

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.

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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)

						2019	2018 ⁽¹⁾
	Personal and Commercial	Wealth Management	Financial Markets	USSF&I	Other		
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

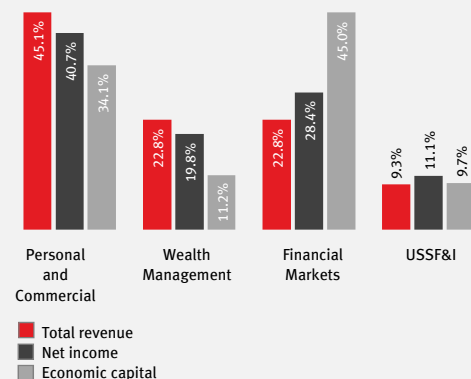
(millions of Canadian dollars, except per share amounts)

	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 (<i>thousands</i>)	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.

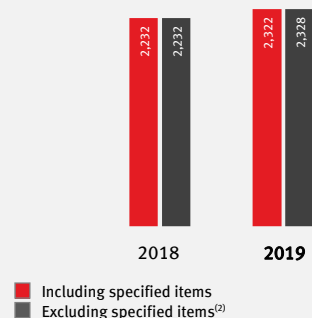
Business Mix⁽¹⁾

Year ended October 31, 2019
(taxable equivalent basis)⁽²⁾



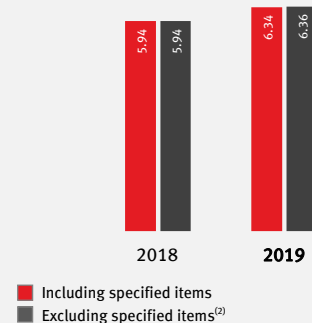
Net income

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.

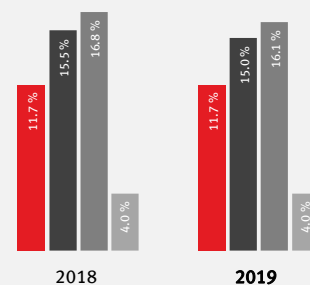
Annual Dividend per Common Share

Year ended October 31
(Canadian dollars)



Evolution of Regulatory Ratios under Basel III

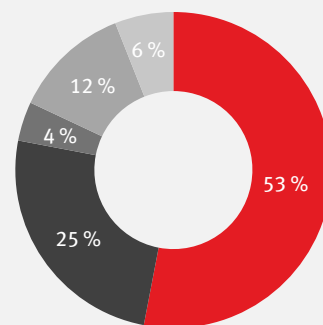
As at October 31



- CET1
- Tier 1
- Total
- Leverage ratio

Breakdown of the Average Loan and Acceptance Portfolio⁽¹⁾

As at October 31, 2019



- Personal Banking (2018: 54%)
- Commercial Banking (2018: 25%)
- Wealth Management (2018: 4%)
- Financial Markets – Corporate Banking (2018: 11%)
- U.S. Specialty Finance and International (2018: 6%)

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

Economic Review and Outlook

Global Economy

While talks between China and the United 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 (<i>dollars</i>)	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 (<i>dollars</i>)	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

