)			1,185	–	1,185					
Notional amount – Other	2,740	717	14,860	3,187	21,504					
Average fixed interest rate – Pay fixed	2.1 %	2.1 %	2.0 %	2.2 %	2.0 %			2.1 %		
Average fixed interest rate – Receive fixed	1.9 %	– %	0.7 %	0.7 %	0.8 %			0.8 %		
Cross-currency swaps						50	55	12,144	52	149
Notional amount – LIBOR reform(1)			10,765	2,302	13,067					
Notional amount – Other	3,034	1,435	–	–	4,469					
Average CAD-USD exchange rate	$ 1.3076	$ 1.3243	$ 1.3101	$ 1.2838	$ 1.3074			$ 1.2976		
Average USD-EUR exchange rate	$ 1.2278	$ 1.1131	$ 1.1351	$ 1.2295	$ 1.1626			$ 1.1742		
Average USD-GBP exchange rate	–	$ 1.2921	–	–	$ 1.2921			$ 1.3012		
Equity price risk										
Equity swaps										
Notional amount	–	–	–	–	–	–	–	109	–	–
Average price	–	–	–	–	–			$ 62.42		
	5,774	2,152	26,810	5,489	40,225	261	193	29,672	346	195
Hedges of net investments in foreign operations(2)										
Foreign exchange risk										
Cross-currency swaps										
Notional amount	10	–	–	–	10	–	–	15	–	–
Average CAD-USD exchange rate	$ 1.3286	–	–	–	$ 1.3286			$ 1.2929		
Average USD-BRL exchange rate	–	–	–	–	–			$ 0.2508		
Average USD-HKD exchange rate	$ 0.1277	–	–	–	$ 0.1277			$ 0.1281		
	10	–	–	–	10	–	–	15	–	–
	7,271	5,568	34,083	11,745	58,667	722	513	46,048	543	671

(1) The benchmark interest rate reform is a global initiative led and coordinated by central banks and governments around the world, including those in Canada. In July 2017, the UK Financial Conduct Committee (FCA) stated that, after 2021, it will no longer compel banks to submit rates used for the calculation of the London Interbank Offered Rate (LIBOR). The Bank has formed a team that is conducting a Bank-wide impact analysis. It is currently inventorying all of the Bank's contractual arrangements linked to LIBOR, assessing the Bank's exposures to LIBOR instruments and identifying impacts on the Bank's products, systems and processes with the intention of minimizing the impacts through appropriate mitigating actions. The Bank is also actively involved in industry working groups and will continue to monitor industry progress.

(2) As at October 31, 2019, the Bank also designated $958 million in foreign currency deposits denominated in U.S. dollars as net investment hedging instruments ($1,035 million in foreign currency deposits denominated in U.S. dollars and euros as net investment hedging instruments as at October 31, 2018).

(millions of Canadian dollars)

Note 17 – Hedging Activities (cont.)

Fair Value Hedges

Fair value hedge transactions consist of using derivative financial instruments (interest rate swaps and options) to hedge changes in the fair value of a financial asset or financial liability caused by interest rate fluctuations. Changes in the fair values of the derivative financial instruments used as hedging instruments offset changes in the fair value of the hedged items. The Bank applies this strategy mainly to portfolios of securities measured at fair value through other comprehensive income, fixed-rate deposits, liabilities related to transferred receivables, and subordinated debt.

In addition, when a fixed-rate asset or liability is denominated in a foreign currency, the Bank sometimes uses cross-currency swaps to hedge the associated foreign exchange risk. The Bank may designate a cross-currency swap to exchange the fixed-rate foreign currency for the functional currency at a floating rate in a single hedging relationship addressing both interest rate risk and foreign exchange risk. In certain cases, given that interest rate risk and foreign exchange risk are hedged in a single hedging relationship, the information below does not distinguish between interest rate risk and the combination of interest rate risk and foreign exchange risk as two separate risk categories. The Bank applies this strategy mainly to foreign currency fixed-rate deposits.

Regression analysis is used to test hedge effectiveness and determine the hedge ratio. For fair value hedges, the main source of potential hedge ineffectiveness is a circumstance where the critical terms of the hedging instrument and the hedged item are not closely aligned.

The following tables show amounts related to hedged items as well as the results of the fair value hedges.

	As at October 31, 2019			Year ended October 31, 2019		
	Carrying value of hedged items	**Cumulative hedge adjustments from active hedges**	**Cumulative adjustments from discontinued hedges**	**Gains (losses) on the hedged items for ineffectiveness measurement(1)**	**Gains (losses) on the hedging instruments for ineffectiveness measurement(1)**	**Hedge ineffectiveness(1)**
Securities at fair value through other comprehensive income	**8,344**	**78**	**9**	**210**	**(208)**	**2**
Deposits	**4,667**	**112**	**48**	**(396)**	**395**	**(1)**
Liabilities related to transferred receivables	**3,663**	**59**	**79**	**(198)**	**197**	**(1)**
Subordinated debt	**752**	**15**	**–**	**(25)**	**26**	**1**
				(409)	**410**	**1**

	As at October 31, 2018			Year ended October 31, 2018		
	Carrying value of hedged items	Cumulative hedge adjustments from active hedges	Cumulative adjustments from discontinued hedges	Gains (losses) on the hedged items for ineffectiveness measurement(1)	Gains (losses) on the hedging instruments for ineffectiveness measurement(1)	Hedge ineffectiveness(1)
Securities at fair value through other comprehensive income	3,315	(78)	(11)	(144)	144	–
Deposits	6,367	(258)	20	264	(262)	2
Liabilities related to transferred receivables	4,482	(89)	50	123	(122)	1
Subordinated debt	737	(10)	–	10	(10)	–
				253	(250)	3

(1) Amounts are presented on a pre-tax basis.

(millions of Canadian dollars)

Cash Flow Hedges

Cash flow hedge transactions consist of using interest rate swaps to hedge the risk of changes in future cash flows caused by floating-rate assets or liabilities. In addition, the Bank sometimes uses cross-currency swaps to hedge the foreign exchange risk caused by assets or liabilities denominated in foreign currencies. In certain cases, given that interest rate risk and foreign exchange risk are hedged in a single hedging relationship, the information below does not distinguish between interest rate risk and the combination of interest rate risk and foreign exchange risk as two separate risk categories. The Bank applies this strategy mainly to its loan, personal credit line, acceptance, and deposit portfolios.

The Bank also uses total return swaps to hedge the risk of changes in future cash flows related to the Restricted Stock Unit (RSU) Plan. Some of these swaps are designated as part of a cash flow hedge against a portion of the unrecognized obligation of the RSU Plan. In cash flow hedges, the derivative financial instruments used as hedging instruments reduce the variability of the future cash flows related to the hedged items.

Regression analysis is used to assess hedge effectiveness and to determine the hedge ratio. For cash flow hedges, the main source of potential hedge ineffectiveness is a circumstance where the critical terms of the hedging instrument and the hedged item are not closely aligned.

The following tables show the amounts related to hedged items as well as the results of the cash flow hedges.

	As at October 31, 2019		Year ended October 31, 2019				
	Accumulated other comprehensive income from active hedges	*Accumulated other comprehensive income* from discontinued hedges	Gains (losses) on hedged items for ineffectiveness measurement[1]	Gains (losses) on hedging instruments for ineffectiveness measurement[1]	Hedge ineffectiveness[1]	Unrealized gains (losses) included in *Other comprehensive income* as the effective portion of the hedging instrument[1]	Losses (gains) reclassified to *Net interest income*[1]
Interest rate risk							
Loans	–	(14)	(45)	45	–	45	(16)
Deposits	30	9	154	(154)	–	(108)	(10)
Acceptances	4	(44)	133	(135)	(2)	(133)	2
	34	(49)	242	(244)	(2)	(196)	(24)
Equity price risk							
Other liabilities	–	10	(6)	6	–	9	(3)
	34	(39)	236	(238)	(2)	(187)	(27)

	As at October 31, 2018		Year ended October 31, 2018				
	Accumulated other comprehensive income from active hedges	*Accumulated other comprehensive income* from discontinued hedges	Gains (losses) on hedged items for ineffectiveness measurement[1]	Gains (losses) on hedging instruments for ineffectiveness measurement[1]	Hedge ineffectiveness[1]	Unrealized gains (losses) included in *Other comprehensive income* as the effective portion of the hedging instrument[1]	Losses (gains) reclassified to *Net interest income*[1]
Interest rate risk							
Loans	(16)	(26)	54	(53)	–	(53)	(36)
Deposits	138	19	(84)	86	–	78	(10)
Acceptances	54	37	(70)	68	1	68	(17)
	176	30	(100)	101	1	93	(63)
Equity price risk							
Other liabilities	(3)	7	23	(23)	–	(23)	–
	173	37	(77)	78	1	70	(63)

(1) Amounts are presented on a pre-tax basis.

(millions of Canadian dollars)

Note 17 – Hedging Activities (cont.)

Hedges of Net Investments in Foreign Operations

The Bank's structural foreign exchange risk arises from investments in foreign operations denominated in currencies other than the Canadian dollar. The Bank measures this risk by assessing the impact of foreign currency fluctuations and hedges it using derivative and non-derivative financial instruments (cross-currency swaps and deposits). In a hedge of a net investment in a foreign operation (net investment hedge), the financial instruments used offset the foreign exchange gains and losses on the investments. When non-derivative financial instruments are designated as foreign exchange risk hedges, only the changes in fair value that are attributable to foreign exchange risk are taken into account when assessing and calculating the effectiveness of the hedge.

Assessing the effectiveness of net investment hedges consists of comparing changes in the carrying value of the deposits or the fair value of the derivative attributable to exchange rate fluctuations with changes in the net investment in a foreign operation attributable to exchange rate fluctuations. Inasmuch as the notional amount of the hedging instruments and the hedged net investments are aligned, no ineffectiveness is expected.

The following tables present the amounts related to hedged items as well as the results of the net investment hedges.

	As at October 31, 2019		Year ended October 31, 2019				
	Accumulated other comprehensive income from active hedges	*Accumulated other comprehensive income* from discontinued hedges	Gains (losses) on hedged items for ineffectiveness measurement(1)	Gains (losses) on hedging instruments for ineffectiveness measurement(1)	Hedge ineffectiveness(1)	Unrealized gains (losses) included in *Other comprehensive income* as the effective portion of the hedging instrument(1)	Losses (gains) reclassified to the *Non-interest income* item(1)
Net investments in foreign operations denominated in:							
USD	7	(191)	(5)	5	–	5	–
EUR	–	–	–	–	–	–	3
BRL	–	36	–	–	–	–	–
Other currencies	–	–	(1)	1	–	1	(1)
	7	(155)	(6)	6	–	6	2

	As at October 31, 2018		Year ended October 31, 2018				
	Accumulated other comprehensive income from active hedges	*Accumulated other comprehensive income* from discontinued hedges	Gains (losses) on hedged items for ineffectiveness measurement(1)	Gains (losses) on hedging instruments for ineffectiveness measurement(1)	Hedge ineffectiveness(1)	Unrealized gains (losses) included in *Other comprehensive income* as the effective portion of the hedging instrument(1)	Losses (gains) reclassified to the *Non-interest income* item(1)
Net investments in foreign operations denominated in:							
USD	(2)	(187)	17	(17)	–	(17)	–
EUR	1	(4)	(1)	1	–	1	–
BRL	(1)	37	(3)	3	–	3	–
Other currencies	–	–	–	–	–	–	–
	(2)	(154)	13	(13)	–	(13)	–

(1) Amounts are presented on a pre-tax basis.

(millions of Canadian dollars)

Reconciliation of Equity Components

The following table presents a reconciliation by risk category of *Accumulated other comprehensive income* attributable to hedge accounting.

As at October 31	2019		2018	
	Net gains (losses) on cash flow hedges	**Net foreign currency translation adjustments**	Net gains (losses) on cash flow hedges	Net foreign currency translation adjustments
Balance at beginning	**151**	**14**	146	(13)
Hedges of net investments in foreign operations(1)				
Gains (losses) included as the effective portion		**6**		(13)
Losses (gains) reclassified to *Non-interest income*		**2**		–
Foreign currency translation gains (losses) on investments in foreign operations		**(9)**		42
Cash flow hedges(1)				
Gains (losses) included as the effective portion				
Interest rate risk	**(196)**		93	
Equity price risk	**9**		(23)	
Losses (gains) reclassified to *Net interest income*				
Interest rate risk	**(24)**		(63)	
Equity price risk	**(3)**		–	
Other comprehensive income attributable to non-controlling interests	**–**	**1**	–	(1)
Income taxes	**57**	**(6)**	(2)	(1)
Balance at end	**(6)**	**8**	151	14

(1) Amounts are presented on a pre-tax basis.

(millions of Canadian dollars)

Note 18 – Share Capital

Authorized

Common Shares

An unlimited number of shares without par value.

First Preferred Shares

An unlimited number of shares, without par value, issuable for a maximum aggregate consideration of $5 billion.

First Preferred Shares

As at October 31, 2019

	Redemption and conversion date[1][2]	Redemption price per share ($)[1]	Convertible into preferred shares[2]	Dividend per share ($)[3]	Reset premium
First preferred shares issued and outstanding					
Series 30[4]	May 15, 2024 [5][6]	25.00	Series 31	0.25156 [7]	2.40 %
Series 32[4]	February 15, 2020 [5][6]	25.00	Series 33	0.24375 [8]	2.25 %
Series 34[4]	May 15, 2021 [5][6]	25.00	Series 35	0.35000 [8]	4.90 %
Series 36[4]	August 15, 2021 [5][6]	25.00	Series 37	0.33750 [8]	4.66 %
Series 38[4]	November 15, 2022 [5][6]	25.00	Series 39	0.27813 [8]	3.43 %
Series 40[4]	May 15, 2023 [5][6]	25.00	Series 41	0.28750 [8]	2.58 %
Series 42[4]	November 15, 2023 [5][6]	25.00	Series 43	0.30938 [8]	2.77 %
First preferred shares authorized but not issued					
Series 23[9]	July 31, 2013	25.00	n.a.	0.75000	n.a.
Series 31[4]	May 15, 2024 [5]	25.00 [10]	n.a.	Floating rate [11]	2.40 %
Series 33[4]	February 15, 2020 [5]	25.50 [12]	n.a.	Floating rate [11]	2.25 %
Series 35[4]	May 15, 2021 [5]	25.50 [12]	n.a.	Floating rate [11]	4.90 %
Series 37[4]	August 15, 2021 [5]	25.50 [12]	n.a.	Floating rate [11]	4.66 %
Series 39[4]	November 15, 2022 [5]	25.50 [12]	n.a.	Floating rate [11]	3.43 %
Series 41[4]	May 15, 2023 [5]	25.50 [12]	n.a.	Floating rate [11]	2.58 %
Series 43[4]	November 15, 2023 [5]	25.50 [12]	n.a.	Floating rate [11]	2.77 %

n.a. Not applicable

(1) Redeemable in cash at the Bank's option, in whole or in part, subject to the provisions of the *Bank Act* (Canada) and to OSFI approval. Redemption prices are increased by all the declared and unpaid dividends on the preferred shares to the date fixed for redemption.

(2) Convertible at the option of the holders of first preferred shares, subject to certain conditions.

(3) The dividends are non-cumulative and payable quarterly, except for Series 23, for which the dividends are payable semi-annually.

(4) Upon the occurrence of a trigger event as defined by OSFI, each outstanding preferred share will be automatically and immediately converted, on a full and permanent basis, without the consent of the holder, into a number of common shares of the Bank determined pursuant to an automatic conversion formula. This conversion will be calculated by dividing the value of the preferred shares, i.e., $25.00 per share, plus all declared and unpaid dividends as at the date of the trigger event, by the value of the common shares. The value of the common shares will be the greater of a $5.00 floor price or the current market price of the common shares. Current market price means the volume weighted average trading price of common shares for the ten consecutive trading days ending on the trading day preceding the date of the trigger event. If the common shares are not listed on an exchange when this price is being established, the price will be the fair value reasonably determined by the Bank's Board.

(5) Redeemable on the date fixed for redemption and on the same date every five years thereafter.

