Royal Bank of Canada

Pillar 3 Report

As at October 31, 2019

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Caution regarding forward-looking statements

From time to time, we make written or oral forward-looking statements within the meaning of certain securities laws, including the "safe harbour" provisions of the *United States Private Securities Litigation Reform Act of 1995* and any applicable Canadian securities legislation. We may make forward-looking statements in this Pillar 3 Report, our 2019 Annual Report, in other filings with Canadian regulators or the SEC, in other reports to shareholders and in other communications. Forward-looking statements are typically identified by words such as "believe", "expect", "foresee", "forecast", "anticipate", "intend", "estimate", "goal", "plan" and "project" and similar expressions of future or conditional verbs such as "will", "may", "should", "could" or "would". By their very nature, forward-looking statements require us to make assumptions and are subject to inherent risks and uncertainties, which give rise to the possibility that our predictions, forecasts, projections, expectations or conclusions will not prove to be accurate, that our assumptions may not be correct and that our financial performance and management objectives, vision and strategic goals will not be achieved. We caution readers not to place undue reliance on these statements as a number of risk factors could cause our actual results to differ materially from the expectations expressed in such forward-looking statements. Additional information about certain risk factors can be found in the Caution regarding forward-looking statements and Risk Management sections of our 2019 Annual Report. When relying on our forward-looking statements to make decisions with respect to us, investors and others should carefully consider these risk factors as well as other uncertainties and potential events. Except as required by law, we do not undertake to update any forward-looking statement, whether written or oral, that may be made from time to time by us or on our behalf.

About Royal Bank of Canada

Royal Bank of Canada is a global financial institution with a purpose-driven, principles-led approach to delivering leading performance. Our success comes from the 85,000+ employees who bring our vision, values and strategy to life so we can help our clients thrive and communities prosper. As Canada's biggest bank, and one of the largest in the world based on market capitalization, we have a diversified business model with a focus on innovation and providing exceptional experiences to more than 17 million clients in Canada, the U.S. and 34 other countries. Learn more at rbc.com.

Our business segments include Personal & Commercial Banking, Wealth Management, Insurance, Investor & Treasury Services, and Capital Markets. Our business segments are supported by Corporate Support, which consists of Technology & Operations and Functions. Technology & Operations provides the technological and operational foundation required to effectively deliver products and services to our clients, while Functions includes our finance, human resources, risk management, internal audit and other functional groups.

Capital framework

Our consolidated regulatory capital requirements are determined by guidelines issued by the Office of the Superintendent of the Financial Institutions (OSFI), which are based on the Basel III framework adopted by the Basel Committee on Banking Supervision (BCBS).

The Basel III framework integrates three "Pillars" to establish a robust foundation for banking supervision and financial stability:

- Pillar 1 prescribes minimum capital requirements and addresses capital adequacy, including standards for calculating risk-weighted assets (RWA);
- Pillar 2 requires the establishment of internal assessment processes and supervisory review to evaluate the risk profile and capital adequacy of banks;
- Pillar 3 enhances the consistency and comparability of risk and capital profiles between banks and across jurisdictions for market participants through meaningful disclosures.

Under Basel III, banks use defined approaches to calculate their minimum regulatory capital required to support various risks and exposure types including credit risk, counterparty credit risk, market risk, operational risk, and securitizations exposures. Refer to the "Capital management" section of our 2019 Annual Report for further information on calculation approaches. Refer to the following sections in this report for further information on the respective approaches:

- Credit Risk
- Counterparty Credit Risk
- Market Risk
- Operational Risk
- Securitization Exposures

Capital framework (continued)

In January 2015, the BCBS published the "*Revised Pillar 3 Disclosure Requirements*" (Revised Standards) to encourage market discipline through regulatory disclosure requirements. The Revised Standards require comprehensive disclosure of our risks and regulatory capital including our methodologies used in calculating capital requirements instituted under Pillar 1. Existing requirements in the areas of credit risk, counterparty credit risk and securitization activities are replaced by the Revised Standards. OSFI mandated the domestic implementation of the first phase of the Revised Standards for Canadian domestic systemically important banks (D-SIBs) for the reporting period ending October 31, 2018. This Pillar 3 report provides disclosures reflective of this first phase of the Revised Standards.