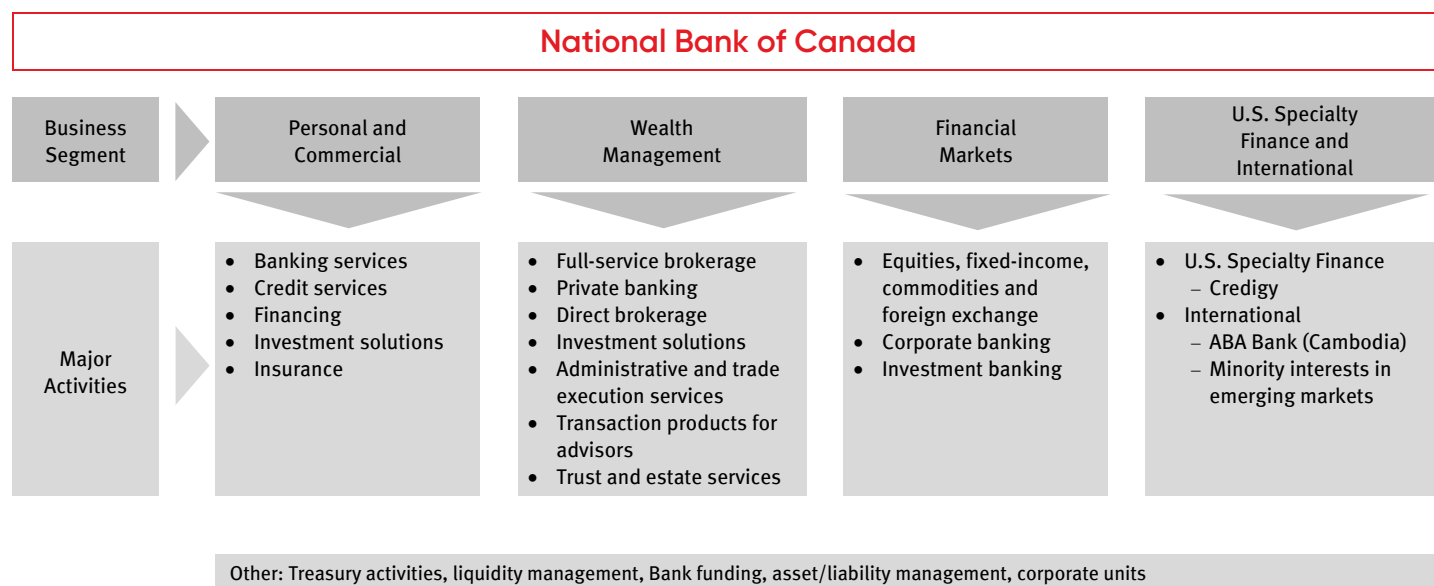
Detailed information about the Bank's income taxes is provided in Note 24 to the consolidated financial statements. For fiscal 2019, income taxes stood at \$462 million, representing an effective tax rate of 17% compared to \$544 million and an effective tax rate of 20% in 2018. This change in effective 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.



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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > 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, people 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.

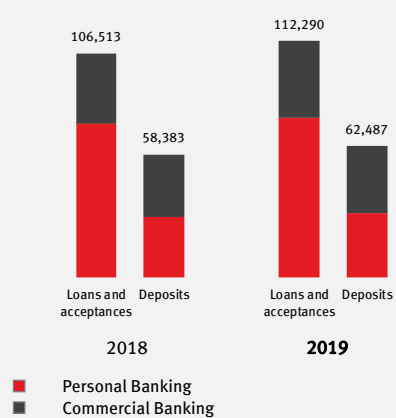
(2) Net interest margin is calculated by dividing net interest income by average interest-bearing assets.

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

Average Loans and Acceptances and Deposits

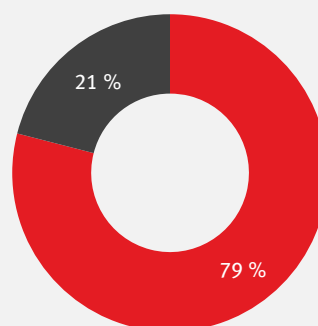
Year ended October 31

(millions of Canadian dollars)



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

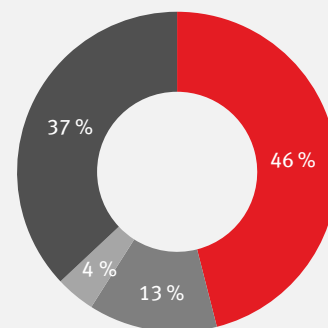
For fiscal 2019, Personal Banking's total revenues amounted to \$2,164 million, up 4% from \$2,085 million in fiscal 2018. This growth came mainly from a 4% increase in loan volumes, mainly mortgage loans, and a 6% increase in deposit volumes. Non-interest income was up \$21 million, essentially due 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

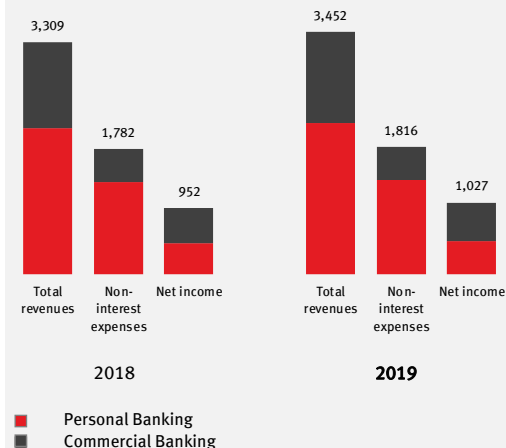
Year ended October 31, 2019



- Retail (2018: 46%)
- Payment Solutions (2018: 13%)
- Insurance (2018: 4%)
- Commercial Banking (2018: 37%)

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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > 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.