(6) Convertible on the date fixed for conversion and on the same date every five years thereafter, subject to certain conditions.

(7) The dividend amount is set for the five-year period commencing on May 16, 2019 and ending on the date fixed for redemption. Thereafter, these shares carry a non-cumulative quarterly fixed dividend in an amount per share determined by multiplying the rate of interest equal to the sum of the 5-year Government of Canada bond yield on the applicable fixed-rate calculation date by $25.00, plus the reset premium.

(8) The dividend amount is set for the initial period ending on the date fixed for redemption. Thereafter, these shares carry a non-cumulative quarterly fixed dividend in an amount per share determined by multiplying the rate of interest equal to the sum of the 5-year Government of Canada bond yield on the applicable fixed-rate calculation date by $25.00, plus the reset premium.

(9) For additional information, see Note 19 to these consolidated financial statements.

(10) As of the date fixed for redemption, and every five years thereafter, the redemption price will be $25.00 per share.

(11) The dividend period begins as of the date fixed for redemption. The amount of the floating quarterly non-cumulative dividend is determined by multiplying the rate of interest equal to the sum of the 90-day Government of Canada treasury bill yield on the floating rate calculation date by $25.00, plus the reset premium.

(12) As of the date fixed for redemption, the redemption price will be $25.50 per share. Thereafter, on the same date every five years, the redemption price will be $25.00 per share.

Second Preferred Shares

15 million shares without par value, issuable for a total maximum consideration of $300 million. As at October 31, 2019, no shares had been issued or traded.

(millions of Canadian dollars)

Shares Outstanding

As at October 31	2019		2018	
	Number of shares	Shares $	Number of shares	Shares $
First Preferred Shares				
Series 30	14,000,000	350	14,000,000	350
Series 32	12,000,000	300	12,000,000	300
Series 34	16,000,000	400	16,000,000	400
Series 36	16,000,000	400	16,000,000	400
Series 38	16,000,000	400	16,000,000	400
Series 40	12,000,000	300	12,000,000	300
Series 42	12,000,000	300	12,000,000	300
	98,000,000	2,450	98,000,000	2,450
Common shares at beginning of the fiscal year	335,070,642	2,822	339,591,965	2,768
Issued pursuant to the Stock Option Plan	2,950,922	122	3,129,313	128
Repurchase of common shares for cancellation	(4,547,200)	(40)	(7,500,000)	(64)
Impact of shares purchased or sold for trading(1)	699,564	45	(149,430)	(10)
Other	(1,517)	–	(1,206)	–
Common shares at end of year	334,172,411	2,949	335,070,642	2,822

(1) As at October 31, 2019, there were 3,846 shares held for trading, representing a negligible amount (703,410 shares held for trading representing $45 million as at October 31, 2018).

Dividends Declared

Year ended October 31	2019		2018	
	Dividends $	Dividends per share	Dividends $	Dividends per share
First Preferred Shares				
Series 30	14	1.0156	14	1.0250
Series 32	12	0.9750	12	0.9750
Series 34	22	1.4000	22	1.4000
Series 36	22	1.3500	22	1.3500
Series 38	18	1.1125	18	1.1125
Series 40	14	1.1500	11	0.9310
Series 42	14	1.2375	6	0.5323
	116		105	
Common shares	892	2.6600	829	2.4400
	1,008		934	

Issuances of Preferred Shares

On June 11, 2018, the Bank had issued 12,000,000 Non-Cumulative 5-Year Rate-Reset Series 42 First Preferred Shares at a price equal to $25.00 per share for gross proceeds of $300 million. Given that the Series 42 preferred shares satisfy the non-viability contingent capital requirements, they qualify for the purposes of calculating regulatory capital under Basel III.

On January 22, 2018, the Bank had issued 12,000,000 Non-Cumulative 5-Year Rate-Reset Series 40 First Preferred Shares at a price equal to $25.00 per share for gross proceeds of $300 million. Given that the Series 40 preferred shares satisfy the non-viability contingent capital requirements, they qualify for the purposes of calculating regulatory capital under Basel III.

Note 18 – Share Capital (cont.)

Repurchases of Common Shares

On June 10, 2019, the Bank began a normal course issuer bid to repurchase for cancellation up to 6,000,000 common shares (representing approximately 1.80% of its outstanding common shares) over the 12-month period ending no later than June 9, 2020. On June 6, 2018, the Bank had begun a normal course issuer bid to repurchase for cancellation up to 8,000,000 common shares (representing approximately 2.36% of its outstanding common shares) over the 12-month period ended June 5, 2019. Any repurchase through the Toronto Stock Exchange will be done at market prices. The common shares may also be repurchased through other means authorized by the Toronto Stock Exchange and applicable regulations, including private agreements or share repurchase programs under issuer bid exemption orders issued by the securities regulators. A private purchase made under an exemption order issued by a securities regulator will be done at a discount to the prevailing market price. The amounts that are paid above the average book value of the common shares are charged to *Retained earnings.* During the year ended October 31, 2019, the Bank repurchased 4,547,200 common shares for $281 million, which reduced *Common share* capital by $40 million and *Retained earnings* by $241 million. During the year ended October 31, 2018, the Bank had repurchased 7,500,000 common shares for $467 million, which had reduced *Common share* capital by $64 million and *Retained earnings* by $403 million.

Reserved Common Shares

As at October 31, 2019 and 2018, there were 15,507,568 common shares reserved under the Dividend Reinvestment and Share Purchase Plan. As at October 31, 2019, there were 20,377,278 common shares (22,894,802 as at October 31, 2018) reserved under the Stock Option Plan.

Common Shares Held in Escrow

As part of the acquisition of Wellington West Holdings Inc. in 2011, the Bank had issued common shares held in escrow. In December 2016, a total of 799,563 of these shares were released to shareholders, and 108,341 shares were cancelled, mainly upon the settlement of certain indemnifications guaranteed by those shares. During the year ended October 31, 2019, a total of 870 of these shares were released to shareholders, and 1,517 shares were cancelled (during the year ended October 31, 2018, a total of 3,778 of these shares were released, and 1,206 shares were cancelled). As at October 31, 2019, the number of common shares held in escrow was 21,510 (23,897 as at October 31, 2018). The Bank expects that the remaining shares in escrow will be settled by the end of calendar year 2020.

Restriction on the Payment of Dividends

The Bank is prohibited from declaring dividends on its common or preferred shares if there are reasonable grounds for believing that the Bank would, by so doing, be in contravention of the regulations of the *Bank Act* (Canada) or OSFI's capital adequacy and liquidity guidelines. In addition, the ability to pay common share dividends is restricted by the terms of the outstanding preferred shares pursuant to which the Bank may not pay dividends on its common shares without the approval of the holders of the outstanding preferred shares, unless all preferred share dividends have been declared and paid or set aside for payment. Moreover, if NBC Asset Trust were unable to pay the full amount of distributions on the trust units, the Bank would withhold from declaring dividends on any of its preferred and common shares during a determined period. For additional information, see Notes 19 and 27 to these consolidated financial statements.

Dividend Reinvestment Plan

The Bank has a dividend reinvestment plan for common and preferred shareholders. Participation in the plan is optional. Under the terms and conditions of the plan, participants acquire shares through the reinvestment of cash dividends paid on the shares they hold or through optional cash payments. Common shares subscribed by participants are purchased on their behalf in the secondary market through the Bank's transfer agent, Computershare Trust Company of Canada, at a price equal to the average purchase price of the common shares during the ten business days immediately following the dividend payment date.

(millions of Canadian dollars)

Note 19 – Non-Controlling Interests

As at October 31	2019	2018
Trust units issued by NBC Asset Trust (NBC CapS II) – Series 2[1]	359	359
Other[2]	(1)	20
	358	379

(1) Includes $9 million in accrued interest as at October 31, 2019 ($9 million as at October 31, 2018).
(2) During the year ended October 31, 2019, the Bank acquired the entire remaining non-controlling interest in the Cambodian subsidiary Advanced Bank of Asia Limited. For additional information, see Note 31 to these consolidated financial statements.

Trust Units Issued by NBC Asset Trust

Through structured entity NBC Asset Trust (the Trust), a closed-end trust established under the laws of the Province of Ontario, the Bank issued transferable non-voting trust units called “Trust Capital Securities” or “NBC CapS II.” These securities are not redeemable or exchangeable for Bank preferred shares at the option of the holder. The gross proceeds from the issuance were used by the Trust to finance the acquisition of mortgage loans from the Bank. For additional information, see Note 27 to these consolidated financial statements.

The main terms and characteristics of the NBC CapS II trust units outstanding as at October 31, 2019 are presented below.

	Number	Issuance date	Annual yield	Distribution dates	Semi-annual distribution by NBC CapS II[1]
Series 2	350,000	June 30, 2008	7.447 %	June 30, December 31	$37.235[2]

(1) For each unit with a face value of $1,000.
(2) For each distribution date after June 30, 2020, the distribution will be paid at a rate equal to one-half the sum of the 180-day bankers’ acceptance rate in effect plus 4.09%.

Distribution

No cash distributions will be payable by the Trust on NBC CapS II if the Bank fails to declare regular dividends on its preferred shares or, if no preferred shares are then outstanding, on its outstanding common shares. In this case, the net distributable funds of the Trust will be paid to the Bank as the sole holder of the special trust securities, representing the residual interest in the Trust. Should the Trust fail to pay the semi-annual distributions in full on the NBC CapS II, the Bank will withhold from declaring dividends on any of its preferred and common shares during a determined period.

Automatic Exchange

Each NBC CapS II – Series 2 can be exchanged automatically, without the consent of the holders, for 40 Series 23 First Preferred Shares of the Bank upon the occurrence of one of the following events: (i) proceedings are commenced for the winding-up of the Bank; (ii) OSFI takes control of the Bank; (iii) the Bank posts a Tier 1 capital ratio of less than 5% or a Total capital ratio of less than 8%; or (iv) OSFI has directed the Bank to increase its capital or to provide additional liquidity and the Bank elects such automatic exchange or the Bank fails to comply with such direction to the satisfaction of OSFI. On an automatic exchange, the Bank will hold all outstanding trust capital securities of the Trust.

Redemption at the Option of the Trust

On any distribution date, the Trust may, subject to prior written notice and OSFI approval, redeem, at its option, the NBC CapS II – Series 2, in whole but not in part, without the consent of the holders.

Purchase for Cancellation

The Trust may, with OSFI approval, purchase NBC CapS II – Series 2, in whole or in part, on the open market or by tender or private contract at any price. The NBC CapS II purchased by the Trust, if any, will be cancelled and will not be reissued.

Regulatory Capital

The NBC CapS II – Series 2 qualify as innovative capital instruments and are eligible as additional Tier 1 capital, but because these instruments do not satisfy the non-viability contingent capital requirements, they are to be phased out at a rate of 10% per year between 2013 and 2022.

Note 20 – Capital Disclosure

Capital Management Objectives, Policies and Procedures

Capital management has a dual role of ensuring a competitive return to the Bank's shareholders while maintaining a solid capital foundation that covers the risks inherent to the Bank's business, supports its business segments and protects its clients.

The Bank's capital management policy defines the guiding principles as well as the roles and responsibilities regarding its internal capital adequacy assessment process. This process is a key tool in establishing the Bank's capital strategy and is subject to quarterly reviews and periodic amendments.

Capital Management

Capital ratios are obtained by dividing regulatory capital by risk-weighted assets and are expressed as a percentage. Risk-weighted assets are calculated in accordance with the rules established by OSFI for on- and off-balance-sheet risks. Credit, market and operational risks are factored into the risk-weighted assets calculation for regulatory purposes. The definition adopted by the Basel Committee on Banking Supervision (BCBS) distinguishes between three types of capital. Common Equity Tier 1 (CET1) capital consists of common shareholders' equity less goodwill, intangible assets and other capital deductions. The Additional Tier 1 instruments comprise eligible non-cumulative preferred shares and the eligible amount of innovative instruments. The sum of CET1 and Additional Tier 1 capital forms what is known as Tier 1 capital. Tier 2 capital consists of the eligible portion of subordinated debt and certain allowances for credit losses. Total regulatory capital is the sum of Tier 1 and Tier 2 capital.

The Bank and all other major Canadian banks have to maintain minimum capital ratios established by OSFI: a CET1 capital ratio of at least 10.0%, a Tier 1 capital ratio of at least 11.5%, and a Total capital ratio of at least 13.5%. All of these ratios are to include a capital conservation buffer of 2.5%, a 1% surcharge applicable solely to D-SIBs, and a 2.0% domestic stability buffer. The domestic stability buffer, which can vary from 0% to 2.5% of risk-weighted assets, consists exclusively of CET1 capital. A D-SIB that fails to meet this buffer requirement will not be subject to automatic constraints to reduce capital distributions but will have to provide a remediation plan to OSFI. The banks also have to meet the capital floor that sets the regulatory capital level according to the Basel II standardized approach. If the capital requirement under Basel III is less than 75% of the capital requirements as calculated under Basel II, the difference is added to risk-weighted assets. OSFI requires Canadian banks to meet a Basel III leverage ratio of at least 3.0%. The leverage ratio is a measure independent of risk that is calculated by dividing the amount of Tier 1 capital by total exposure. Total exposure is defined as the sum of on-balance-sheet assets (including derivative exposures and securities financing transaction exposures) and off-balance-sheet items. The assets deducted from Tier 1 capital are also deducted from total exposure.

During the years ended October 31, 2019 and 2018, the Bank was in compliance with all of OSFI's regulatory capital requirements.

(millions of Canadian dollars)

Regulatory Capital and Ratios Under Basel III

As at October 31	2019	2018
Capital		
CET1	9,692	8,608
Tier 1	12,492	11,410
Total	13,366	12,352
Risk-weighted assets		
CET1 capital	83,039	73,654
Tier 1 capital	83,039	73,670
Total capital	83,039	73,685
Total exposure	308,902	284,337
Capital ratios		
CET1	11.7 %	11.7 %
Tier 1	15.0 %	15.5 %
Total	16.1 %	16.8 %
Leverage ratio	4.0 %	4.0 %

Note 21 – Trading Activity Revenues

Trading activity revenues consist of the net interest income from trading activities and of trading revenues recognized in *Non-interest income* in the Consolidated Statement of Income.

Net interest income comprises dividends related to financial assets and liabilities associated with trading activities, net of interest expenses and interest income related to the financing of these financial assets and liabilities.

Non-interest income consists of realized and unrealized gains and losses as well as interest income on securities measured at fair value through profit or loss, income from held-for-trading derivative financial instruments, changes in the fair value of loans at fair value through profit or loss, changes in the fair value of financial instruments designated at fair value through profit or loss, and transaction costs if applicable.

Year ended October 31	2019	2018
Net interest income	47	70
Non-interest income	829	840
	876	910

(millions of Canadian dollars)

Note 22 – Share-Based Payments

The compensation expense information provided below excludes the impact of hedging.

Stock Option Plan

The Bank's Stock Option Plan is for officers and other designated persons of the Bank and its subsidiaries. Under this plan, options are awarded annually and provide participants with the right to purchase common shares at an exercise price equal to the closing price of the Bank's common share on the Toronto Stock Exchange on the day preceding the award. The options vest evenly over a four-year period and expire ten years from the award date or, in certain circumstances set out in the plan, within specified time limits. The Stock Option Plan contains provisions for retiring employees that allow the participant's rights to continue vesting in accordance with the stated terms of the grant agreement. The maximum number of common shares that may be issued under the Stock Option Plan was 20,377,278 as at October 31, 2019 (22,894,802 as at October 31, 2018). The number of common shares reserved for a participant may not exceed 5% of the total number of Bank shares issued and outstanding.

As at October 31		2019		2018
	Number of options	**Weighted average exercise price**	Number of options	Weighted average exercise price
Stock Option Plan				
Outstanding at beginning	**13,064,746**	**$ 44.78**	14,575,894	$ 40.46
Awarded	**2,116,892**	**$ 58.79**	1,836,348	$ 64.14
Exercised	**(2,950,922)**	**$ 36.40**	(3,129,313)	$ 35.75
Cancelled[1]	**(127,090)**	**$ 56.86**	(218,183)	$ 48.85
Outstanding at end	**12,103,626**	**$ 49.15**	13,064,746	$ 44.78
Exercisable at end	**7,421,662**	**$ 43.59**	8,378,530	$ 39.17

(1) Includes 13,662 expired options during the year ended October 31, 2019 (13,784 expired options during the year ended October 31, 2018).