In March 2017, the BCBS issued its second phase of the Pillar 3 disclosure requirements entitled, "*Pillar 3 disclosure requirements – consolidated and enhanced framework*". The disclosure standard consolidates all existing Pillar 3 disclosure requirements of the Basel III framework, including the leverage and liquidity ratios disclosure templates. OSFI has not yet released the implementation date for the BCBS phase two disclosure requirements.

In December 2018, the BCBS issued its third and final phase (phase three) of the Pillar 3 disclosure requirements, *Pillar 3 disclosure requirements – updated framework.* This phase incorporates revisions and additions to the Pillar 3 framework arising from the finalization of the Basel III reforms in December 2017, such as additional disclosure requirements comparing RWA as determined by banks' internal models against results based on the standardized approach, and new disclosure requirements on asset encumbrance and capital distribution constraints. The phase three requirements, together with the phase one and two disclosure requirements released in January 2015 and March 2017, respectively, complete the Pillar 3 framework. OSFI has not yet released the implementation date for BCBS phase three disclosures.

Effective November 1, 2018, OSFI adopted the BCBS frameworks related to the Standardized approach for measuring counterparty credit risk (SA-CCR), capital requirements for bank exposures to central counterparties (CCPs) and the revised securitization framework as incorporated in the OSFI's Capital Adequacy Requirements (CAR) guideline. Our 2019 figures reported in this Pillar 3 document reflect the CAR guideline requirements.

Refer to our 2019 Annual Report, Capital, liquidity and other regulatory developments section for further information on upcoming regulatory reforms which were announced during the year.

Leverage framework

On October 30, 2014, OSFI issued its "Leverage Requirements (LR) Guideline", which reflected its adoption of the BCBS "Basel III leverage ratio framework and disclosure requirement" effective the first fiscal quarter of 2015. The LR guideline requires banks to disclose their leverage ratio and its underlying components. The leverage ratio is defined as the capital measure divided by the leverage exposure measure. The capital measure is defined as Tier 1 capital and the leverage exposure measure is the sum of (a) on-balance sheet exposures; (b) derivative exposures; (c) securities financing transaction (SFT) exposures and (d) off-balance sheet items.

Poorly managed leverage can lead to unwarranted corrective measures due to excessive exposure growth or capital reduction, causing detriment to the bank's balance sheet and overall shareholders' wealth. Maintaining a prescribed minimum level of leverage helps neutralize leverage risk in the event of unexpected economic crises. OSFI requires maintenance of a minimum leverage ratio of 3% at all times.

On October 30, 2018, OSFI published its updated LR Guideline, effective November 1, 2018. The revisions aligned the LR guideline with OSFI's adoption of the BCBS *"Standardized approach for measuring counterparty credit risk exposures"* and *Revisions to the securitization framework"*.

Effective Q1 2022, in addition to the pre-existing 3% leverage ratio minimum requirement, the BCBS has introduced an additional leverage ratio buffer requirement for global systemically-important banks (G-SIB) as part of their Basel III reforms *"Basel III: Finalizing post-crisis reforms* (December 2017)*"*. The G-SIB leverage ratio must be met with Tier 1 capital and is set at 50% of a G-SIB's higher-loss absorbency risk-weighted requirement. On July 16, 2018 OSFI announced that all Canadian domestically important banks (D-SIBs) will be held to the 3.5% minimum leverage requirements including RBC which has been designated a G-SIB.

On November 20, 2018, OSFI updated its Leverage disclosure guidelines, which are based on BCBS phase two disclosure requirements, to reflect the revisions to the LR and CAR guidelines mentioned above. Refer to our Leverage disclosures included in this report as required by OSFI.

TLAC framework

The Canadian Bail-in regime, including OSFI's Total Loss Absorbing Capacity (TLAC) Framework Guideline, came into effect on September 23, 2018. The purpose of the TLAC requirement is to address the sufficiency of a Canadian Domestic Systemically Important Bank's (D-SIB) loss absorbing capacity in supporting its recapitalization in the event of its failure. TLAC is defined as the aggregate of Tier 1 capital, Tier 2 capital, and other TLAC instruments (senior bail-in debt), which includes senior unsecured debt with an original term to maturity of greater than 400 days and remaining term to maturity of greater than 365 days. Under the Bail-in regime, bail-in debt, which would ordinarily rank equally to Other Liabilities in liquidation, is subject to conversion under statutory resolution powers whereas Other Liabilities are not subject to such conversion.