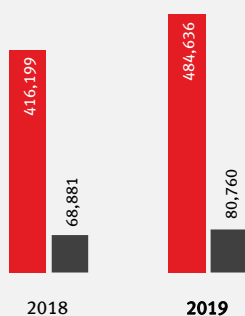
Assets Under Administration and Under Management – Wealth Management

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

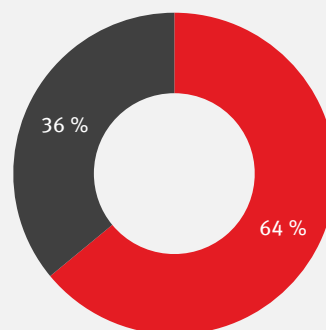
Year ended October 31
(millions of Canadian dollars)



■ Assets under administration
■ Assets under management

Total Revenues by Geographic Distribution

Year ended October 31, 2019
(on a taxable equivalent basis)⁽¹⁾



■ Province of Quebec (2018: 62%)
■ Other provinces (2018: 38%)

(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

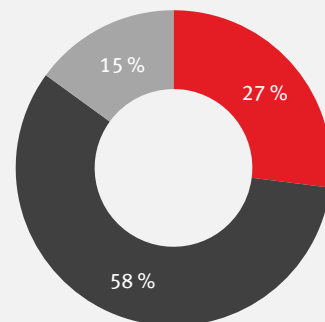
As at October 31, 2019, assets under administration and under management totalled \$565.4 billion, rising \$80.3 billion or 17% from October 31, 2018 due to net inflows into various solutions and to stronger stock market performance in fiscal 2019.

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.

Total Revenues by Category

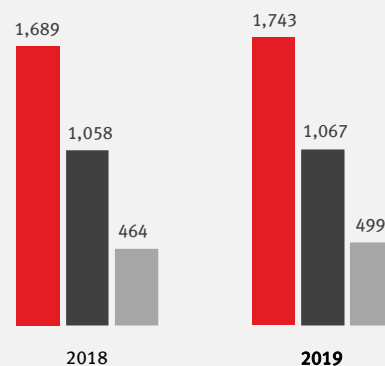
Year ended October 31, 2019
(on a taxable equivalent basis)⁽¹⁾



■ Net interest income (2018: 27%)
■ Fee-based services (2018: 58%)
■ Transaction-based and other revenues (2018: 15%)

Operating Results

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



■ Total revenues
■ Non-interest expenses
■ Net income

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

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
<p>Maintain leadership in Canadian debt underwriting</p>	<p>Ranked first in government debt underwriting:</p> <ul style="list-style-type: none"> > 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. <p>Lead in corporate debt underwriting:</p> <ul style="list-style-type: none"> > 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.
<p>Maintain leadership in investment products</p>	<p>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.</p> <p>Ranked first in ETF market-making in Canada:</p> <ul style="list-style-type: none"> > 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. <p>Pioneer in overnight offerings, which continue to be a successful means for asset managers to raise capital:</p> <ul style="list-style-type: none"> > 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 <i>Deal of the Year</i> in rate structures by mtn-i, a global news, data and analytics platform covering the private debt market. > Awarded <i>Most Impressive Financial Institutional Structured MTN Issuer</i> 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
<p>Expand our client coverage to increase our presence in advisory services</p>	<p>Awarded the <i>Greenwich Quality Leader in Canadian FX Service</i> 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.</p> <p>Involved in significant mandates including:</p> <ul style="list-style-type: none"> > 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 Barkerville 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.
<p>Leverage leadership in equity distribution to increase lead and co-lead positions</p>	<ul style="list-style-type: none"> > 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