Exercise price	Options outstanding	Options exercisable	Expiry date
$29.25	373,908	373,908	December 2019
$34.34	580,874	580,874	December 2020
$34.09	778,732	778,732	December 2021
$38.36	965,378	965,378	December 2022
$44.96	1,213,605	1,213,605	December 2023
$47.93	1,529,319	1,529,319	December 2024
$42.17	1,339,479	884,759	December 2025
$54.69	1,493,427	671,513	December 2026
$64.14	1,734,064	423,574	December 2027
$58.79	2,094,840	–	December 2028
	12,103,626	7,421,662	

During the year ended October 31, 2019, the Bank awarded 2,116,892 stock options (1,836,348 stock options during the year ended October 31, 2018) with an average fair value of $6.14 per option ($7.42 for the year ended October 31, 2018).

The average fair value of options awarded was estimated on the award date using the Black-Scholes model as well as the following assumptions.

Year ended October 31	2019	2018
Risk-free interest rate	**2.50%**	2.11%
Expected life of options	**7 years**	7 years
Expected volatility	**18.40%**	18.87%
Expected dividend yield	**4.37%**	3.80%

(millions of Canadian dollars)

The expected life of the options is based on historical data and is not necessarily representative of how options will be exercised in the future. Expected volatility is extrapolated from the implied volatility of the Bank's share price and observable market inputs, which are not necessarily representative of actual results. The expected dividend yield represents the annualized dividend divided by the Bank's share price at the award date. The risk-free interest rate is based on the Canadian dollar swap curve at the award date. The exercise price is equal to the Bank's share price at the award date. No other market parameter has been included in the fair value measurement of the options.

The compensation expense recorded for this plan for the year ended October 31, 2019 was $11 million ($12 million for the year ended October 31, 2018).

Stock Appreciation Rights (SAR) Plan

The SAR Plan is for officers and other designated persons of the Bank and its subsidiaries. Under this plan, participants receive, upon exercising the right, a cash amount equal to the difference between the closing price of the Bank's common share on the Toronto Stock Exchange on the day preceding the exercise date and the closing price on the day preceding the award date. SARs vest evenly over a four-year period and expire 10 years after the award date or, in certain circumstances set out in the plan, within specified time limits. The SAR Plan contains provisions for retiring employees that allow the participant's rights to continue vesting in accordance with the stated terms of the grant agreement. A compensation expense of $2 million was recognized for the year ended October 31, 2019 with respect to this plan ($1 million for the year ended October 31, 2018).

As at October 31		2019		2018
	Number of SARs	**Weighted average exercise price**	Number of SARs	Weighted average exercise price
SAR Plan[(1)]				
Outstanding at beginning	**332,211**	**$ 46.86**	395,334	$ 42.29
Awarded	**46,968**	**$ 58.79**	62,820	$ 64.14
Exercised	**(44,182)**	**$ 38.69**	(125,943)	$ 41.13
Outstanding at end	**334,997**	**$ 49.61**	332,211	$ 46.86
Exercisable at end	**190,691**	**$ 43.65**	163,971	$ 38.91

(1) No SARs cancelled or expired during the years ended October 31, 2019 and 2018.

Exercise price	SARs outstanding	SARs exercisable	Expiry date
$29.25	9,320	9,320	December 2019
$34.34	21,060	21,060	December 2020
$34.09	24,608	24,608	December 2021
$38.36	24,216	24,216	December 2022
$44.96	29,480	29,480	December 2023
$47.93	31,572	31,572	December 2024
$42.17	33,356	14,811	December 2025
$54.69	51,597	19,919	December 2026
$64.14	62,820	15,705	December 2027
$58.79	46,968	–	December 2028
	334,997	190,691	

Deferred Stock Unit (DSU) Plans

The DSU Plans are for officers and other designated persons of the Bank and its subsidiaries as well as directors. These plans allow the Bank to tie a portion of the value of the compensation of participants to the future value of the Bank's common shares. A DSU is a right that has a value equal to the closing price of a common share of the Bank on the Toronto Stock Exchange on the day preceding the award. DSUs generally vest evenly over four years. Additional DSUs are credited to the accounts of participants in an amount equal to the dividends declared on Bank common shares and vest evenly over the same period as the reference DSUs. DSUs may only be cashed when participants retire or leave the Bank or, for directors, when their term ends. The DSU Plans contain provisions for retiring employees whereby participants may continue vesting units in accordance with the stated terms of the grant agreement.

During the year ended October 31, 2019, the Bank awarded 51,839 DSUs at a weighted average price of $60.33 (44,713 DSUs at a weighted average price of $63.68 for the year ended October 31, 2018). A total of 569,402 DSUs were outstanding as at October 31, 2019 (591,360 DSUs as at October 31, 2018). A compensation expense of $9 million was recognized for the year ended October 31, 2019 with respect to these plans ($7 million for the year ended October 31, 2018).

Note 22 – Share-Based Payments (cont.)

Restricted Stock Unit (RSU) Plan

The RSU Plan is for certain officers and other designated persons of the Bank and its subsidiaries. The objective of this plan is to ensure that the compensation of certain officers and other designated persons is competitive and to foster retention. An RSU represents a right that has a value equal to the average closing price of the Bank's common share, as published by the Toronto Stock Exchange, over the ten trading days preceding the sixth business day in December. RSUs generally vest evenly over three years, although some RSUs vest on the sixth business day of December of the third year following the date of the award, the date on which all RSUs expire. Additional RSUs are credited to the accounts of participants in an amount equal to the dividends declared on the Bank common shares and vest evenly over the same period as the reference RSUs. The RSU Plan contains provisions for retiring employees whereby participants may continue vesting units in accordance with the stated terms of the award agreement.

During the year ended October 31, 2019, the Bank awarded 2,396,501 RSUs at a weighted average price of $60.07 (2,158,594 RSUs at a weighted average price of $63.57 for the year ended October 31, 2018). As at October 31, 2019, a total of 4,977,984 RSUs were outstanding (5,072,615 RSUs as at October 31, 2018). A compensation expense of $175 million was recognized for the year ended October 31, 2019 with respect to this plan ($140 million for the year ended October 31, 2018).

Performance Stock Unit (PSU) Plan

The PSU Plan is for officers and other designated persons of the Bank. The objective of this plan is to tie a portion of the value of the compensation of these officers and other designated persons to the future value of the Bank's common shares. A PSU represents a right that has a value equal to the average closing price of the Bank's common share, as published by the Toronto Stock Exchange, over the ten trading days preceding the sixth business day in December, adjusted upward or downward according to performance criteria, which is based on the Bank's total shareholder return (TSR) growth index over three years compared to the average TSR growth index of the comparator group composed of Canadian banks over three years. PSUs vest on the sixth business day of December of the third year following the date of the award, the date on which all PSUs expire. Additional PSUs are credited to the accounts of participants in an amount equal to the dividends declared on the Bank's common shares and vest evenly over the same period as the reference PSUs. The PSU Plan contains provisions for retiring employees whereby participants may continue vesting units in accordance with the stated terms of the award agreement.

During the year ended October 31, 2019, the Bank awarded 351,956 PSUs at a weighted average price of $60.07 (287,206 PSUs at a weighted average price of $63.57 for the year ended October 31, 2018). As at October 31, 2019, a total of 843,250 PSUs were outstanding (969,322 PSUs as at October 31, 2018). A compensation expense of $29 million was recognized for the year ended October 31, 2019 with respect to this plan ($21 million for the year ended October 31, 2018).

Deferred Compensation Plan of National Bank Financial (NBF)

This plan is exclusively for key employees of NBF Wealth Management. The purpose of this plan is to foster the retention of key employees and promote the growth in income and the continuous improvement in profitability at Wealth Management. Under this plan, participants can defer a portion of their annual compensation, and NBF may pay a contribution to key employees when certain financial objectives are met. Amounts awarded by NBF and the compensation deferred by participants are invested in, among others, Bank common share units. These share units represent a right, the value of which corresponds to the closing price of the Bank's common share on the Toronto Stock Exchange on the award date. Additional units are paid to the accounts of participants in an amount equal to the dividends declared on Bank common shares. Share units representing the amounts awarded by NBF vest evenly over four years. When a participant retires, or in certain cases when the participant's employment is terminated, the participant receives a cash amount representing the value of the vested share units.

During the year ended October 31, 2019, NBF awarded 147,927 share units at a weighted average price of $59.94 (132,544 share units at a weighted average price of $63.63 for the year ended October 31, 2018). As at October 31, 2019, a total of 1,764,789 share units were outstanding (1,618,166 share units as at October 31, 2018). During the year ended October 31, 2019, a $22 million compensation expense was recognized for this plan (recovery of a $3 million compensation expense related to a decline in share value for the year ended October 31, 2018).

Employee Share Ownership Plan

Under the Bank's Employee Share Ownership Plan, employees who meet the eligibility criteria can contribute up to 8% of their annual gross salary by way of payroll deductions. The Bank matches 25% of the employee contribution up to a maximum of $1,500 per annum. Bank contributions vest to the employee after one year of uninterrupted participation in the plan. Subsequent contributions vest immediately. The Bank's contributions, amounting to $12 million for the year ended October 31, 2019 ($9 million for the year ended October 31, 2018), were charged to *Compensation and employee benefits* when paid. As at October 31, 2019, a total of 5,813,172 common shares were held for this plan (5,718,242 common shares as at October 31, 2018).

Plan shares are purchased on the open market and are considered to be outstanding for earnings per share calculations. Dividends paid on the Bank's common shares held for the Employee Share Ownership Plan are used to purchase other common shares on the open market.

Plan Liabilities and Intrinsic Value

Total liabilities arising from the Bank's share-based compensation plans amounted to $549 million as at October 31, 2019 ($494 million as at October 31, 2018). The intrinsic value of these liabilities that had vested as at October 31, 2019 was $217 million ($182 million as at October 31, 2018).

(millions of Canadian dollars)

Note 23 – Employee Benefits – Pension Plans and Other Post-Employment Benefits

The Bank offers defined benefit pension plans and other post-employment benefit plans to eligible employees. The pension plans provide benefits based on years of plan participation and average earnings at retirement. The other post-employment benefit plans include post-retirement medical, dental and life insurance coverage. The pension plans are funded whereas the other plans are not funded. The fair value of plan assets and the present value of the defined benefit obligation are measured as at October 31.

The Bank's most significant pension plan is the *Employee Pension Plan of the National Bank of Canada*; it is registered with OSFI and the Canada Revenue Agency and subject to the *Pension Benefits Standards Act, 1985* and the *Income Tax Act*.

The defined benefit plans expose the Bank to specific risks such as investment performance, changes to the discount rate used to calculate the obligation, the longevity of plan members and future inflation. While management believes that the assumptions used in the actuarial valuation process are reasonable, there remains a degree of risk and uncertainty that may cause future results to differ significantly from these assumptions, which could give rise to gains or losses.

According to the Bank's governance rules, the policies and risk management related to the defined benefit plans are overseen at different levels by the pension committees, the Bank's management and the Board's Human Resources Committee. The defined benefit plans are examined on an ongoing basis in order to monitor the funding and investment policies, the plans' financial status and the Bank's funding requirements.

The Bank's funding policy for the defined benefit pension plans is to make at least the minimum annual contributions required by pension regulators.

For funded plans, the Bank determines whether an economic benefit exists in the form of potential reductions in future contributions and in the form of refunds from the plan surplus, where permitted by applicable regulations and plan provisions.

Defined Benefit Obligation, Plan Assets and Funded Status

As at October 31

	Pension plans		Other post-employment benefit plans	
	2019	2018	**2019**	2018
Defined benefit obligation				
Balance at beginning	**3,864**	3,984	**176**	191
Current service cost	**93**	114	**3**	5
Interest cost	**158**	148	**6**	7
Remeasurements				
Actuarial (gains) losses arising from changes in demographic assumptions	**(121)**	37	**8**	–
Actuarial (gains) losses arising from changes in financial assumptions	**712**	(276)	**18**	(16)
Actuarial (gains) losses arising from experience adjustments	**141**	–	**–**	(1)
Employee contributions	**53**	47		
Benefits paid	**(197)**	(190)	**(9)**	(10)
Balance at end	**4,703**	3,864	**202**	176
Plan assets				
Fair value at beginning	**3,918**	3,979		
Interest income	**157**	144		
Administration cost	**(4)**	(4)		
Remeasurements				
Return on plan assets (excluding interest income)	**575**	(116)		
Bank contributions(1)	**67**	58		
Employee contributions	**53**	47		
Benefits paid	**(197)**	(190)		
Fair value at end	**4,569**	3,918		
Defined benefit asset (liability) at end	**(134)**	54	**(202)**	(176)

(1) For fiscal 2020, the Bank expects to pay an employer contribution of $62 million to the defined benefit pension plans.

(millions of Canadian dollars)

Note 23 – Employee Benefits – Pension Plans and Other Post-Employment Benefits (cont.)

Defined Benefit Asset (Liability)

As at October 31

	Pension plans		Other post-employment benefit plans	
	2019	2018	**2019**	2018
Defined benefit asset included in *Other assets*	**38**	64		
Defined benefit liability included in *Other liabilities*	**(172)**	(10)	**(202)**	(176)
	(134)	54	**(202)**	(176)

Cost for Pension Plans and Other Post-Employment Benefits

Year ended October 31

	Pension plans		Other post-employment benefit plans	
	2019	2018	**2019**	2018
Current service cost	**93**	114	**3**	5
Interest expense (income), net	**1**	4	**6**	7
Administration costs	**4**	4		
Expense recognized in *Net income*	**98**	122	**9**	12
Remeasurements(1)				
Actuarial (gains) losses on defined benefit obligation	**732**	(239)	**26**	(17)
Return on plan assets(2)	**(575)**	116		
Remeasurements recognized in *Other comprehensive income*	**157**	(123)	**26**	(17)
	255	(1)	**35**	(5)

(1) Changes related to the discount rate and to the return on plan assets are reviewed and updated on a quarterly basis. All other assumptions are updated annually.
(2) Excluding interest income.

Allocation of the Fair Value of Pension Plan Assets

As at October 31

	2019			2018		
	Quoted in an active market(1)	**Not quoted in an active market**	**Total**	Quoted in an active market(1)	Not quoted in an active market	Total
Asset classes						
Cash and cash equivalents	**–**	**63**	**63**	–	91	91
Equity securities	**1,458**	**478**	**1,936**	1,482	482	1,964
Debt securities						
Canadian government	**306**	**–**	**306**	223	–	223
Canadian provincial and municipal governments	**–**	**1,491**	**1,491**	–	1,115	1,115
Other issuers	**–**	**571**	**571**	–	383	383
Other	**–**	**202**	**202**	–	142	142
	1,764	**2,805**	**4,569**	1,705	2,213	3,918

(1) Unadjusted quoted prices in active markets for identical assets that the Bank can access at the measurement date.

The Bank's investment strategy for plan assets considers several factors, including the time horizon of pension plan obligations and investment risk. For each plan, an allocation range per asset class is defined using a mix of equity and debt securities to optimize the risk-return profile of plan assets and minimize asset/liability mismatching.

The pension plan assets may include investment securities issued by the Bank. As at October 31, 2019 and 2018, the pension plan assets do not include any securities issued by the Bank.

For fiscal 2019, the Bank and its related entities received $3 million ($5 million in fiscal 2018) in fees from the pension plans for related management, administration and custodial services.