TLAC requirements establish two minimum standards; which are required to be met effective November 1, 2021: the risk-based TLAC ratio, which builds on the risk-based capital ratios described in the CAR guideline, and the TLAC leverage ratio, which builds on the leverage ratio described in OSFI's Leverage Requirements guideline. The risk-based TLAC ratio is defined as TLAC divided by Total risk-weighted assets (RWA) while the TLAC leverage ratio is defined as TLAC divided by the Leverage ratio exposure. OSFI requires systemically important banks to maintain a minimum TLAC ratio of 23.5% (inclusive of the revised domestic stability buffer of 2% in Q4 2019) and a TLAC leverage ratio of 6.75%. We began issuing TLAC eligible debt in Q4 2018 and our TLAC ratio is expected to increase through normal course refinancing of maturing debt through the effective date of the TLAC requirements.

In May 2018, OSFI published its TLAC Disclosure Guideline for Canadian D-SIBs. The disclosure requirements reflect the BCBS TLAC disclosure requirements as outlined in the BCBS March 2017 phase two requirements mentioned above. Refer to our TLAC disclosures included in this report as required by OSFI.

DISCLOSURE MAP

Pillar 3 Requirement	Pillar 3 Requirement		2019 Annual Report section	Sub-section	2019 Annual Report Reference
Overview of key metrics, risk management and RWA	KM1				
	OVA	a) Business model and risk profile	Top and emerging risks	Top and emerging risks	47-48
			Risk management overview	Risk Management Principles	49
				Risk drivers	49
			Enterprise risk management	Risk governance	50
				Risk appetite	51
				Risk measurement	51-52
				Risk control	52-53
		b) Risk governance structure	Enterprise risk management	Risk governance	50
				Risk control	52-53
		c) Communication and enforcement of risk culture within the bank	Enterprise risk management	Conduct and risk culture	53-54
		d) Scope and main features of risk measurement systems	Enterprise risk management	Risk measurement	51-52
		e) Risk information reporting	Enterprise risk management	Risk control - *Reporting*	53
		f) Stress testing	Enterprise risk management	Risk measurement – *Stress testing*	51-52
			Market risk	Stress tests	66
			Systemic risk	Systemic risk	86-87
		g) Strategies and processes applied to manage, hedge and mitigate risks	Enterprise risk management	Risk appetite	51
				Risk measurement	51-52
				Risk control	52-53
			Credit risk	Overview	54-55
				Credit risk measurement	55
				Credit risk assessment	56-57
				Credit risk mitigation	57-58
				Credit risk approval	58
				Credit risk administration	58
			Market risk	Market risk controls – FVTPL positions	66
				Stress tests	66
				Market risk controls – Structural Interest Rate Risk (SIRR) positions	68
				SIRR measurement	68
				Non-trading foreign exchange rate risk	69
			Liquidity and funding risk	Overview	71
				Risk control	71-72
				Risk measurement	72
				Funding	74-76
				Liquidity coverage ratio	78-79
			Insurance risk	Insurance risk	82
			Operational risk	Overview	82
				Operational risk framework	82
			Regulatory compliance risk	Regulatory compliance risk	83-84
			Strategic risk	Strategic risk	84
			Reputation risk	Reputation risk	84
			Legal and regulatory environment risk	Legal and regulatory environment risk	85-86
			Competitive risk	Competitive risk	86
			Systemic risk	Systemic risk	86-87
			Consolidated Financial Statements	Note 8 – Derivative financial instruments and hedging activities - *Derivatives issued for trading purposes*	168
				Note 8 – Derivative financial instruments and hedging activities - *Derivatives issued for other than trading purposes*	168-169
				Note 8 – Derivative financial instruments and hedging activities - *Derivative-related credit risk*	170-171
	OV1				

DISCLOSURE MAP (continued)