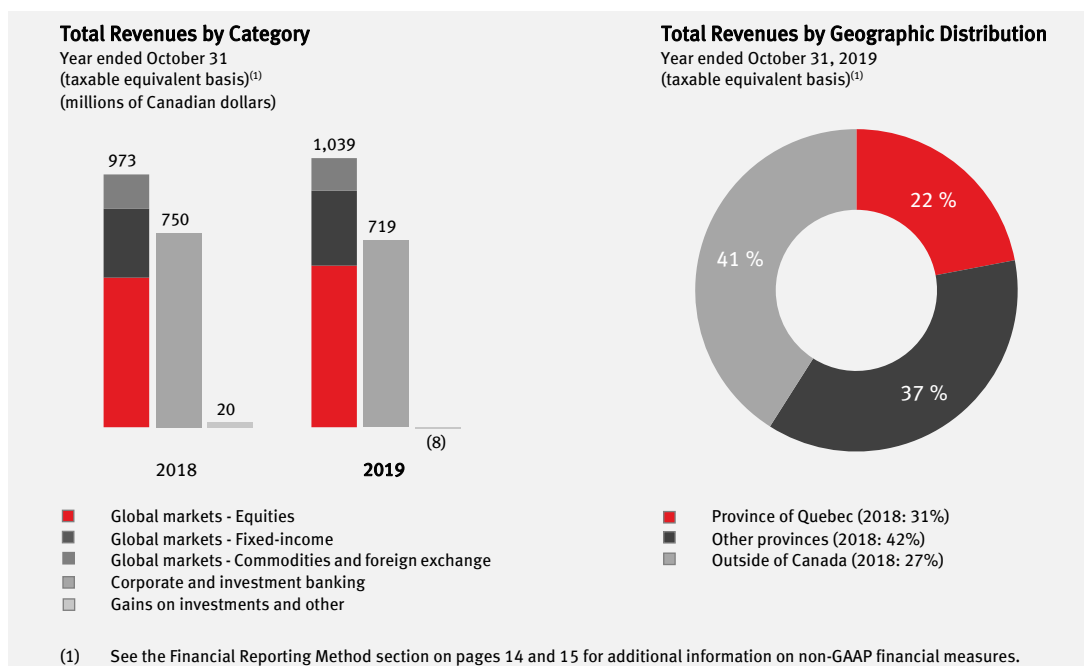
Year ended October 31
(taxable equivalent basis)⁽¹⁾
(millions of Canadian dollars)

	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			
Gains on investments and other	719	750	(4)
	(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.



Financial Results

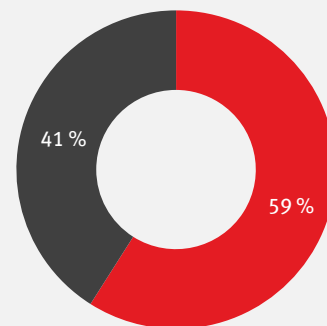
In the Financial Markets segment, net income totalled \$717 million in fiscal 2019, down 6% year over year. The segment's fiscal 2019 total revenues on a taxable equivalent basis⁽¹⁾ amounted to \$1,750 million, up \$7 million from \$1,743 million in fiscal 2018. Revenues from the Global Markets category 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

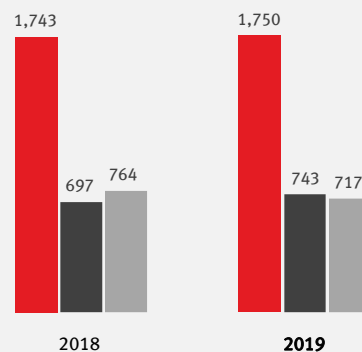
Year ended October 31, 2019
 (taxable equivalent basis)⁽¹⁾



■ Global markets (2018: 56%)
 ■ Corporate and investment banking (2018: 43%)
 ■ Gains on investments and other (2018: 1%)

Operating Results

Year ended October 31
 (taxable equivalent basis)⁽¹⁾
 (millions of Canadian dollars)



■ Total revenues
 ■ Non-interest expenses
 ■ Net income

(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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > 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	<ul style="list-style-type: none"> > <i>Global Finance</i> magazine named ABA Bank as the "Best Bank in Cambodia" for the fifth consecutive year. > <i>Euromoney</i> 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.