(millions of Canadian dollars)

Allocation of the Defined Benefit Obligation by the Status of Defined Benefit Plan Participants

As at October 31

	Pension plans		Other post-employment benefit plans	
	2019	2018	2019	2018
Active employees	42 %	45 %	22 %	31 %
Retirees	52 %	51 %	78 %	69 %
Participants with deferred vested benefits	6 %	4 %		
	100 %	100 %	100 %	100 %
Weighted average duration of the defined benefit obligation *(in years)*	17	16	13	14

Significant Actuarial Assumptions (Weighted Average)

Discount Rate

The discount rate assumption is based on an interest rate curve that represents the yields on corporate AA bonds. Short-term maturities are obtained using a curve based on observed data from corporate AA bonds. Long-term maturities are obtained using a curve based on observed data and extrapolated data.

To measure the pension plan and other post-employment plan obligation, the vested benefits that the Bank expects to pay in each future period are discounted to the measurement date using the spot rate associated with each of the respective periods based on the yield curve derived using the above methodology. The sum of discounted benefit amounts represents the defined benefit obligation. An average discount rate that replicates this obligation is then computed.

To better reflect current service cost, a separate discount rate was determined to account for the timing of future benefit payments associated with the additional year of service to be earned by the plan's active participants. Since these benefits are, on average, being paid at a later date than the benefits already earned by participants as a whole (i.e., longer duration), this method results in the use of a generally higher discount rate for calculating current service cost than that used to measure obligations where the yield curve is positively sloped. The methodology used to determine this discount rate is the same as the one used to establish the discount rate for measuring the obligation.

Other Assumptions

For measurement purposes, the estimated annual growth rate for health care costs was 5.17% as at October 31, 2019 (5.23% as at October 31, 2018). Based on the assumption retained, this rate is expected to decrease gradually to 3.50% in 2038 and remain steady thereafter.

Mortality assumptions are a determining factor when measuring the defined benefit obligation. Determining the expected benefit payout period is based on best estimate assumptions regarding mortality. Mortality tables are reviewed at least once a year, and the assumptions made are in accordance with accepted actuarial practice. New results regarding the plans are reviewed and used in calculating best estimates of future mortality.

As at October 31

	Pension plans		Other post-employment benefit plans	
	2019	2018	2019	2018
Defined benefit obligation				
Discount rate	3.10 %	4.05 %	3.10 %	4.05 %
Rate of compensation increase	3.00 %	3.00 %	3.00 %	3.00 %
Health care cost trend rate			5.17 %	5.23 %
Life expectancy *(in years)* at 65 for a participant currently at				
Age 65				
Men	21.3	21.2	21.3	21.2
Women	23.6	23.6	23.6	23.6
Age 45				
Men	22.3	22.3	22.3	22.3
Women	24.6	24.5	24.6	24.5

(millions of Canadian dollars)

Note 23 – Employee Benefits – Pension Plans and Other Post-Employment Benefits (cont.)

Year ended October 31

	Pension plans		Other post-employment benefit plans	
	2019	2018	**2019**	2018
Pension plan expense				
Discount rate – Current service	**4.15 %**	3.75 %	**4.15 %**	3.75 %
Discount rate – Interest expense (income), net	**4.05 %**	3.65 %	**4.05 %**	3.65 %
Rate of compensation increase	**3.00 %**	3.00 %	**3.00 %**	3.00 %
Health care cost trend rate			**5.23 %**	5.28 %
Life expectancy *(in years)* at 65 for a participant currently at				
Age 65				
Men	**21.2**	21.2	**21.2**	21.2
Women	**23.6**	23.5	**23.6**	23.5
Age 45				
Men	**22.3**	22.2	**22.3**	22.2
Women	**24.5**	24.5	**24.5**	24.5

Sensitivity of Significant Assumptions for 2019

The following table shows the potential impacts of changes to key assumptions on the defined benefit obligation of the pension plans and other post-employment benefit plans as at October 31, 2019. These impacts are hypothetical and should be interpreted with caution as changes in each significant assumption may not be linear.

	Pension plans	Other post-employment benefit plans
	Change in the obligation	Change in the obligation
Impact of a 0.25% increase in the discount rate	(191)	(5)
Impact of a 0.25% decrease in the discount rate	204	5
Impact of a 0.25% increase in the rate of compensation increase	34	–
Impact of a 0.25% decrease in the rate of compensation increase	(35)	–
Impact of a 1.00% increase in the health care cost trend rate		9
Impact of a 1.00% decrease in the health care cost trend rate		(7)
Impact of an increase in the age of participants by one year	(123)	(3)
Impact of a decrease in the age of participants by one year	119	3

Projected Benefit Payments

Year ended October 31

	Pension plans	Other post-employment benefit plans
2020	203	9
2021	209	9
2022	215	9
2023	221	9
2024	228	9
2025 to 2029	1,247	38

(millions of Canadian dollars)

Note 24 – Income Taxes

The Bank's income tax expense reported in the consolidated financial statements is as follows.

Year ended October 31	2019	2018
Consolidated Statement of Income		
Current taxes		
Current year	647	504
Prior period adjustments	22	16
	669	520
Deferred taxes		
Origination and reversal of temporary differences	(188)	15
Prior period adjustments	(19)	9
	(207)	24
	462	544
Consolidated Statement of Changes in Equity		
Share issuance expense and other	–	(5)
Consolidated Statement of Comprehensive Income		
Remeasurements of pension plans and other post-employment benefit plans	(48)	37
Net change in cash flow hedges	(57)	2
Other	2	2
	(103)	41
Income taxes	359	580

The breakdown of the income tax expense is as follows.

Year ended October 31	2019	2018
Current taxes	617	523
Deferred taxes	(258)	57
	359	580

The temporary differences and tax loss carryforwards resulting in deferred tax assets and liabilities are as follows.

	As at October 31 Consolidated Balance Sheet		Year ended October 31 Consolidated Statement of Income		Year ended October 31 Consolidated Statement of Comprehensive Income	
	2019	2018[1]	2019	2018[1]	2019	2018
Deferred tax assets						
Allowances for credit losses	150	143	7	(16)	–	–
Deferred charges	264	233	31	(13)	–	–
Defined benefit liability – Pension plans	78	36	–	–	42	(33)
Defined benefit liability – Other post-employment benefit plans	50	54	(10)	–	6	(2)
Investments in associates	75	54	21	14	–	–
Deferred revenue	41	38	3	–	–	–
Tax loss carryforwards	95	26	69	2	–	–
Other items[2][3]	44	26	17	(49)	–	–
	797	610	138	(62)	48	(35)
Deferred tax liabilities						
Premises and equipment and intangible assets	(140)	(207)	67	(8)	–	–
Defined benefit asset – Pension plans	(33)	(41)	8	16	–	(2)
Investments in associates	(16)	(31)	15	(6)	–	–
Other items	(51)	(32)	(21)	36	2	(1)
	(240)	(311)	69	38	2	(3)
Net deferred tax assets (liabilities)	557	299	207	(24)	50	(38)

(1) For the year ended October 31, 2018, certain amounts have been reclassified.
(2) As at October 31, 2019, the Consolidated Balance Sheet includes a negligible amount in deferred tax assets related to share issuance costs ($5 million as at October 31, 2018) reported in *Retained earnings* on the Consolidated Statement of Changes in Equity.
(3) As at November 1, 2018, as a result of adjustments upon IFRS 15 adoption, *Deferred tax assets* and *Retained earnings* increased by $1 million.

(millions of Canadian dollars)

Note 24 – Income Taxes (cont.)

Net deferred tax assets are included in *Other assets* and net deferred tax liabilities are included in *Other liabilities*.

As at October 31	2019	2018
Deferred tax assets	562	324
Deferred tax liabilities	(5)	(25)
	557	299

According to forecasts, which are based on information available on October 31, 2019, the Bank believes that it is probable that the results of future operations will generate sufficient taxable income to utilize all the deferred tax assets before they expire.

As at October 31, 2019, the total amount of temporary differences, unused tax loss carryforwards and unused tax credits for which no deferred tax asset has been recognized was $508 million ($369 million as at October 31, 2018).

As at October 31, 2019, the total amount of temporary differences related to investments in subsidiaries, associates, and joint ventures for which no deferred tax liability has been recognized was $3,184 million ($1,972 million as at October 31, 2018).

The following table provides a reconciliation of the Bank's income tax rate.

Year ended October 31		2019		2018
	$	%	$	%
Income before income taxes	2,784	100.0	2,776	100.0
Income taxes at Canadian statutory income tax rate	741	26.6	741	26.7
Reduction in income tax rate due to				
Tax-exempt income from securities	(208)	(7.5)	(161)	(5.8)
Non-taxable portion of capital gains	(17)	(0.6)	(6)	(0.2)
Tax rates of subsidiaries, foreign entities and associates	(67)	(2.4)	(36)	(1.3)
Other items	13	0.5	6	0.2
	(279)	(10.0)	(197)	(7.1)
Income taxes reported in the Consolidated Statement of Income and effective income tax rate	462	16.6	544	19.6

Notice of Assessment

In June 2019, the Bank was reassessed by the Canada Revenue Agency (CRA) for additional income tax and interest of approximately $150 million (including estimated provincial tax and interest) in respect of certain Canadian dividends received by the Bank during 2014.

In prior fiscal years, the Bank was reassessed for additional income tax and interest of approximately $220 million (including provincial tax and interest) in respect of certain Canadian dividends received by the Bank during the 2013 and 2012 taxation years.

The transactions to which the above-mentioned reassessments relate are similar to those prospectively addressed by income tax legislation enacted as a result of the 2015 Canadian federal budget.

The CRA may issue reassessments to the Bank for taxation years subsequent to 2014 in regard to activities similar to those that were the subject of the above-mentioned reassessments. The Bank remains confident that its tax position was appropriate and intends to vigorously defend its position. As a result, no amount has been recognized in the consolidated financial statements as at October 31, 2019.

Note 25 – Earnings Per Share

Diluted earnings per share is calculated by dividing net income attributable to common shareholders by the weighted average number of common shares outstanding after taking into account the dilution effect of stock options using the treasury stock method and any gain (loss) on the redemption of preferred shares.

Year ended October 31	2019	2018
Basic earnings per share		
Net income attributable to the Bank's shareholders	2,256	2,145
Dividends on preferred shares	116	105
Net income attributable to common shareholders	2,140	2,040
Weighted average basic number of common shares outstanding *(thousands)*	335,104	339,372
Basic earnings per share *(dollars)*	6.39	6.01
Diluted earnings per share		
Net income attributable to common shareholders	2,140	2,040
Weighted average basic number of common shares outstanding *(thousands)*	335,104	339,372
Adjustment to average number of common shares *(thousands)*		
Stock options(1)	2,526	3,868
Weighted average diluted number of common shares outstanding *(thousands)*	337,630	343,240
Diluted earnings per share *(dollars)*	6.34	5.94

(1) For the year ended October 31, 2019, the calculation of the diluted earnings per share excluded an average number of 1,775,598 options outstanding with a weighted average exercise price of $64.14 (1,621,740 options outstanding with a weighted average exercise price of $64.14 for the year ended October 31, 2018), as the exercise price of these options was greater than the average price of the Bank's common shares.

Note 26 – Guarantees, Commitments and Contingent Liabilities

Guarantees

The maximum potential amount of future payments represents the maximum risk of loss if there were a total default by the guaranteed parties, without consideration of recoveries under recourse provisions, insurance policies or from collateral held or pledged. The maximum potential amount of future payments for significant guarantees issued by the Bank is presented in the following table.

As at October 31	2019	2018
Letters of guarantee(1)	5,231	4,353
Backstop liquidity, credit enhancement facilities and other(1)	5,655	4,878
Securities lending	280	227

(1) For additional information on allowances for credit losses related to off-balance-sheet commitments, refer to Note 7 to these consolidated financial statements.

Letters of Guarantee

In the normal course of business, the Bank issues letters of guarantee. These letters of guarantee represent irrevocable commitments that the Bank will make payments in the event that a client cannot meet its financial obligations to third parties. The Bank's policy for requiring collateral security with respect to letters of guarantee is similar to that for loans. Generally, the term of these letters of guarantee is less than two years.

Backstop Liquidity and Credit Enhancement Facilities

Facilities to Multi-Seller Conduits

The Bank administers multi-seller conduits that purchase financial assets from clients and finance those purchases by issuing asset-backed commercial paper. The Bank provides backstop liquidity facilities to these multi-seller conduits. As at October 31, 2019, the notional amount of the global-style backstop liquidity facilities totalled $2.6 billion ($2.6 billion as at October 31, 2018), representing the total amount of the commercial paper outstanding.

These backstop liquidity facilities can be drawn if the conduits are unable to access the commercial paper market, even if there is no general market disruption. These facilities have terms of less than one year and can be periodically renewed. The terms and conditions of these backstop liquidity facilities do not require the Bank to advance money to the conduits if the conduits are insolvent or involved in bankruptcy proceedings or to fund non-performing assets beyond the amount of the available credit enhancements. The backstop liquidity facilities provided by the Bank have not been drawn to date.

(millions of Canadian dollars)

Note 26 – Guarantees, Commitments and Contingent Liabilities (cont.)

The Bank also provides credit enhancement facilities to these multi-seller conduits. These facilities have terms of less than one year and are automatically renewable unless the Bank sends a non-renewal notice. As at October 31, 2019 and 2018, the committed notional value for these facilities was $30 million. To date, the credit enhancement facilities provided by the Bank have not been drawn.

The maximum risk of loss for the Bank cannot exceed the total amount of commercial paper outstanding, i.e., $2.6 billion as at October 31, 2019 ($2.6 billion as at October 31, 2018). As at October 31, 2019, the Bank held $13 million ($7 million as at October 31, 2018) of this commercial paper and, consequently, the maximum potential amount of future payments was $2.6 billion ($2.6 billion as at October 31, 2018).

CDCC Overnight Liquidity Facility
Canadian Derivatives Clearing Corporation (CDCC) acts as a central clearing counterparty for multiple financial instrument transactions in Canada. Certain fixed-income clearing members of CDCC have provided an equally shared committed and uncommitted global overnight liquidity facility for the purpose of supporting CDCC in its clearing activities of securities purchased under reverse repurchase agreements or sold under repurchase agreements. The objective of this facility is to maintain sufficient liquidity in the event of a clearing member's default. As a fixed-income clearing member providing support to CDCC, the Bank provides a liquidity facility. As at October 31, 2019, the notional amount of the overnight uncommitted liquidity facility amounted to $3.0 billion ($2.3 billion as at October 31, 2018). As at October 31, 2019 and 2018, no amount had been drawn.

Securities Lending
Under securities lending agreements the Bank has entered into with certain clients who have entrusted it with the safekeeping of their securities, the Bank lends the securities to third parties and indemnifies its clients in the event of loss. In order to protect itself against any contingent loss, the Bank obtains, as security from the borrower, a cash amount or extremely liquid marketable securities with a fair value greater than that of the securities loaned. No amount has been recognized on the Consolidated Balance Sheet with respect to potential indemnities resulting from securities lending agreements.

Other Indemnification Agreements
In the normal course of business, including securitization transactions and discontinuances of businesses and operations, the Bank enters into numerous contractual agreements under which it undertakes to compensate the counterparty for costs incurred as a result of litigation, changes in laws and regulations (including tax legislation), claims with respect to past performance, incorrect representations or the non-performance of certain restrictive covenants. The Bank also undertakes to indemnify any person acting as a director or officer or performing a similar function within the Bank or one of its subsidiaries or another entity, at the request of the Bank, for all expenses incurred by that person in proceedings or investigations to which he or she is party in that capacity. Moreover, as a member of a securities transfer network and pursuant to the membership agreement and the regulations governing the operation of the network, the Bank granted collateral in favour of the Bank of Canada to guarantee any obligation of the Bank towards the Bank of Canada that could result from the Bank's participation in the securities transfer network. The durations of the indemnification agreements vary according to circumstance; as at October 31, 2019 and 2018, given the nature of the agreements, the Bank is unable to make a reasonable estimate of the maximum potential liability it could be required to pay to counterparties. No amount has been recorded on the Consolidated Balance Sheet with respect to these agreements.

Commitments

Credit Instruments
In the normal course of business, the Bank enters into various off-balance-sheet commitments. The credit instruments used to meet the financing needs of its clients represent the maximum amount of additional credit the Bank could be obligated to extend if the commitments were fully drawn.