Pillar 3 Requirement	Pillar 3 Requirement		2019 Annual Report section	Sub-section	2019 Annual Report Reference
Linkages between financial statements and regulatory exposures	LI1				
	LI2				
	LIA				
Credit risk	CRA	a) Translation of the business model into the components of the bank's credit risk profile	Credit risk	Overview	54-55
				Credit risk exposure	55-56
		b) Criteria and approach used for defining credit risk management policy and for setting credit risk limits	Enterprise risk management	Risk governance	50
				Risk appetite	51
				Risk measurement	51-52
				Risk control - *Authorities and limits*	53
			Credit risk	Overview	54-55
				Credit risk assessment	56-57
				Credit risk mitigation	57-58
				Credit risk approval	58
		c) Structure and organization of the credit risk management and control function	Enterprise risk management	Risk governance	50
				Risk control	52-53
		d) Interaction between the credit risk management, risk control, compliance and internal audit functions	Enterprise risk management	Risk governance	50
		e) Scope and content of the reporting on credit risk exposure to the executive management and to the board of directors	Enterprise risk management	Risk governance	50
				Risk control - *Reporting*	53
	CR1				
	CR2[1]				
	CRB	a) The scope and definitions of "past due" and "impaired" exposures used for accounting purposes and the differences, if any, between the definition of past due and default for accounting and regulatory purposes	Consolidated Financial Statements	Note 2 – Summary of significant accounting policies, estimates and judgments - Allowance for credit losses - *Definition of default* *Credit impaired financial assets (Stage 3)*	131
				Note 5 – Loans and allowance for credit losses - *Loans past due but not impaired*	163
		b) The extent of past-due exposures (more than 90 days) that are not considered to be impaired and the reasons for this	Consolidated Financial Statements	Note 5 – Loans and allowance for credit losses - *Loans past due but not impaired*	163
		c) Description of methods used for determining accounting provisions for credit losses	Consolidated Financial Statements	Note 2 – Summary of significant accounting policies, estimates and judgments - Allowance for credit losses	129-132
		Description of the categorization of ECL accounting provisions (general and specific) for standardized approach exposures	n/a	n/a – For regulatory calculations under both the Standardized and IRB approaches, the IFRS 9 stage 3 allowances are considered to be specific allowances and the IFRS 9 stage 1 and stage 2 allowances are considered to be general allowances	
		d) The bank's own definition of a restructured exposure	Consolidated Financial Statements	Note 2 – Summary of significant accounting policies, estimates and judgments - Allowance for credit losses - *Modifications*	132

[1]Requirement for disclosure of this table is only semi-annual.

DISCLOSURE MAP (continued)

Pillar 3 Requirement	Pillar 3 Requirement		2019 Annual Report section	Sub-section	2019 Annual Report Reference
Credit risk (continued)	CRC	a) Core features of policies and processes for, and an indication of the extent to which the bank makes use of, on– and off–balance sheet netting	Credit risk	Credit risk assessment – *Counterparty credit risk*	56-57
			Consolidated Financial Statements	Note 8 – Derivative financial instruments and hedging activities - *Derivative-related credit risk*	170-171
				Note 31 – Offsetting financial assets and financial liabilities	207-208
		b) Core features of policies and processes for collateral evaluation and management	Credit risk	Credit risk mitigation - *Collateral*	57-58
		c) Information about market or credit risk concentrations under the credit risk mitigation instruments used	Credit risk	Credit risk mitigation	57-58
				Credit risk approval - *Credit risk limits*	58
			Consolidated Financial Statements	Note 8 – Derivative financial instruments and hedging activities	168-177
	CR3 [1]				
	CRD				
	CR4				
	CR5				
	CRE				
	CR6				
	CR7				
	CR8				
	CR9 [2]				
	CR10		n/a	n/a	n/a
Counterparty credit risk	CCRA	a) Risk management objectives and policies related to counterparty credit risk	Credit risk	Credit risk assessment – *Counterparty credit risk*	56-57
			Consolidated Financial Statements	Note 8 – Derivative financial instruments and hedging activities - *Derivative-related credit risk*	170-171
		b) The method used to assign the operating limits defined in terms of internal capital for counterparty credit exposures and for CCP exposures	Credit risk	Credit risk assessment – *Counterparty credit risk*	56-57
		c) Policies relating to guarantees and other risk mitigants and assessments concerning counterparty credit risk, including exposures towards CCPs	Credit risk	Credit risk assessment – *Counterparty credit risk*	56-57
			Consolidated Financial Statements	Note 8 – Derivative financial instruments and hedging activities - *Derivative-related credit risk*	170-171
			Consolidated Financial Statements	Note 31 – Offsetting financial assets and financial liabilities	207-208
		d) Policies with respect to wrong-way risk exposures	Credit risk	Credit risk assessment – *Wrong-way risk*	57
		e) The impact in terms of the amount of collateral that the bank would be required to provide given a credit rating downgrade	Liquidity and funding risk	Credit ratings	77
	CCR1				
	CCR2				
	CCR3				
	CCR4				
	CCR5 [1]				
	CCR6 [1]				
	CCR7		n/a	n/a	n/a
	CCR8	f) Exposures to central counterparties			

[1]Requirement for disclosure of this table is only semi-annual.
[2]Requirement for disclosure of this table is only annual.