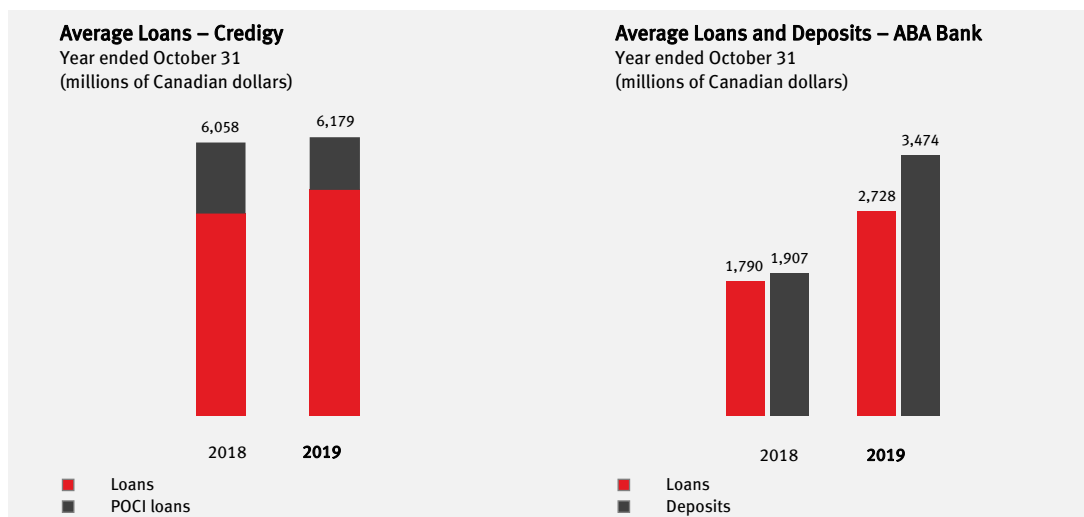
Segment Results – USSF&I

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

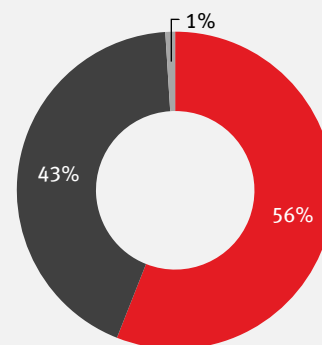
For fiscal 2019, Credigy's net income totalled \$144 million, down \$10 million from fiscal 2018. The subsidiary's total revenues amounted to \$402 million compared to \$446 million in fiscal 2018, a \$44 million or 10% decrease attributable mainly to lower net interest income arising from changes in 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 POCL 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

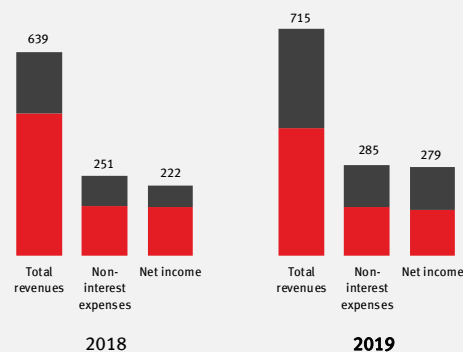
Year ended October 31, 2019



- 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)
Total	172,906	155,772	11
	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	Credit 1,708 Market – Operational 390 Other risks 217 Total 2,315	Credit 105 Market – Operational 242 Other risks 414 Total 761	Credit 2,199 Market 201 Operational 308 Other risks 340 Total 3,048	Credit 521 Market 10 Operational 82 Other risks 42 Total 655	Credit 63 Market (16) Operational (73) Other risks (84) Total (110)
Risk-weighted assets	Credit 31,851 Market – Operational 4,692 Total 36,543	Credit 1,811 Market – Operational 2,917 Total 4,728	Credit 22,783 Market 4,147 Operational 3,764 Total 30,694	Credit 6,588 Market – Operational 1,024 Total 7,612	Credit 4,221 Market 129 Operational (888) Total 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.