As at October 31	2019	2018
Letters of guarantee[(1)]	5,231	4,353
Documentary letters of credit[(2)]	163	142
Credit card receivables[(3)]	7,630	7,874
Commitments to extend credit[(3)]	62,124	57,794

(1) See the Letters of Guarantee heading on page 195.
(2) Documentary letters of credit are documents issued by the Bank and used in international trade to enable a third party to draw drafts on the Bank up to an amount established under specific terms and conditions; these instruments are collateralized by the delivery of the goods to which they are related.
(3) Credit card receivables and commitments to extend credit represent the undrawn portions of credit authorizations granted in the form of loans, acceptances, letters of guarantee and documentary letters of credit. The Bank is required at all times to make the undrawn portion of the credit authorization available, subject to certain conditions.

Financial Assets Received as Collateral
As at October 31, 2019, the fair value of financial assets received as collateral that the Bank was authorized to sell or repledge was $55.3 billion ($57.5 billion as at October 31, 2018). These financial assets received as collateral consist of securities related to securities financing and derivative transactions as well as securities purchased under reverse repurchase agreements and securities borrowed.

(millions of Canadian dollars)

Other Commitments

The Bank acts as an investor in investment banking activities where it enters into agreements to finance external private equity funds and investments in equity and debt securities at market value at the time the agreements are signed. In connection with these activities, the Bank has commitments to invest up to $92 million as at October 31, 2019 ($99 million as at October 31, 2018). In addition, through one of its subsidiaries, the Bank purchases retail loans originated by other financial institutions at market value at the time of purchase. As at October 31, 2019, the Bank had commitments to purchase loans of up to $1.6 billion.

Pledged Assets

In the normal course of business, the Bank pledges securities and other assets as collateral. A breakdown of encumbered assets pledged as collateral is provided in the following table. These transactions are concluded in accordance with standard terms and conditions for such transactions.

As at October 31	**2019**	2018
Assets pledged to		
Bank of Canada	**502**	502
Direct clearing organizations(1)	**1,052**	1,130
Assets pledged in relation to		
Derivative financial instrument transactions	**2,822**	1,652
Borrowing, securities lending and securities sold under reverse repurchase agreements	**41,946**	41,378
Securitization transactions	**23,299**	22,083
Covered bonds(2)	**10,300**	8,995
Other	**4**	125
Total	**79,925**	75,865

(1) Includes assets pledged as collateral for Large Value Transfer System (LVTS) activities.
(2) The Bank has a covered bond program. For additional information, see Notes 13 and 27 to these consolidated financial statements.

Contingent Liabilities

Maple Financial Group Inc.

The Bank has a 24.9% equity interest in Maple Financial Group Inc. (Maple), a privately owned Canadian company that operated through direct and indirect wholly owned subsidiaries in Canada, Germany, the United Kingdom and the United States.

Maple Bank GmbH (Maple GmbH), an indirect wholly owned subsidiary of Maple, has been the subject of an investigation into alleged tax irregularities by German prosecutors since September 2015 and, to the Bank's knowledge, that investigation is ongoing. The Bank understands that the investigation is focusing on selected trading activities by Maple GmbH and some of its former employees, primarily during taxation years 2006 to 2010. The German authorities have alleged that these trading activities, often referred to as "cum/ex trading," violated German tax laws. Neither the Bank nor its employees were involved in these trading activities and, to the Bank's knowledge, are not the subject of this investigation. At that time, the Bank announced that if it were determined that portions of the dividends it received from Maple could be reasonably attributed to tax fraud by Maple GmbH, arrangements would be made to repay those amounts to the relevant authority.

On February 6, 2016, the German Federal Financial Supervisory Authority, BaFin, placed a moratorium on the business activities of Maple GmbH preventing it from carrying out its normal business activities. In August 2016, Maple filed for bankruptcy under applicable Canadian laws, and a trustee was appointed to administer the company. Similar proceedings were initiated for each of Maple's other material subsidiaries in their home jurisdictions. In light of the situation, the Bank wrote off the carrying value of its equity interest in Maple in an amount of $164 million ($145 million net of income taxes) during the first quarter of 2016. The $164 million write-off of the equity interest in this associate was recognized in the *Non-interest income – Other* item of the Consolidated Statement of Income for the year ended October 31, 2016 and was reported in the Financial Markets segment.

While there has not yet been a determination of tax fraud on the part of Maple GmbH or its employees, in the insolvency proceedings of Maple GmbH the German finance office issued a declaration about the result of the tax audit at Maple GmbH and about the relevant tax consequences of the cum/ex trading and concluded a final tax claim of the tax authorities against the insolvency administrator. This claim was approved by the Maple GmbH creditor assembly.

The Bank has been in contact with the German prosecutors, who have confirmed that, in their view based upon the evidence they have considered since the occurrence of the insolvency, the Bank was not involved in any respect with the alleged tax fraud undertaken by Maple GmbH nor was it negligent in failing to identify that alleged fraud. Further to discussions between the Bank and the German prosecutors concerning the amounts deemed attributable to the alleged tax fraud, the Bank paid 7.7 million euros to the German tax authorities on November 19, 2019.

The Bank has been engaging in discussions with the bankruptcy and insolvency administrators of relevant Maple entities regarding potential claims they may assert against Maple's former shareholders in relation to the insolvency of Maple and its subsidiaries. The Bank does not see a legal basis for any such liability but is nevertheless continuing discussions at this time. If any payments are required, they are not expected to be material to the Bank's financial position.

Note 26 – Guarantees, Commitments and Contingent Liabilities (cont.)

Litigation
In the normal course of business, the Bank and its subsidiaries are involved in various claims relating, among other matters, to loan portfolios, investment portfolios and supplier agreements, including court proceedings, investigations or claims of a regulatory nature, class actions or other legal remedies of varied natures.

More specifically, the Bank is involved as a defendant in class actions instituted by consumers contesting, *inter alia*, certain transaction fees or who wish to avail themselves of certain legislative provisions relating to consumer protection. The recent developments in the main legal proceedings involving the Bank are as follows:

Watson
In 2011, a class action was filed in the Supreme Court of British Columbia against Visa Corporation Canada (Visa) and MasterCard International Incorporated (MasterCard) (the Networks) as well as National Bank and a number of other Canadian financial institutions. A similar action was also initiated in Quebec, Ontario, Alberta and Saskatchewan. In each of the actions, the Networks and financial institutions are alleged to have been involved in a price-fixing system to maintain and increase the fees paid by merchants on transactions executed using the credit cards of the Networks. In so doing, they would notably be in breach of the *Competition Act*. An unspecified amount of compensatory and punitive damages is being claimed. In 2017, a settlement was reached with the plaintiffs; in 2018 it was approved by the trial courts in each of the five jurisdictions where the action was initiated. The rulings approving the settlement are now the subject of appeal proceedings in multiple jurisdictions.

Defrance
On January 21, 2019, the Quebec Superior Court authorized a class action against the Bank and several other Canadian financial institutions. The originating application was served to the Bank on April 23, 2019. The class action was initiated on behalf of consumers residing in Quebec. The plaintiffs allege that non-sufficient funds charges, billed by all of the defendants when a payment order is refused due to non-sufficient funds, are illegal and prohibited by the *Consumer Protection Act*. The plaintiffs are claiming, in the form of damages, the repayment of these charges as well as punitive damages.

It is impossible to determine the outcome of the claims instituted or which may be instituted against the Bank and its subsidiaries. The Bank estimates, based on the information at its disposal, that while the amount of contingent liabilities pertaining to these claims, taken individually or in the aggregate, could have a material impact on the Bank's consolidated results of operation for a particular period, it would not have a material adverse impact on the Bank's consolidated financial position.

Note 27 – Structured Entities

A structured entity is an entity created to accomplish a narrow and well-defined objective and is designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when any voting rights relate solely to administrative tasks and the relevant activities are directed by means of contractual arrangements. Structured entities are assessed for consolidation in accordance with the accounting treatment described in Note 1. The Bank's maximum exposure to loss resulting from its interests in these structured entities consists primarily of the investments in these entities, the fair value of derivative financial instrument contracts entered into with them, and the backstop liquidity and credit enhancement facilities granted to certain structured entities.

In the normal course of business, the Bank may enter into financing transactions with third-party structured entities, including commercial loans, reverse repurchase agreements, prime brokerage margin lending, and similar collateralized lending transactions. While such transactions expose the Bank to the counterparty credit risk of the structured entities, this exposure is mitigated by the collateral related to these transactions. The Bank typically has neither power nor significant variable returns resulting from financing transactions with structured entities and does not consolidate such entities. Financing transactions with third-party-sponsored structured entities are included in the Bank's consolidated financial statements and are not included in the table accompanying this note.

Non-Consolidated Structured Entities

Multi-Seller Conduits

The Bank administers multi-seller conduits that purchase financial assets from clients and finance those purchases by issuing commercial paper backed by the assets acquired. Clients use these multi-seller conduits to diversify their funding sources and reduce borrowing costs, while continuing to manage the financial assets and providing some amount of first-loss protection. Notes issued by the conduits and held by third parties provide additional credit loss protection. The Bank acts as a financial agent and provides these conduits with administrative and transaction structuring services as well as backstop liquidity and credit enhancement facilities under the commercial paper program. These facilities are presented and described in Note 26. The Bank has concluded derivative financial instrument contracts with these conduits, the fair value of which is presented on the Bank's Consolidated Balance Sheet. Although the Bank has the ability to direct the relevant activities of these conduits, it cannot use its power to affect the amount of the returns it obtains, as it acts as an agent. Consequently, the Bank does not control these conduits and does not consolidate them.

Investment Funds

The Bank enters into derivative or other financial instrument contracts with third parties to provide them with the desired exposure to certain investment funds. The Bank economically hedges the risks related to these derivatives by investing in those investment funds. The Bank can also hold economic interests in certain investment funds as part of its investing activities. In addition, the Bank is sponsor and investment manager of mutual funds in which it has insignificant or no interest. The Bank does not control the funds where its holdings are not significant as in these circumstances, the Bank either acts only as an agent or does not have any power over the relevant activities. In both cases, it does not have significant exposure to the variable returns of the funds. Therefore, the Bank does not consolidate these funds.

Private Investments

As part of its investment banking operations, the Bank invests in several limited liability partnerships and other incorporated entities. These investment companies in turn invest in operating companies with a view to reselling these investments at a profit over the medium or long term. The Bank does not intervene in the operations of these entities; its only role is that of an investor. Consequently, it does not control these companies and does not consolidate them.

Asset-Backed Structured Entities

The Bank invested in certain asset-backed structured entities. The underlying assets consist of residential mortgages, consumer loans, equipment loans and leases. The Bank does not have the ability to direct the relevant activities of these structured entities and has no exposure to their variable returns, other than the right to receive interest income and dividend income from its investments. Consequently, the Bank does not control these structured entities and does not consolidate them.

(millions of Canadian dollars)

Note 27 – Structured Entities (cont.)

The following table presents the carrying amounts of the assets and liabilities relating to the Bank's interests in non-consolidated structured entities, the Bank's maximum exposure to loss from these interests, as well as the total assets of these structured entities. The structured entity Canada Housing Trust is not presented. For additional information, see Note 8 to these consolidated financial statements.

				As at October 31, 2019
	Multi-seller conduits[1]	Investment funds[2]	Private investments[3]	Asset-backed structured entities[4]
Assets on the Consolidated Balance Sheet				
Securities at fair value through profit or loss	13	540	81	–
Securities at amortized cost	–	–	–	2,462
Derivative financial instruments	2	–	–	3
	15	540	81	2,465
As at October 31, 2018	7	139	86	1,450
Liabilities on the Consolidated Balance Sheet				
Derivative financial instruments	–	–	–	–
As at October 31, 2018	26	–	–	–
Maximum exposure to loss				
Securities	15	540	81	2,465
Liquidity, credit enhancement facilities and commitments	2,608	–	–	242
	2,623	540	81	2,707
As at October 31, 2018	2,557	139	86	1,552
Total assets of the structured entities	2,647	1,970	482	6,506
As at October 31, 2018	2,589	1,054	492	3,612

(1) The main underlying assets, located in Canada, are residential mortgages, automobile loans, automobile inventory financings, and other receivables. As at October 31, 2019, the notional committed amount of the global-style liquidity facilities totalled $2.6 billion ($2.6 billion as at October 31, 2018), representing the total amount of commercial paper outstanding. The Bank also provides series-wide credit enhancement facilities for a notional committed amount of $30 million ($30 million as at October 31, 2018). The maximum exposure to loss cannot exceed the amount of commercial paper outstanding. As at October 31, 2019, the Bank held $13 million in commercial paper ($7 million as at October 31, 2018) and, consequently, the maximum potential amount of future payments as at October 31, 2019 is limited to $2.6 billion ($2.6 billion as at October 31, 2018), which represents the undrawn liquidity and credit enhancement facilities.
(2) The underlying assets are various financial instruments and are presented on a net asset basis. Certain investment funds are in a trading portfolio.
(3) The underlying assets are private investments. The amount of total assets of the structured entities corresponds to the amount for the most recent available period.
(4) The underlying assets are residential mortgages, consumer loans, equipment loans and leases.

Consolidated Structured Entities

Securitization Entity for the Bank's Credit Card Receivables

In April 2015, the Bank set up Canadian Credit Card Trust II (CCCT II) to continue its credit card securitization program on a revolving basis and to use the entity for capital management and funding purposes.

The Bank provides first-loss protection against the losses since it retains the excess spread from the portfolio of sold receivables. The excess spread represents the residual net interest income after all the expenses related to this structure have been paid. The Bank also provides second-loss protection as it holds subordinated notes issued by CCCT II. In addition, the Bank acts as an administrative agent and servicer and as such is responsible for the daily administration and management of CCCT II's credit card receivables. The Bank therefore has the ability to direct the relevant activities of CCCT II and can exercise its power to affect the amount of returns it obtains. Consequently, the Bank controls CCCT II and consolidates it.

Investment Funds

The Bank enters into derivative or other financial instrument contracts with third parties to provide them with the desired exposure to certain investment funds. The Bank economically hedges the risks related to these derivatives by investing in those investment funds. The Bank can also hold economic interests in certain investment funds as part of its investing activities. The Bank controls the relevant activities of these funds through its involvement as an investor and its significant exposure to their variable returns. Therefore, the Bank consolidates these funds.

(millions of Canadian dollars)

Covered Bonds

NBC Covered Bond Guarantor (Legislative) Limited Partnership

In December 2013, the Bank established the covered bond legislative program under which covered bonds are issued. It therefore created NBC Covered Bond Guarantor (Legislative) Limited Partnership (the Guarantor) to guarantee payment of the principal and interest owed to the bondholders. The Bank sold uninsured residential mortgages to the Guarantor and granted it loans to facilitate the acquisition of these assets. The Bank acts as manager of the partnership and has decision-making authority over its relevant activities in accordance with the contractual terms governing the covered bond legislative program. In addition, the Bank is able, in accordance with the contractual terms governing the covered bond legislative program, to affect the variable returns of the partnership, which are directly related to the return on the mortgage loan portfolio and the interest on the loans from the Bank. Consequently, the Bank controls the partnership and consolidates it.

NBC Asset Trust

The Bank created NBC Asset Trust for its funding and capital management needs. The securities issued by this trust constitute innovative capital instruments and are eligible as additional Tier 1 capital, but because these instruments do not satisfy the non-viability contingent capital requirements, they are to be phased out at a rate of 10% per year between 2013 and 2022. For additional information, see Note 19 to these consolidated financial statements. The issuance proceeds were used to acquire, from the Bank, residential mortgage loans. The Bank continues to administer these loans and is committed to repurchase from NBC Asset Trust the capital balance and unpaid accrued interest on any loan that is more than 90 days past due. The Bank also manages day-to-day operations and holds the special voting securities of the trust. After the distribution has been paid to the holders of the trust capital securities, the Bank, as the sole holder of the special trust securities, is entitled to receive the balance of net residual funds. Therefore, the Bank has the ability to direct the relevant activities of NBC Asset Trust and can use its power to affect the amount of returns it obtains. Consequently, the Bank controls this trust and consolidates it.