DISCLOSURE MAP (continued)

Pillar 3 Requirement	Pillar 3 Requirement		2019 Annual Report section	Sub-section	2019 Annual Report Reference
Securitization	SECA	a) Objectives in relation to securitization activities	Off-balance sheet arrangements	Off-balance sheet arrangements	45-47
			Consolidated Financial Statements	Note 6 – Derecognition of financial assets	163-164
			Consolidated Financial Statements	Note 7 – Structured entities	164-167
		b) List of SPEs where RBC is sponsor / provides implicit support	Consolidated Financial Statements	Note 7 – Structured entities	164-167
		c) Accounting policies for securitization	Consolidated Financial Statements	Note 2 – Summary of significant accounting policies, estimates and judgments – *Basis of consolidation*	125
				Note 2 – Summary of significant accounting policies, estimates and judgments – *Derecognition of financial assets*	132
			Critical accounting policies and estimates	Consolidation of structured entities	100
		d) the names of external credit assessment institution (ECAIs) used for securitizations and the types of securitization exposure for which each agency is used	Capital Management (also refer to CRD in this document)	Regulatory capital approach for securitization exposures	97-98
		e) Use of Basel IAA for capital purposes	Credit risk	n/a	54-58
			Capital Management	Regulatory capital approach for securitization exposures	97-98
		f) Use of other internal assessment for capital purposes	Credit risk	Credit risk assessment	56-57
	SEC1	Securitization exposures in the banking book			
	SEC2	Securitization activities in the trading book			
	SEC3	Securitization exposures in the banking book and associated regulatory capital requirements - bank acting as originator or as sponsor			
	SEC4	Securitization exposures in the banking book and associated capital requirements - bank acting as investor			
Market risk	MRA	a) Processes implemented to identify, measure, monitor and control the bank's market risks	Market risk	Market risk controls – FVTPL positions	66
				Stress Tests	66
				Market risk measures – FVTPL positions	67
				Market risk measures for assets and liabilities of RBC Insurance	68
				Market risk controls – Structural Interest Rate Risk (SIRR) positions	68
				SIRR measurement	68
				Market risk measures – Structural Interest Rate Sensitivities	68
				Market risk measures for other material non-trading portfolios	69
		Policies for hedging risk and strategies/processes for monitoring the continuing effectiveness of hedges	Consolidated Financial Statements	Note 2 – Summary of significant accounting policies, estimates and judgements – *Hedge accounting*	133-134
		b) Description of the market risk governance structure established to implement the strategies and processes of the bank	Enterprise risk management	Risk governance	50
				Risk appetite	51
				Risk measurement	51-52
				Risk control	52-53
				Risk measurement – *Stress testing*	51-52
				Conduct and risk culture	53-54

DISCLOSURE MAP (continued)

Pillar 3 Requirement	Pillar 3 Requirement		2019 Annual Report section	Sub-section	2019 Annual Report Reference
Market risk (continued)	MRA (continued)	Description of the relationships and the communication mechanisms between the different parties involved in market risk management	Enterprise risk management	Risk governance	50
				Risk control	52-53
		c) Scope and nature of risk reporting and/or measurement systems	Enterprise risk management	Risk measurement	51-52
				Risk control	52-53
				Risk measurement – *Stress testing*	51-52
			Market risk	Market risk controls – FVTPL positions	66
				Stress Tests	66
				Market risk measures – FVTPL positions	67
				Market risk measures for assets and liabilities of RBC Insurance	68
				Market risk controls – Structural Interest Rate Risk (SIRR) positions	68
				SIRR measurement	68
				Market risk measures – Structural Interest Rate Sensitivities	68
				Market risk measures for other material non-trading portfolios	69
	MRB	c) General description of the models (VaR/stressed VaR)	Market risk	Market risk controls – FVTPL positions	66
		g) Description of stress testing applied to the modelling parameters	Market risk	Stress Tests	66
	MR1				
	MR2				
	MR3				
	MR4 [1]				
Leverage	LR1				
	LR2				
Total loss absorbing capacity	KM2				
	TLAC1				
	TLAC2				
	TLAC3				
Operational Risk		a) Details of the approach for operational risk capital assessment for which the bank qualifies	Operational risk	Operational risk capital	83
		b) Description of the advanced measurement approaches for operational risk (AMA)	Operational risk	Operational risk capital	83
		c) Description of the use of insurance for the purpose of mitigating operational risk	Operational risk	Operational risk capital	83
Interest rate risk in the banking book			Market risk	Market risk	66-71

[1]Requirement for disclosure of this table is only semi-annual.