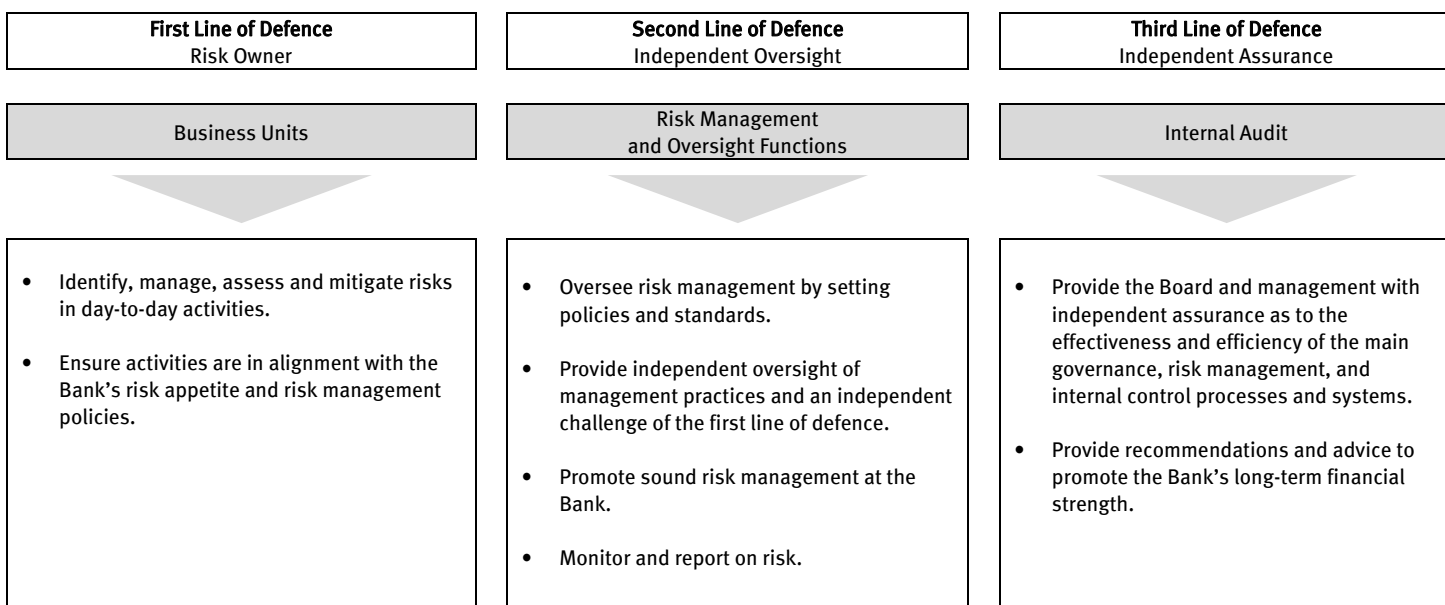
Enterprise-Wide Stress Testing

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

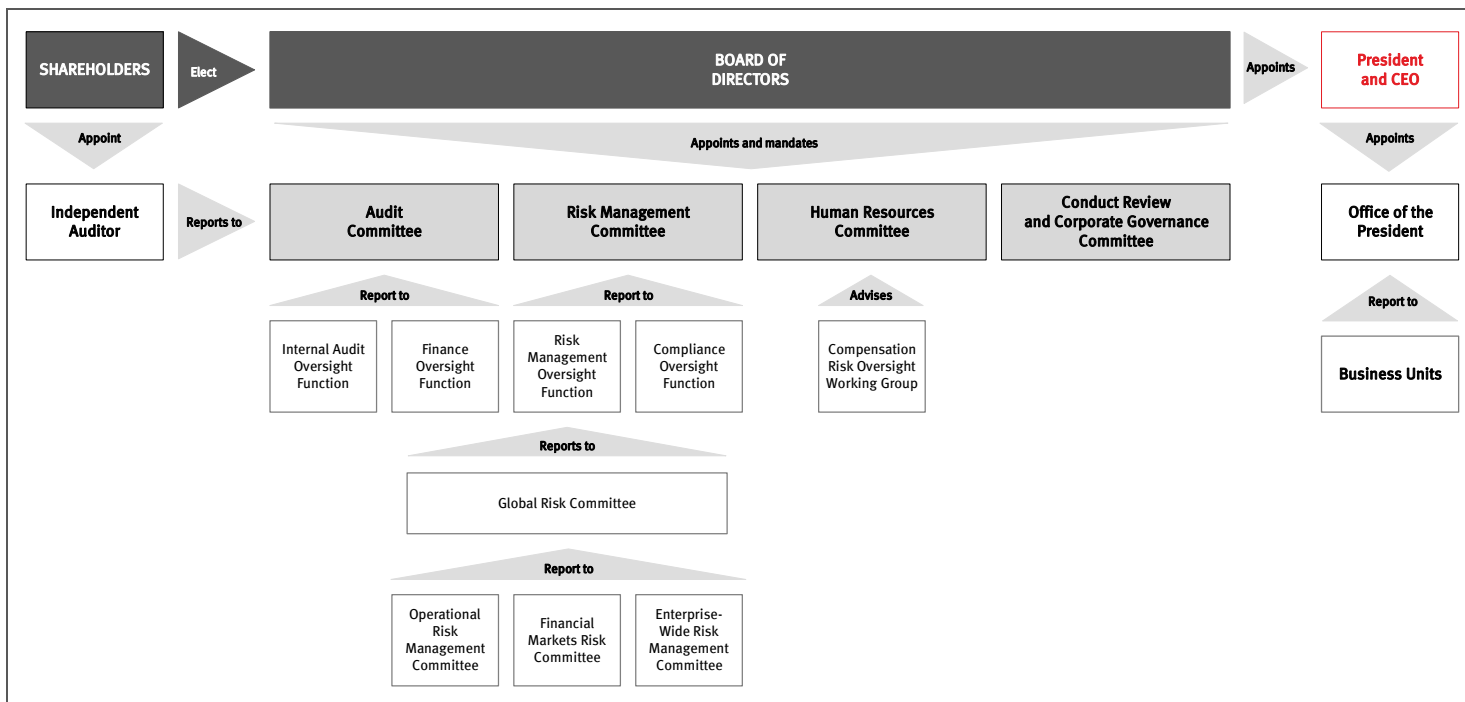
The Bank's management continually promotes risk management through internal communications. A balanced approach is advocated, whereby business development initiatives are combined with a constant focus on sound and effective risk management. In particular, risk is taken into consideration when preparing 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.