Third-Party Structured Entities

In 2018, the Bank, through one of its subsidiaries, provided financing to a third-party structured entity in exchange for a 100% interest in a loan portfolio, the sole asset held by that entity. The Bank controls and therefore consolidates the structured entity, as it has the ability to direct the entity's relevant activities through its involvement in the decision-making process. The Bank is also exposed to the entity's variable returns.

The following table presents the Bank's investments and other assets in the consolidated structured entities as well as the total assets of these entities.

As at October 31		**2019**		2018
	Investments and other assets	**Total assets[1]**	Investments and other assets	Total assets[1]
Consolidated structured entities				
Securitization entity for the Bank's credit card receivables[2][3]	**849**	**1,765**	898	2,053
Investment funds[4]	**286**	**311**	289	310
Covered bonds[5]	**16,167**	**16,515**	12,886	13,153
Building[6]	**–**	**–**	61	54
NBC Asset Trust[7]	**700**	**1,063**	700	1,060
Third-party structured entities[8]	**232**	**232**	305	305
	18,234	**19,886**	15,139	16,935

(1) There are restrictions that stem mainly from regulatory requirements, corporate or securities laws and contractual arrangements that limit the ability of certain consolidated structured entities to transfer funds to the Bank.
(2) The underlying assets are credit card receivables.
(3) The Bank's investment is presented net of third-party holdings.
(4) The underlying assets are various financial instruments and are presented on a net asset basis. Certain investment funds are in a trading portfolio.
(5) The underlying assets are uninsured residential mortgage loans of the Bank. The average maturity of these underlying assets is two years. As at October 31, 2019, the total amount of transferred mortgage loans was $16.2 billion ($12.9 billion as at October 31, 2018), and the total amount of covered bonds of $9.5 billion was recognized in *Deposits* on the Consolidated Balance Sheet ($8.3 billion as at October 31, 2018). For additional information, see Note 13 to these consolidated financial statements.
(6) As at October 31, 2018, the underlying asset was the Bank's head office building, which was sold on July 30, 2019. For additional information, see Note 10 to these consolidated financial statements.
(7) The underlying assets are insured and uninsured residential mortgage loans of the Bank. As at October 31, 2019, insured loans amounted to $12 million ($18 million as at October 31, 2018). The average maturity of the underlying assets is one year. For additional information, see Note 19 to these consolidated financial statements.
(8) The underlying assets consist of a loan portfolio.

(millions of Canadian dollars)

Note 28 – Related Party Disclosures

In the normal course of business, the Bank provides various banking services to related parties and enters into contractual agreements and other operations with related parties. The Bank considers the following to be related parties:

- its key officers and directors and members of their immediate family, i.e., spouses and children under 18 living in the same household;
- entities over which its key officers and directors and their immediate family have control or significant influence through their significant voting power;
- the Bank's associates and joint ventures;
- the Bank's pension plans (for additional information, see Note 23 to these consolidated financial statements).

According to the established definition, the Bank's key officers are those persons having authority and responsibility for planning, directing and controlling the Bank's activities, directly or indirectly.

Related Party Transactions

As at October 31

	Key officers and directors[1]		Related entities	
	2019	2018	**2019**	2018
Assets				
Mortgage loans and other loans	**3**	36	**339** [2]	298 [2]
Other	**–**	–	**–**	8
Liabilities				
Deposits	**39**	59	**632** [3]	511 [3]
Other	**–**	–	**3**	16

(1) As at October 31, 2019, key officers, directors and their immediate family members were holding $69 million of the Bank's common and preferred shares ($67 million as at October 31, 2018).
(2) As at October 31, 2019, mortgage loans and other loans consisted of: (i) no loans to the Bank's associates and joint ventures (no loans as at October 31, 2018) and (ii) $339 million in loans to entities over which the Bank's key officers, directors or their immediate family members exercise control or significant influence through significant voting power ($298 million as at October 31, 2018).
(3) As at October 31, 2019, deposits consisted of: (i) $395 million in deposits from the Bank's associates and joint ventures ($306 million as at October 31, 2018) and (ii) $237 million in deposits from entities over which the Bank's key officers, directors or their immediate family members exercise control or significant influence through significant voting power ($205 million as at October 31, 2018).

The contractual agreements and other transactions with related entities as well as with directors and key officers are entered into under conditions similar to those offered to non-related third parties. These agreements did not have a significant impact on the Bank's results. The Bank also offers a deferred stock unit plan to directors who are not Bank employees. For additional information, see Notes 9, 22 and 27 to these consolidated financial statements.

Compensation of Key Officers and Directors

Year ended October 31	**2019**	2018
Compensation and other short-term and long-term benefits	**23**	22
Share-based payments	**25**	25

(millions of Canadian dollars)

Principal Subsidiaries of the Bank[1]

			As at October 31, 2019	
Name	Business activity	Principal office address	Voting shares[2]	Investment at cost
Canada and United States				
National Bank Acquisition Holding Inc.	Holding company	Montreal, Canada	100%	1,464
National Bank Financial Inc.	Investment dealer	Montreal, Canada	100%	
NBF International Holdings Inc.	Holding company	Montreal, Canada	100%	
National Bank of Canada Financial Group Inc.	Holding company	New York, NY, United States	100%	
Credigy Ltd.	Holding company	Atlanta, GA, United States	80%	
National Bank of Canada Financial Inc.	Investment dealer	New York, NY, United States	100%	
National Bank Life Insurance Company	Insurance	Montreal, Canada	100%	
Natcan Trust Company	Trustee	Montreal, Canada	100%	238
National Bank Trust Inc.	Trustee	Montreal, Canada	100%	195
National Bank Realty Inc.	Real estate	Montreal, Canada	100%	80
National Bank Investments Inc.	Mutual funds dealer	Montreal, Canada	100%	585
NatBC Holding Corporation	Holding company	Hollywood, FL, United States	100%	31
Natbank, National Association	Commercial bank	Hollywood, FL, United States	100%	
Other countries				
Natcan Global Holdings Ltd.	Holding company	Sliema, Malta	100%	22
NBC Global Finance Limited	Investment services	Dublin, Ireland	100%	
NBC Financial Markets Asia Limited	Investment dealer	Hong Kong, China	100%	5
Advanced Bank of Asia Limited	Commercial bank	Phnom Penh, Cambodia	100%	377
ATA IT Ltd.	Information technology	Bangkok, Thailand	100%	3

(1) Excluding consolidated structured entities. For additional information, see Note 27 to these consolidated financial statements.
(2) The Bank's percentage of voting rights in these subsidiaries.

Note 29 – Management of the Risks Associated With Financial Instruments

The Bank is exposed to credit risk, market risk, liquidity risk and financing risk. The Bank's objectives, policies and procedures for managing risk and the risk measurement methods are presented in the Risk Management section of the MD&A for the year ended October 31, 2019. Text in grey shading and tables identified with an asterisk (*) in the Risk Management section of the MD&A for the year ended October 31, 2019 are an integral part of these consolidated financial statements.

Residual Contractual Maturities of Balance Sheet Items and Off-Balance-Sheet Commitments

The following tables present balance sheet items and off-balance-sheet commitments by residual contractual maturity as at October 31, 2019 and 2018. The information gathered from this maturity analysis is a component of liquidity and funding management. However, this maturity profile does not represent how the Bank manages its interest rate risk nor its liquidity risk and funding needs. The Bank considers factors other than contractual maturity in the assessment of liquid assets or in determining expected future cash flows.

In the normal course of business, the Bank enters into various off-balance-sheet commitments. The credit instruments used to meet the funding needs of its clients represent the maximum amount of additional credit the Bank could be obligated to extend if the commitments were fully drawn.

The Bank also has future minimum commitments under leases for premises as well for other contracts, mainly commitments to purchase loans and contracts for outsourced information technology services. Most of the lease commitments are related to operating leases.

(millions of Canadian dollars)

Note 29 – Management of the Risks Associated With Financial Instruments (cont.)

									As at October 31, 2019	
	1 month or less	Over 1 month to 3 months	Over 3 months to 6 months	Over 6 months to 9 months	Over 9 months to 12 months	Over 1 year to 2 years	Over 2 years to 5 years	Over 5 years	No specified maturity	Total
Assets										
Cash and deposits with financial institutions	7,301	1,638	121	111	33	–	–	–	4,494	13,698
Securities										
At fair value through profit or loss	1,228	647	658	256	411	4,215	7,451	6,872	40,085	61,823
At fair value through other comprehensive income	36	14	26	5	1	3,213	4,749	1,982	622	10,648
At amortized cost	33	84	262	331	105	1,704	5,853	1,383	–	9,755
	1,297	745	946	592	517	9,132	18,053	10,237	40,707	82,226
Securities purchased under reverse repurchase agreements and securities borrowed	7,247	1,365	922	495	–	1,317	–	–	6,377	17,723
Loans(1)										
Residential mortgage	734	1,161	1,959	3,093	2,893	10,674	32,601	3,375	681	57,171
Personal	253	430	803	972	843	3,367	11,576	3,407	15,293	36,944
Credit card									2,322	2,322
Business and government	8,469	2,771	2,995	3,203	2,222	6,016	13,445	2,771	8,707	50,599
Customers' liability under acceptances	6,138	710	45	–	–	–	–	–	–	6,893
Allowances for credit losses									(678)	(678)
	15,594	5,072	5,802	7,268	5,958	20,057	57,622	9,553	26,325	153,251
Other										
Derivative financial instruments	564	614	483	262	194	847	2,039	3,126	–	8,129
Investments in associates and joint ventures									385	385
Premises and equipment									490	490
Goodwill									1,412	1,412
Intangible assets									1,406	1,406
Other assets(1)	1,425	142	87	88	88	266	107	38	497	2,738
	1,989	756	570	350	282	1,113	2,146	3,164	4,190	14,560
	33,428	9,576	8,361	8,816	6,790	31,619	77,821	22,954	82,093	281,458

(1) Amounts collectible on demand are considered to have no specified maturity.

(millions of Canadian dollars)

	1 month or less	Over 1 month to 3 months	Over 3 months to 6 months	Over 6 months to 9 months	Over 9 months to 12 months	Over 1 year to 2 years	Over 2 years to 5 years	Over 5 years	No specified maturity	Total
										As at October 31, 2019
Liabilities and equity										
Deposits(1)(2)										
Personal	1,716	1,983	3,045	2,696	3,042	6,105	7,276	2,606	31,596	60,065
Business and government	20,252	6,050	6,630	4,778	2,723	6,411	11,706	6,213	60,503	125,266
Deposit-taking institutions	711	69	79	29	275	–	5	46	3,021	4,235
	22,679	8,102	9,754	7,503	6,040	12,516	18,987	8,865	95,120	189,566
Other										
Acceptances	6,138	710	45	–	–	–	–	–	–	6,893
Obligations related to securities sold short(3)	504	176	195	34	495	315	2,738	5,147	3,245	12,849
Obligations related to securities sold under repurchase agreements and securities loaned	7,493	1,281	2,881	2,743	–	–	–	–	7,502	21,900
Derivative financial instruments	793	763	556	292	214	712	1,959	1,563	–	6,852
Liabilities related to transferred receivables(4)	–	1,491	995	881	375	3,640	10,623	3,307	–	21,312
Securitization – Credit card(5)	–	–	874	–	–	–	37	–	–	911
Other liabilities – Other items(1)(5)	1,298	330	141	63	36	58	84	292	2,964	5,266
	16,226	4,751	5,687	4,013	1,120	4,725	15,441	10,309	13,711	75,983
Subordinated debt	–	–	–	–	–	–	–	773	–	773
Equity									15,136	15,136
	38,905	12,853	15,441	11,516	7,160	17,241	34,428	19,947	123,967	281,458
Off-balance-sheet commitments										
Letters of guarantee and documentary letters of credit	335	1,430	411	1,019	888	1,258	53	–	–	5,394
Credit card receivables(6)									7,630	7,630
Backstop liquidity and credit enhancement facilities(7)	–	15	3,017	15	–	–	–	–	2,608	5,655
Commitments to extend credit(8)	1,916	4,552	4,103	5,064	4,019	4,258	10,326	784	27,102	62,124
Obligations related to:										
Lease commitments	8	17	26	27	26	99	249	239	–	691
Other contracts(9)	158	289	523	423	380	198	257	–	–	2,228

(1) Amounts payable upon demand or notice are considered to have no specified maturity.
(2) The *Deposits* item is presented in greater detail than it is on the Consolidated Balance Sheet.
(3) Amounts are disclosed according to the remaining contractual maturity of the underlying security.
(4) These amounts mainly include liabilities related to the securitization of mortgage loans.
(5) The *Other liabilities* item is presented in greater detail than it is on the Consolidated Balance Sheet.
(6) These amounts are unconditionally revocable at the Bank's discretion at any time.
(7) In the event of payment on one of the backstop liquidity facilities, the Bank will receive as collateral government bonds in an amount up to $3.0 billion.
(8) These amounts include $45.2 billion that is unconditionally revocable at the Bank's discretion at any time.
(9) These amounts include $0.3 billion in contractual commitments related to the head office building under construction.

(millions of Canadian dollars)

Note 29 – Management of the Risks Associated With Financial Instruments (cont.)

As at October 31, 2018

	1 month or less	Over 1 month to 3 months	Over 3 months to 6 months	Over 6 months to 9 months	Over 9 months to 12 months	Over 1 year to 2 years	Over 2 years to 5 years	Over 5 years	No specified maturity	Total
Assets										
Cash and deposits with financial institutions	9,544	790	41	1	19	10	–	–	2,351	12,756
Securities										
At fair value through profit or loss	1,972	1,706	1,039	1,429	1,457	5,634	10,501	5,443	26,636	55,817
At fair value through other comprehensive income	3	183	7	66	68	714	1,892	2,502	233	5,668
At amortized cost	–	10	9	–	730	814	6,162	573	–	8,298
	1,975	1,899	1,055	1,495	2,255	7,162	18,555	8,518	26,869	69,783
Securities purchased under reverse repurchase agreements and securities borrowed	7,759	1,242	2,154	271	790	2,151	–	–	3,792	18,159
Loans(1)										
Residential mortgage	724	950	1,583	2,653	2,105	10,124	32,675	2,085	752	53,651
Personal	365	395	622	1,070	762	3,914	10,509	3,116	16,604	37,357
Credit card									2,325	2,325
Business and government	7,557	2,454	2,246	3,672	2,206	4,244	12,838	2,402	8,987	46,606
Customers' liability under acceptances	6,019	670	112	–	–	–	–	–	–	6,801
Allowances for credit losses									(658)	(658)
	14,665	4,469	4,563	7,395	5,073	18,282	56,022	7,603	28,010	146,082
Other										
Derivative financial instruments	642	884	718	375	287	951	2,005	2,746	–	8,608
Investments in associates and joint ventures									645	645
Premises and equipment									601	601
Goodwill									1,412	1,412
Intangible assets									1,314	1,314
Other assets(1)	574	108	66	61	131	119	31	54	1,967	3,111
	1,216	992	784	436	418	1,070	2,036	2,800	5,939	15,691
	35,159	9,392	8,597	9,598	8,555	28,675	76,613	18,921	66,961	262,471

(1) Amounts collectible on demand are considered to have no specified maturity.