OVERVIEW OF KEY METRICS, RISK MANAGEMENT AND RWA

KM1: Key Capital and Leverage metrics (at consolidated group level)

	(Millions of Canadian dollars)[1]	a October 31 2019	b July 31 2019	c October 31 2018	d Y o Y Change (a-c)
	Available capital (amounts)				
1	Common Equity Tier 1 (CET1)	62,184	60,938	57,001	5,183
2	Tier 1	67,861	66,615	63,279	4,582
3	Total capital	77,888	76,563	72,494	5,394
	Risk-weighted assets (amounts)				
4	Total risk-weighted assets (RWA)	512,856	510,664	496,459	16,397
	Risk-based capital ratios as a percentage of RWA				
5	Common Equity Tier 1 ratio	12.1%	11.9%	11.5%	0.6%
6	Tier 1 ratio	13.2%	13.0%	12.8%	0.4%
7	Total capital ratio	15.2%	15.0%	14.6%	0.6%
	Additional CET1 buffer requirements as a percentage of RWA				
8	Capital conservation buffer requirement	2.5%	2.5%	2.5%	-
9	Countercyclical buffer requirement[2]	0.0%	0.0%	0.0%	-
10	Bank G-SIB and/or D-SIB additional requirements	1.0%	1.0%	1.0%	-
11	Total of bank CET1 specific buffer requirements (row 8 + row 9 + row 10)	3.5%	3.5%	3.5%	-
12	CET1 available after meeting the bank's minimum capital requirements (row 5 - 8%)[3]	4.1%	3.9%	3.5%	0.6%
	Basel III leverage ratio				
13	Total Basel III leverage ratio exposure measure	1,570,460	1,529,369	1,450,769	119,691
14	Basel III leverage ratio (row 2 / row 13)	4.3%	4.4%	4.4%	(0.1)%

[1] This table incorporates the impact of expected credit loss (ECL) accounting on regulatory capital. Lines 1a, 2a, 3a, 5a, 6a, 7a & 14a have been excluded from this table as OSFI does not provide transitional arrangement for ECL.

[2] Bank specific countercyclical buffer requirement for Q4 2019 was 2bps (Q3 2019 – 2bps; Q4 2018 – 1bps) and is determined based on our private sector exposures in jurisdictions identified by BCBS.

[3] 8% reflects minimum capital requirements which includes D-SIB/G-SIB surcharge, and excludes the OSFI Domestic Stability Buffer of 2% in Q4 2019 (1.75% in Q3 2019; 1.5% in Q4 2018). Refer to our Capital Management section of our 2019 Annual Report and Q3 2019 Report to Shareholders.

Our CET1 ratio was 12.1%, up 60 bps from last year, mainly reflecting internal capital generation, partially offset by higher RWA, share repurchases and the impact of lower discount rates in determining our pension and other post-employment benefit obligations.

Our Tier 1 capital ratio of 13.2% was up 40 bps, reflecting the factors noted above under the CET1 ratio. Tier 1 capital ratio was also negatively impacted by the net redemption of preferred shares.

Our Total capital ratio of 15.2% was up 60 bps, reflecting the factors noted above under the Tier 1 ratio. Total capital ratio was also favorably impacted by the net issuance of subordinated debentures.

During the year, Total RWA increased $16 billion, mainly driven by business growth in wholesale and retail lending as well as the impact of regulatory changes relating to the phase-out of CVA scalars and revisions to the CAR guidelines. These factors were partially offset by model updates primarily related to standardized to AIRB portfolio conversion in retail banking.

Our Leverage ratio of 4.3% was down 10 bps, mainly reflecting growth in leverage ratio exposures, share repurchases, and the net redemption of preferred shares, partially offset by internal capital generation. The increase in leverage exposures was primarily attributable to growth in retail and wholesale lending, repo-style transactions, securities and the impact of regulatory changes.