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
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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
<p>Economic and geopolitical risk</p>		<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

Risk	Trend	Description
<p>Reliance on technology and third parties</p>		<p>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.</p> <p>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.</p>
<p>Environmental, social and governance (ESG) approach and climate change</p>		<p>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.</p> <p>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.</p> <p>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.</p> <p>In addition, the Bank of Canada's annual <i>Financial System Review</i> 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.</p>
<p>Technological innovation and competition</p>		<p>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.</p> <p>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.</p>

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

Personal Credit Portfolios

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			
	Balance sheet	Market risk measures		Not subject to market risk	Non-traded risk primary risk sensitivity
		Trading ⁽¹⁾	Non-Trading ⁽²⁾		
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

	Balance sheet	Market risk measures		Not subject to market risk	Non-traded risk primary risk sensitivity
		Trading ⁽¹⁾	Non-trading ⁽²⁾		
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.

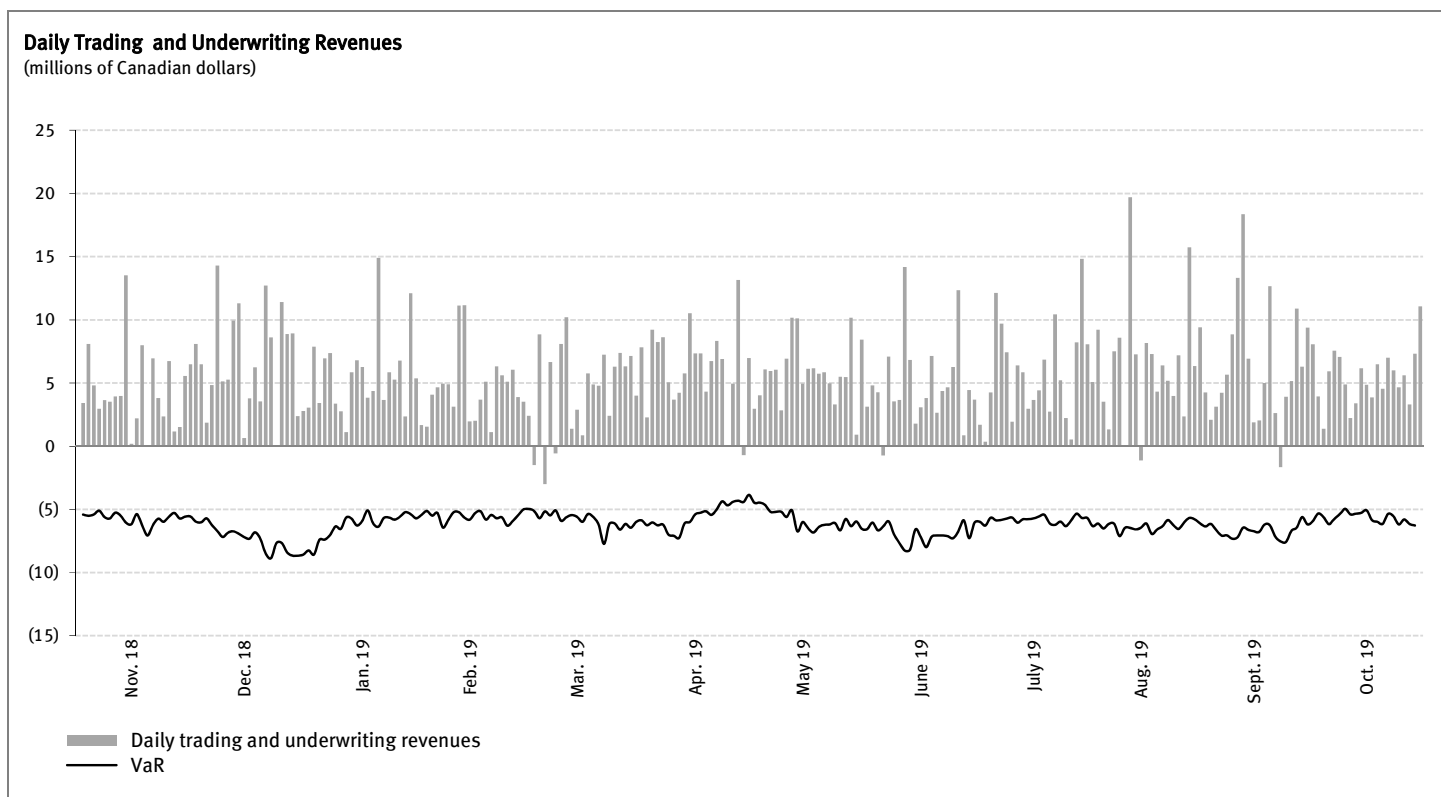
(1) Amounts are presented on a pre-tax basis and represent one-day SVaR using a 99% confidence level.