(millions of Canadian dollars)

	1 month or less	Over 1 month to 3 months	Over 3 months to 6 months	Over 6 months to 9 months	Over 9 months to 12 months	Over 1 year to 2 years	Over 2 years to 5 years	Over 5 years	No specified maturity	Total
										As at October 31, 2018
Liabilities and equity										
Deposits(1)(2)										
Personal	1,630	2,324	2,631	2,033	2,785	5,156	8,994	2,327	27,808	55,688
Business and government	12,082	9,725	5,587	2,953	1,988	7,017	11,050	5,025	54,894	110,321
Deposit-taking institutions	949	541	200	15	263	–	–	50	2,803	4,821
	14,661	12,590	8,418	5,001	5,036	12,173	20,044	7,402	85,505	170,830
Other										
Acceptances	6,019	670	112	–	–	–	–	–	–	6,801
Obligations related to securities sold short(3)	1,061	362	201	33	311	1,753	3,729	5,946	4,384	17,780
Obligations related to securities sold under repurchase agreements and securities loaned	6,912	1,981	3,826	1,607	–	–	–	–	5,672	19,998
Derivative financial instruments	427	668	288	245	181	856	1,485	1,886	–	6,036
Liabilities related to transferred receivables(4)	–	2,244	226	867	537	3,088	10,072	3,066	–	20,100
Securitization – Credit card(5)	36	–	–	–	–	874	–	–	–	910
Other liabilities – Other items(1)(5)	548	241	56	20	59	66	63	207	3,654	4,914
	15,003	6,166	4,709	2,772	1,088	6,637	15,349	11,105	13,710	76,539
Subordinated debt	–	–	–	–	–	–	–	747	–	747
Equity									14,355	14,355
	29,664	18,756	13,127	7,773	6,124	18,810	35,393	19,254	113,570	262,471
Off-balance-sheet commitments										
Letters of guarantee and documentary letters of credit	78	1,269	540	1,296	688	566	58	–	–	4,495
Credit card receivables(6)									7,874	7,874
Backstop liquidity and credit enhancement facilities(7)	–	15	2,298	15	–	–	–	–	2,550	4,878
Commitments to extend credit(8)	2,394	4,161	3,886	4,988	4,737	3,839	6,777	304	26,708	57,794
Obligations related to(9):										
Lease commitments	7	16	23	22	22	86	218	254	–	648
Other contracts	18	12	18	17	32	102	101	–	–	300

(1) Amounts payable upon demand or notice are considered to have no specified maturity.
(2) The *Deposits* item is presented in greater detail than it is on the Consolidated Balance Sheet.
(3) Amounts have been disclosed according to the remaining contractual maturity of the underlying security.
(4) These amounts mainly include liabilities related to the securitization of mortgage loans.
(5) The *Other liabilities* item is presented in greater detail than it is on the Consolidated Balance Sheet.
(6) These amounts are unconditionally revocable at the Bank's discretion at any time.
(7) In the event of payment on one of the backstop liquidity facilities, the Bank will receive as collateral government bonds in an amount up to $2.3 billion.
(8) These amounts include $42.9 billion that is unconditionally revocable at the Bank's discretion at any time.
(9) After refining the process used to identify lease commitments and other contracts, certain amounts have been modified from those previously reported as at October 31, 2018.

(millions of Canadian dollars)

Note 30 – Segment Disclosures

The Bank carries out its activities in four business segments, which are defined below. For presentation purposes, other activities are grouped in the *Other* heading. Each reportable segment is distinguished by services offered, type of clientele and marketing strategy.

The presentation of segment disclosures is consistent with the presentation adopted by the Bank for the year beginning November 1, 2018. This presentation reflects the fact that advisor banking service activities, which had previously been presented in the Wealth Management segment, are now presented in the Personal and Commercial segment. The Bank made this change to better align the monitoring of its activities with its management structure.

Personal and Commercial
The Personal and Commercial segment encompasses the banking, financing, and investing services offered to individuals, advisors and businesses as well as insurance operations.

Wealth Management
The Wealth Management segment comprises investment solutions, trust services, banking services, lending services and other wealth management solutions offered through internal and third-party distribution networks.

Financial Markets
The Financial Markets segment encompasses corporate banking and investment banking and financial solutions for large and mid-size corporations, public sector organizations, and institutional investors. The segment is also active in proprietary trading and investment activities for the Bank.

U.S. Specialty Finance and International (USSF&I)
The USSF&I segment encompasses the specialty finance expertise provided by subsidiary Credigy; the activities of subsidiary ABA Bank, which offers financial products and services to individuals and businesses in Cambodia; and the activities of targeted investments in certain emerging markets.

Other
This heading encompasses treasury activities, liquidity management, Bank funding, asset/liability management activities, certain non-recurring items and the unallocated portion of corporate units.

The segment disclosures have been prepared in accordance with the accounting policies described in Note 1 to these consolidated financial statements, except for the net interest income, non-interest income and income taxes (recovery) of the operating segments, which are presented on a taxable equivalent basis. Taxable equivalent basis is a calculation method that consists in grossing up certain tax-exempt income by the amount of income tax that would have otherwise been payable. The effect of these adjustments is reversed under the *Other* heading. Operations support charges are allocated to each operating segment presented in the business segment results. The Bank assesses performance based on the net income attributable to the Bank's shareholders. Intersegment revenues are recognized at the exchange amount. Segment assets correspond to average assets used in segment operations.

Results by Business Segment

Year ended October 31(1)

	Personal and Commercial		Wealth Management		Financial Markets		USSF&I		Other		Total	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Net interest income(2)	**2,383**	2,276	**470**	446	**474**	409	**656**	584	**(387)**	(333)	**3,596**	3,382
Non-interest income(2)(3)	**1,069**	1,033	**1,273**	1,243	**1,276**	1,334	**59**	55	**159**	119	**3,836**	3,784
Total revenues	**3,452**	3,309	**1,743**	1,689	**1,750**	1,743	**715**	639	**(228)**	(214)	**7,432**	7,166
Non-interest expenses(4)	**1,816**	1,782	**1,067**	1,058	**743**	697	**285**	251	**390**	275	**4,301**	4,063
Contribution	**1,636**	1,527	**676**	631	**1,007**	1,046	**430**	388	**(618)**	(489)	**3,131**	3,103
Provisions for credit losses	**237**	228	**–**	1	**30**	4	**80**	94	**–**	–	**347**	327
Income before income taxes (recovery)	**1,399**	1,299	**676**	630	**977**	1,042	**350**	294	**(618)**	(489)	**2,784**	2,776
Income taxes (recovery)(2)	**372**	347	**177**	166	**260**	278	**71**	72	**(418)**	(319)	**462**	544
Net income	**1,027**	952	**499**	464	**717**	764	**279**	222	**(200)**	(170)	**2,322**	2,232
Non-controlling interests	**–**	–	**–**	–	**–**	–	**40**	38	**26**	49	**66**	87
Net income attributable to the Bank's shareholders	**1,027**	952	**499**	464	**717**	764	**239**	184	**(226)**	(219)	**2,256**	2,145
Average assets	**112,798**	106,857	**6,219**	6,167	**112,493**	100,721	**10,985**	9,270	**43,667**	42,925	**286,162**	265,940

(1) For the year ended October 31, 2018, certain amounts have been reclassified, mainly amounts related to advisor banking service activities, which have been transferred from the Wealth Management segment to the Personal and Commercial segment.
(2) For the year ended October 31, 2019, *Net interest income* was grossed up by $195 million ($144 million in 2018), *Non-interest income* was grossed up by $135 million ($101 million in 2018), and an equivalent amount was recognized in *Income taxes (recovery)*. The effect of these adjustments is reversed under the *Other* heading.
(3) For the *Other* heading of segment results, the *Non-interest income* item includes a $79 million gain on disposal of Fiera Capital Corporation shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss resulting from the fair value measurement of an investment.
(4) For the *Other* heading of segment results, the *Non-interest expenses* item includes $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, an $11 million charge related to Maple, and $10 million in severance pay.

(millions of Canadian dollars)

Results by Geographic Segment

Year ended October 31

	Canada		United States		Other		Total	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018
Net interest income	**2,466**	2,531	**551**	469	**579**	382	**3,596**	3,382
Non-interest income(1)	**3,502**	3,488	**84**	108	**250**	188	**3,836**	3,784
Total revenues	**5,968**	6,019	**635**	577	**829**	570	**7,432**	7,166
Non-interest expenses(2)	**3,931**	3,750	**210**	205	**160**	108	**4,301**	4,063
Contribution	**2,037**	2,269	**425**	372	**669**	462	**3,131**	3,103
Provisions for credit losses	**267**	233	**68**	81	**12**	13	**347**	327
Income before income taxes	**1,770**	2,036	**357**	291	**657**	449	**2,784**	2,776
Income taxes	**303**	412	**58**	85	**101**	47	**462**	544
Net income	**1,467**	1,624	**299**	206	**556**	402	**2,322**	2,232
Non-controlling interests	**36**	54	**30**	33	**–**	–	**66**	87
Net income attributable to the Bank's shareholders	**1,431**	1,570	**269**	173	**556**	402	**2,256**	2,145
Average assets	**231,667**	218,647	**20,411**	20,503	**34,084**	26,790	**286,162**	265,940

(1) For Canada, the *Non-interest income* item includes a $79 million gain on disposal of Fiera Capital Corporation shares, a $50 million gain on disposal of premises and equipment, and a $33 million loss resulting from the fair value measurement of an investment.
(2) For Canada, the *Non-interest expenses* item includes $57 million in impairment losses on premises and equipment and on intangible assets, $45 million in provisions for onerous contracts, an $11 million charge related to Maple and $10 million in severance pay.

Note 31 – Acquisition

On September 27, 2019, the Bank acquired the entire remaining non-controlling interest in the Cambodian subsidiary Advanced Bank of Asia Limited (ABA Bank) for $84 million. Following this transaction, ABA Bank became a wholly owned subsidiary of the Bank.

Note 32 – Event After the Consolidated Balance Sheet Date

On November 19, 2019, the Bank paid 7.7 million euros to the German tax authorities in relation to the Maple case. This payment was made upon a final tax claim of the tax authorities against the insolvency administrator that was approved by the Maple GmbH creditor assembly. As at October 31, 2019, a provision of $11 million was recorded to reflect this adjusting event after the Consolidated Balance Sheet date. For additional information, see Note 26 to these consolidated financial statements.

Supplementary Information

Statistical Review

As at October 31[1] (millions of Canadian dollars)	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Consolidated Balance Sheet data										
Cash and deposits with financial institutions	**13,698**	12,756	8,802	8,183	7,567	8,086	3,596	3,249	2,851	2,274
Securities	**82,226**	69,783	65,343	64,541	56,040	52,953	53,744	54,898	56,592	54,268
Securities purchased under reverse repurchase agreements and securities borrowed	**17,723**	18,159	20,789	13,948	17,702	24,525	21,449	15,529	12,507	10,878
Loans	**153,251**	146,082	136,457	128,036	116,676	106,959	97,338	90,922	80,758	63,134
Other assets	**14,560**	15,691	14,436	17,498	18,105	12,906	12,092	13,305	14,146	14,748
Total assets	**281,458**	262,471	245,827	232,206	216,090	205,429	188,219	177,903	166,854	145,302
Deposits	**189,566**	170,830	156,671	142,066	130,458	119,883	102,111	93,474	85,787	81,785
Other liabilities	**75,983**	76,539	75,589	77,026	72,755	73,163	74,729	73,948	71,791	53,059
Non-controlling interests										1,217
Subordinated debt	**773**	747	9	1,012	1,522	1,881	2,426	2,470	2,000	2,033
Share capital										
Preferred	**2,450**	2,450	2,050	1,650	1,023	1,223	677	762	762	1,089
Common	**2,949**	2,822	2,768	2,645	2,614	2,293	2,160	2,054	1,970	1,804
Contributed surplus	**51**	57	58	73	67	52	58	58	46	66
Retained earnings	**9,312**	8,472	7,706	6,706	6,705	5,850	5,055	4,091	3,366	4,081
Accumulated other comprehensive income	**16**	175	168	218	145	289	214	255	337	168
Non-controlling interests	**358**	379	808	810	801	795	789	791	795	
Total liabilities and equity	**281,458**	262,471	245,827	232,206	216,090	205,429	188,219	177,903	166,854	145,302
Average assets	**286,162**	265,940	248,351	235,913	222,929	206,680	193,509	181,344	165,942	140,360
Net impaired loans[2][3] under IFRS 9	**450**	404								
Net impaired loans[3] under IAS 39			206	281	254	248	183	179	175	162
Consolidated Statement of Income data										
Net interest income	**3,596**	3,382	3,436	3,205	2,929	2,761	2,478	2,365	2,318	1,933
Non-interest income	**3,836**	3,784	3,173	2,635	2,817	2,703	2,673	2,936	2,336	2,351
Total revenues	**7,432**	7,166	6,609	5,840	5,746	5,464	5,151	5,301	4,654	4,284
Provisions for credit losses	**347**	327	244	484	228	208	181	180	184	144
Non-interest expenses	**4,301**	4,063	3,857	3,875	3,665	3,423	3,206	3,207	2,952	2,822
Income taxes	**462**	544	484	225	234	295	252	317	264	221
Non-controlling interests										63
Net income	**2,322**	2,232	2,024	1,256	1,619	1,538	1,512	1,597	1,254	1,034
Non-controlling interests	**66**	87	84	75	70	69	63	61	60	
Net income attributable to the Bank's shareholders	**2,256**	2,145	1,940	1,181	1,549	1,469	1,449	1,536	1,194	

(1) The figures for 2010 are presented in accordance with previous Canadian GAAP, and certain amounts from fiscal years 2013, 2012 and 2011 have been adjusted to reflect changes to the accounting standards in 2014.

(2) Given the adoption of IFRS 9, all loans classified in Stage 3 of the expected credit loss model are impaired loans. Under IAS 39, loans were considered impaired according to different criteria. Net impaired loans are presented net of allowances for credit losses on Stage 3 loan amounts drawn and, in this table, the net impaired loans presented exclude POCI loans.

(3) Includes customers' liability under acceptances.

As at October 31[1]	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Number of common shares[2] *(thousands)*	**334,172**	335,071	339,592	338,053	337,236	329,297	325,983	322,617	320,948	325,544
Number of common shareholders on record	**20,894**	21,325	21,542	21,966	22,152	22,394	22,737	23,180	23,588	23,598
Basic earnings per share[2]	**$ 6.39**	$ 6.01	$ 5.44	$ 3.31	$ 4.56	$ 4.36	$ 4.34	$ 4.63	$ 3.41	$ 3.00
Diluted earnings per share[2]	**$ 6.34**	$ 5.94	$ 5.38	$ 3.29	$ 4.51	$ 4.32	$ 4.31	$ 4.58	$ 3.37	$ 2.97
Dividend per share[2]	**$ 2.66**	$ 2.44	$ 2.28	$ 2.18	$ 2.04	$ 1.88	$ 1.70	$ 1.54	$ 1.37	$ 1.24
Share price[2]										
High	**$ 68.02**	$ 65.63	$ 62.74	$ 47.88	$ 55.06	$ 53.88	$ 45.24	$ 40.64	$ 40.72	$ 33.94
Low	**$ 54.97**	$ 58.69	$ 46.83	$ 35.83	$ 40.75	$ 41.60	$ 36.18	$ 31.64	$ 32.43	$ 27.23
Close	**$ 68.02**	$ 59.76	$ 62.61	$ 47.88	$ 43.31	$ 52.68	$ 45.24	$ 38.59	$ 35.57	$ 33.57
Book value[2]	**$ 36.89**	$ 34.40	$ 31.51	$ 28.52	$ 28.26	$ 25.76	$ 22.97	$ 20.02	$ 17.82	$ 18.80
Dividends on preferred shares										
Series 15	**–**	–	–	–	–	–	$ 0.2444	$ 1.4625	$ 1.4625	$ 1.4625
Series 16	**–**	–	–	–	–	$ 1.2125	$ 1.2125	$ 1.2125	$ 1.2125	$ 1.2125
Series 20	**–**	–	–	–	$ 1.5000	$ 1.5000	$ 1.5000	$ 1.5000	$ 1.5000	$ 1.5000
Series 21	**–**	–	–	–	–	–	$ 1.0078	$ 1.3438	$ 1.3438	$ 1.3438
Series 24	**–**	–	–	–	–	$ 0.4125	$ 1.6500	$ 1.6500	$ 1.6500	$ 1.6500
Series 26	**–**	–	–	–	–	$ 0.4125	$ 1.6500	$ 1.6500	$ 1.6500	$ 1.6500
Series 28	**–**	–	$ 0.9500	$ 0.9500	$ 0.9500	$ 0.9500	$ 0.9728	–	–	–
Series 30	**$ 1.0156**	$ 1.0250	$ 1.0250	$ 1.0250	$ 1.0250	$ 0.7849	–	–	–	–
Series 32	**$ 0.9750**	$ 0.9750	$ 0.9750	$ 0.9750	$ 1.0760	–	–	–	–	–
Series 34	**$ 1.4000**	$ 1.4000	$ 1.4000	$ 1.1373	–	–	–	–	–	–
Series 36	**$ 1.3500**	$ 1.3500	$ 1.3500	$ 0.5733	–	–	–	–	–	–
Series 38	**$ 1.1125**	$ 1.1125	$ 0.4724	–	–	–	–	–	–	–
Series 40	**$ 1.1500**	$ 0.9310	–	–	–	–	–	–	–	–
Series 42	**$ 1.2375**	$ 0.5323	–	–	–	–	–	–	–	–
Financial ratios										
Return on common shareholders' equity	**18.0 %**	18.4 %	18.1 %	11.7 %	16.9 %	17.9 %	20.1 %	24.1 %	19.8 %	17.0 %
Return on average assets	**0.81 %**	0.84 %	0.81 %	0.53 %	0.73 %	0.74 %	0.78 %	0.88 %	0.76 %	0.74 %
Regulatory ratios under Basel III										
Capital ratios[3]										
CET1[4]	**11.7 %**	11.7 %	11.2 %	10.1 %	9.9 %	9.2 %	8.7 %	7.3 %	7.6 %	
Tier 1[4]	**15.0 %**	15.5 %	14.9 %[5]	13.5 %	12.5 %[6]	12.3 %[7]	11.4 %	10.1 %	10.8 %	14.0 %
Total[4]	**16.1 %**	16.8 %	15.1 %[5]	15.3 %	14.0 %[8]	15.1 %[7]	15.0 %	14.1 %	14.3 %	17.5 %
Leverage ratio[4]	**4.0 %**	4.0 %	4.0 %	3.7 %	3.7 %					
Other information										
Number of employees[9][10]	**24,557**	22,426	20,584	20,600	19,026	18,725	16,675	16,636	16,217	15,298
Branches in Canada	**422**	428	429	450	452	452	453	451	448	442
Banking machines in Canada	**939**	937	931	938	930	935	937	923	893	869