(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.



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)	2019					2018
	Bank-owned liquid assets ⁽¹⁾	Liquid assets received ⁽²⁾	Total liquid assets	Encumbered liquid assets ⁽³⁾	Unencumbered liquid assets	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)	2019					2018
	Bank-owned liquid assets ⁽¹⁾	Liquid assets received ⁽²⁾	Total liquid assets	Encumbered liquid assets ⁽³⁾	Unencumbered liquid assets	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		
	Total unweighted value ⁽²⁾ (average)	October 31, 2019 Total weighted value ⁽³⁾ (average)	July 31, 2019 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.

Consumer Protection

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.

Anti-Money Laundering and Anti-Terrorist Financing (AML/ATF) Activities

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.

Privacy and Data Protection

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	Total	Q4	Q3	Q2	Q1
3,382	826	837	885	834	3,436	881	887	815	853	3,436	881	887	815	853
3,784	988	955	869	972	3,173	823	788	782	780	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	6,609	1,704	1,675	1,597	1,633
327	73	76	91	87	244	70	58	56	60	244	70	58	56	60
4,063	1,036	1,011	992	1,024	3,857	976	971	941	969	3,857	976	971	941	969
544	139	136	124	145	484	133	128	116	107	484	133	128	116	107
2,232	566	569	547	550	2,024	525	518	484	497	2,024	525	518	484	497
87	16	23	25	23	84	19	24	22	19	84	19	24	22	19
2,145	550	546	522	527	1,940	506	494	462	478	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	\$ 5.44	\$ 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	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	\$ 2.28	\$ 0.58	\$ 0.58	\$ 0.56	\$ 0.56
-	-	-	-	-	0.9500	0.2375	0.2375	0.2375	0.2375	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	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	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	1.4000	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	1.3500	0.3375	0.3375	0.3375	0.3375
1.1125	0.2781	0.2781	0.2782	0.2781	0.4724	0.4724	-	-	-	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 %	18.1 %	17.8 %	18.2 %	17.9 %	18.4 %
262,471	257,637	256,259	251,065	251,065	245,827	240,072	239,020	234,119	234,119	245,827	240,072	239,020	234,119	234,119
747	753	755	8	8	9	9	10	1,009	1,009	9	9	10	1,009	1,009
404	413	382	371	371	206	240	213	226	226	206	240	213	226	226
339,372	337,508	339,160	339,885	340,950	340,809	341,108	341,555	341,107	339,476	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	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		339,592	341,580	341,524	340,810
	\$ 34.40	\$ 33.91	\$ 32.64	\$ 31.75		\$ 31.51	\$ 30.84	\$ 29.97	\$ 29.51		\$ 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	\$ 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	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		21,635	21,526	21,290	21,295
	428	428	428	429		429	443	445	448		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
Subordinated debt	184,460	1.79	167,176	1.47	154,254	1.11	142,852	1.04	129,468	1.07
Obligations other than deposits	758	3.25	564	3.20	423	3.81	1,047	3.16	1,571	3.80
Interest-bearing liabilities	47,404	1.35	47,762	1.20	44,204	0.74	38,804	0.31	40,374	0.41
Other liabilities	232,622	1.90	215,502	1.57	198,881	1.11	182,703	0.98	171,413	1.03
Equity	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