(1) The figures for 2010 are presented in accordance with previous Canadian GAAP, and certain amounts from fiscal years 2013, 2012 and 2011 have been adjusted to reflect changes to the accounting standards in 2014.
(2) The figures for 2014 and prior years have been adjusted to reflect the stock dividend paid in 2014.
(3) The October 31, 2013, 2012 and 2011 ratios have not been adjusted to reflect changes in accounting standards.
(4) Since October 31, 2013, the capital ratios were calculated using the "all-in" methodology and the October 31, 2012 and 2011 ratios are presented on a pro forma basis.
(5) Taking into account the redemption of the Series 28 preferred shares on November 15, 2017.
(6) Taking into account the redemption of the Series 20 preferred shares on November 15, 2015.
(7) Taking into account the redemption of the Series 16 preferred shares on November 15, 2014.
(8) Taking into account the redemption of the Series 20 preferred shares on November 15, 2015 and the $500 million redemption of notes on November 2, 2015.
(9) Full-time equivalent.
(10) Includes employees from Credigy Ltd. and Advanced Bank of Asia Limited for fiscal years 2014 to 2019.

Glossary of Financial Terms

Acceptances
Acceptances constitute a guarantee of payment by a bank and can be traded in the money market. The Bank earns a "stamping fee" for providing this guarantee.

Allowances for credit losses
Allowances for credit losses represent management's unbiased estimate of expected credit losses as at the balance sheet date. These allowances are primarily related to loans and off-balance-sheet items such as loan commitments and financial guarantees.

Assets under administration
Assets in respect of which a financial institution provides administrative services such as custodial services, collection of investment income, settlement of purchase and sale transactions and record-keeping. Assets under administration, which are beneficially owned by clients, are not reported on the balance sheet of the institution offering such services.

Assets under management
Assets managed by a financial institution that are beneficially owned by clients. Management services are more comprehensive than administrative services, and include selecting investments or offering investment advice. Assets under management, which may also be administered by the financial institution, are not reported on the financial institution's balance sheet.

Average interest-bearing assets
Average interest-bearing assets include deposits with financial institutions, certain interest-bearing cash items, securities, securities purchased under reverse repurchase agreements and securities borrowed, and loans but excludes other assets. The average is calculated based on the daily averages for the year.

Basis point
Unit of measure equal to one one-hundredth of a percentage point (0.01%).

Common Equity Tier 1 (CET1) capital ratio
Common Equity Tier 1 capital consists of common shareholders' equity less goodwill, intangible assets and other capital deductions. Common Equity Tier 1 capital ratio is calculated by dividing Common Equity Tier 1 capital by the corresponding risk-weighted assets.

Derivative financial instruments
Derivative financial instruments are financial contracts whose value is derived from an underlying interest rate, exchange rate or equity, commodity or credit instrument or index. Examples of derivatives include swaps, options, forward rate agreements and futures. The notional amount of the derivative is the contract amount used as a reference point to calculate the payments to be exchanged between the two parties, and the notional amount itself is generally not exchanged by the parties.

Dividend payout ratio
Common dividends as a percentage of net income after preferred share dividends.

Economic capital
Economic capital is the internal measure used by the Bank to determine the capital required for its solvency and to pursue its business operations. Economic capital takes into consideration the credit, market, operational, business and other risks to which the Bank is exposed, as well as the risk diversification effect among them and among the business segments. Economic capital thus helps the Bank to determine the capital required to protect itself against such risks and ensure its long-term viability.

Efficiency ratio
Non-interest expenses as a percentage of total revenue, the efficiency ratio measures the efficiency of the Bank's operations.

Fair value
The fair value of a financial instrument is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction in the principal market at the measurement date under current market conditions (i.e., an exit price).

Hedging
The purpose of a hedging transaction is to modify the Bank's exposure to one or more risks by creating an offset between changes in the fair value of, or the cash flows attributable to, the hedged item and the hedging instrument.

Impaired loans
The Bank considers a financial asset, other than a credit card receivable, to be credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred or when contractual payments are 90 days past due. Credit card receivables are considered credit-impaired and are fully written off at the earlier of the following: when a notice of bankruptcy is received, a settlement proposal is made, or contractual payments are 180 days past due.

Leverage ratio
The leverage ratio is calculated by dividing Tier 1 capital by total exposure. Total exposure is defined as the sum of on-balance-sheet assets (including derivative exposures and securities financing transaction exposures) and off-balance-sheet items.

Liquidity coverage ratio
The liquidity coverage ratio is a measure designed to ensure that the Bank has sufficient high-quality liquid assets to cover net cash outflows given a severe, 30-day liquidity crisis.

Master netting agreement
Legal agreement between two parties that have multiple derivative contracts with each other that provides for the net settlement of all contracts through a single payment, in the event of default, insolvency or bankruptcy.

Net interest margin
Net interest income as a percentage of average interest-bearing assets.

Office of the Superintendent of Financial Institutions (Canada) (OSFI)
The mandate of the Office of the Superintendent of Financial Institutions (OSFI) is to regulate and supervise financial institutions and private pension plans subject to federal oversight, to help minimize undue losses to depositors and policyholders and, thereby, to contribute to public confidence in the Canadian financial system.

Operating leverage
Operating leverage is the difference between the growth rate for total revenues and the growth rate for non-interest expenses.

Provisions for credit losses
The amount charged to income necessary to bring the allowances for credit losses to a level determined appropriate by management.

Return on common shareholders' equity (ROE)
Net income, less dividends on preferred shares, expressed as a percentage of the average value of common shareholders' equity.

Risk-weighted assets
Assets are risk weighted according to the guidelines established by OSFI. In the Standardized calculation approach, factors are applied to the face value of certain assets in order to reflect comparable risk levels. In the Advanced Internal Rating-Based (AIRB) approach, risk-weighted assets are derived from the Bank's internal models, which represent the Bank's own assessment of the risks it incurs. Off-balance-sheet instruments are converted to balance sheet (or credit) equivalents by adjusting the notional values before applying the appropriate risk-weighting factors.

Securities purchased under reverse repurchase agreements
Securities purchased by the Bank from a client pursuant to an agreement under which the securities will be resold to the same client on a specified date and at a specified price. Such an agreement is a form of short-term collateralized lending.

Securities sold under repurchase agreements
Financial obligations related to securities sold pursuant to an agreement under which the securities will be repurchased on a specified date and at a specified price. Such an agreement is a form of short-term funding.

Structured entity
A structured entity is an entity created to accomplish a narrow and well-defined objective and is designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when voting rights relate solely to administrative tasks and the relevant activities are directed by means of contractual arrangements.

Taxable equivalent basis
Taxable equivalent basis is a calculation method that consists in grossing up certain tax-exempt income by the amount of income tax that would have otherwise been payable.

Tier 1 capital ratio
Tier 1 capital ratio consists of Common Equity Tier 1 capital and Additional Tier 1 instruments, namely, eligible non-cumulative preferred shares and the eligible amount of innovative instruments. Tier 1 capital ratio is calculated by dividing Tier 1 capital, less regulatory adjustments, by the corresponding risk-weighted assets.

Total capital ratio
Total capital is the sum of Tier 1 and Tier 2 capital. Tier 2 capital consists of the eligible portion of subordinated debt and certain credit loss allowances. Total capital ratio is calculated by dividing total capital, less regulatory adjustments, by the corresponding risk-weighted assets.

Total shareholder return
The total shareholder return (TSR) represents the average total return on an investment in the Bank's common shares. The return includes changes in share price and assumes that the dividends received were reinvested in additional common shares of the Bank.

Value-at-Risk (VaR)
VaR is a statistical measure of risk that is used to quantify market risks across products, per types of risks and aggregate risk on a portfolio basis. VaR is defined as the maximum loss at a specific confidence level over a certain horizon under normal market conditions. The VaR method has the advantage of providing a uniform measurement of financial instrument-related market risks based on a single statistical confidence level and time horizon.

Information for Shareholders

Description of Share Capital

The authorized share capital of the Bank consists of an unlimited number of common shares, without par value, an unlimited number of first preferred shares, without par value, issuable for a maximum aggregate consideration of $5 billion, and 15 million second preferred shares, without par value, issuable for a maximum aggregate consideration of $300 million. As at October 31, 2019, the Bank had a total of 334,172,411 common shares and 98,000,000 first preferred shares issued and outstanding.

Stock Exchange Listings

The Bank's common shares and Series 30, 32, 34, 36, 38, 40 and 42 First Preferred Shares are listed on the Toronto Stock Exchange in Canada.

Issue or class	Ticker symbol
Common shares	NA
First Preferred Shares	
Series 30	NA.PR.S
Series 32	NA.PR.W
Series 34	NA.PR.X
Series 36	NA.PR.A
Series 38	NA.PR.C
Series 40	NA.PR.E
Series 42	NA.PR.G

Number of Registered Shareholders

As at October 31, 2019, there were 20,894 common shareholders recorded in the Bank's common share register.

Dividends

Dividend Dates in Fiscal 2020
(subject to approval by the Board of Directors of the Bank)

Record date	Payment date
Common shares	
December 30, 2019	February 1, 2020
March 30, 2020	May 1, 2020
June 29, 2020	August 1, 2020
September 28, 2020	November 1, 2020
Preferred shares,	
Series 30, 32, 34, 36, 38, 40 and 42	
January 6, 2020	February 15, 2020
April 6, 2020	May 15, 2020
July 6, 2020	August 15, 2020
October 6, 2020	November 15, 2020

Dividends Declared on Common Shares During Fiscal 2019

Record date	Payment date	Dividend per share ($)
December 31, 2018	February 1, 2019	0.65
March 25, 2019	May 1, 2019	0.65
June 25, 2019	August 1, 2019	0.68
September 30, 2019	November 1, 2019	0.68

Dividends Declared on Preferred Shares During Fiscal 2019

		Dividend per share ($)						
Record date	Payment date	Series 30	Series 32	Series 34	Series 36	Series 38	Series 40	Series 42
Jan. 7, 19	Feb. 15, 19	0.2563	0.2438	0.3500	0.3375	0.2781	0.2875	0.3094
Apr. 5, 19	May 15, 19	0.2562	0.2437	0.3500	0.3375	0.2782	0.2875	0.3094
Jul. 8, 19	Aug. 15, 19	0.2516	0.2438	0.3500	0.3375	0.2781	0.2875	0.3093
Oct. 7, 19	Nov. 15, 19	0.2515	0.2437	0.3500	0.3375	0.2781	0.2875	0.3094

Dividends paid are "eligible dividends" in accordance with the *Income Tax Act* (Canada).

Dividend Reinvestment and Share Purchase Plan

National Bank has a Dividend Reinvestment and Share Purchase Plan for Canadian holders of its common and preferred shares under which they can acquire common shares of the Bank without paying commissions or administration fees. Canadian participants acquire common shares through the reinvestment of cash dividends paid on the shares they hold or through optional cash payments of at least $1 per payment, up to a maximum of $5,000 per quarter.

For additional information, shareholders may contact National Bank's registrar and transfer agent, Computershare Trust Company of Canada, at 1-888-838-1407. To participate in the plan, National Bank's beneficial or non-registered common shareholders must contact their financial institution or broker.

Direct Deposit
Shareholders may elect to have their dividend payments deposited directly via electronic funds transfer to their bank account at any financial institution that is a member of the Canadian Payments Association. To do so, they must send a written request to the Transfer Agent, Computershare Trust Company of Canada.

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600 De La Gauchetière Street West, 4th Floor
Montreal, Quebec H3B 4L2 Canada

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Website: nbc.ca

Annual Meeting
The Annual Meeting of Holders of Common Shares of the Bank will be held on April 24, 2020, at National Bank of Canada's head Office in Montreal, Quebec, Canada.

Public Accountability Statement
The 2019 Social Responsibility Report will be available in March 2020 on the Bank's website at nbc.ca.

Communication with Shareholders
For information about stock transfers, address changes, dividends, lost certificates, tax forms and estate transfers, shareholders of record may contact the Transfer Agent at the following address:

Computershare Trust Company of Canada
Share Ownership Management
100 University Avenue, 8th Floor
Toronto, Ontario M5J 2Y1 Canada

Telephone: 1-888-838-1407
Fax: 1-888-453-0330
E-mail: *service@computershare.com*
Website: computershare.com

Shareholders whose shares are held by a market intermediary are asked to contact the market intermediary concerned.

Other shareholder inquiries can be addressed to:
Investor Relations
National Bank of Canada
National Bank Tower
600 De La Gauchetière Street West, 7th Floor
Montreal, Quebec H3B 4L2 Canada

Telephone: 1-866-517-5455
E-mail: investorrelations@nbc.ca
Website: nbc.ca/investorrelations

Normal Course Issuer Bid
The Bank began a normal course issuer bid (NCIB) to repurchase for cancellation up to 6,000,000 common shares for the period starting June 10, 2019 and ending June 9, 2020. Shareholders may obtain, free of charge, a copy of the notice of intent regarding this NCIB, which was approved by the Toronto Stock Exchange, by writing to the Corporate Secretary, National Bank of Canada, 600 De La Gauchetière Street West, 4th floor, Montreal, Quebec, Canada H3B 4L2.

Caution Regarding Forward-Looking Statements
From time to time, National Bank of Canada makes written and oral forward-looking statements, including in this Annual Report, in other filings with Canadian regulators, in reports to shareholders, in press releases and in other communications. All such statements are made pursuant to the Canadian and American securities legislation and the provisions of the United States *Private Securities Litigation Reform Act of 1995*.

Additional information about these statements can be found on page 13 of this Annual Report.

Trademarks
The trademarks belonging to National Bank of Canada and used in this report include National Bank of Canada, Private Wealth 1859, CashPerformer, NBC CapS II, NBC Asset Trust, NBC Capital Trust, and National Bank All-in-One and their respective logos. Certain trademarks owned by third parties are also mentioned in this report.

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Legal Deposit
ISBN 978-2-921835-63-3
Legal deposit – Bibliothèque et Archives nationales du Québec, 2019
Legal deposit – Library and Archives Canada, 2019

Printing
L'Empreinte

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