OVA: Bank risk management approach

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement		RBC 2019 Annual Report section	Sub-section
a)	Business model and risk profile	Top and emerging risks	Top and emerging risks
		Risk management overview	Risk Management Principles
			Risk drivers
		Enterprise risk management	Risk governance
			Risk appetite
			Risk measurement
			Risk control
b)	Risk governance structure	Enterprise risk management	Risk governance
			Risk control
c)	Communication and enforcement of risk culture within the bank	Enterprise risk management	Conduct and risk culture
d)	Scope and main features of risk measurement systems	Enterprise risk management	Risk measurement
e)	Risk information reporting	Enterprise risk management	Risk control - *Reporting*
f)	Stress testing	Enterprise risk management	Risk measurement - *Stress testing*
		Market risk	Stress tests
		Systemic risk	Systemic risk
g)	Strategies and processes applied to manage, hedge and mitigate risks	Enterprise risk management	Risk appetite
			Risk measurement
			Risk control
		Credit risk	Overview
			Credit risk measurement
			Credit risk assessment
			Credit risk mitigation
			Credit risk approval
			Credit risk administration
		Market risk	Market risk controls - FVTPL positions
			Stress tests
			Market risk controls - Structural Interest Rate Risk (SIRR) positions
			SIRR measurement
			Non-trading foreign exchange rate risk
		Liquidity and funding risk	Overview
			Risk control
			Risk measurement
			Funding
			Liquidity coverage ratio
		Insurance risk	Insurance risk
		Operational risk	Overview
			Operational risk framework
		Regulatory compliance risk	Regulatory compliance risk
		Strategic risk	Strategic risk
		Reputation risk	Reputation risk
		Legal and regulatory environment risk	Legal and regulatory environment risk
		Competitive risk	Competitive risk
		Systemic risk	Systemic risk
		Consolidated Financial Statements	Note 8 - Derivative financial instruments and hedging activities - *Derivatives issued for trading purposes*
			Note 8 - Derivative financial instruments and hedging activities - *Derivatives issued for other-than-trading purposes*
			Note 8 - Derivative financial instruments and hedging activities - *Derivative-related credit risk*

OV1: Overview of risk weighted assets (RWA)

The following table presents an overview of our RWA and the related minimum capital requirements by risk type.

		a	b	c	d	e
		RWA			Minimum capital requirement[1]	RWA
	(Millions of Canadian dollars)	October 31 2019	July 31 2019	October 31 2018	October 31 2019	Change (a-c)
1	**Credit risk (excluding counterparty credit risk)**	**346,005**	**342,700**	**331,613**	**27,680**	**14,392**
2	Of which Standardized approach (SA)	79,487	81,699	77,266	6,359	2,221
3	Of which Internal rating-based (IRB) approach	266,518	261,001	254,347	21,321	12,171
4	**Counterparty credit risk (CCR)**	**45,814**	**47,478**	**43,443**	**3,666**	**2,371**
4a	Of which other CCR	11,083	10,895	30,108	887	(19,025)
4b	Credit valuation adjustment (CVA)[2]	13,369	14,211	13,335	1,070	34
5	Of which Standardised approach for counterparty credit risk (SA-CCR)[3]	21,362	22,372	-	1,709	21,362
6	Of which Internal model method (IMM)	-	-	-	-	-
7	Equity positions in banking book under market-based approach	2,238	2,240	2,209	179	29
8	Equity investments in funds – look-through approach	-	-	-	-	-
9	Equity investments in funds – mandate-based approach	2,514	2,644	2,075	201	439
10	Equity investments in funds – fall-back approach	106	17	125	8	(19)
11	Settlement risk	29	851	498	2	(469)
12	**Securitisation exposures in banking book**	**7,794**	**7,586**	**10,320**	**624**	**(2,526)**
12a	Of which transitional grandfathering adjustment	(6,888)	(6,888)	-	(551)	(6,888)
13	Of which IRB ratings-based approach (SEC-IRBA)	422	427	-	34	422
14	Of which External ratings-based approach (SEC-ERBA)[4]	11,445	11,535	10,320	916	1,125
15	Of which Standardized approach (SEC-SA)[4]	2,815	2,512	-	225	2,815
16	**Market risk**	**28,917**	**29,425**	**32,209**	**2,313**	**(3,292)**
17	Of which Standardized approach (SA)	12,166	12,524	12,976	973	(810)
18	Of which Internal model approaches (IMA)	16,751	16,901	19,233	1,340	(2,482)
19	**Operational risk**	**66,104**	**65,262**	**62,716**	**5,289**	**3,388**
20	Of which Basic Indicator Approach	-	-	-	-	-
21	Of which Standardized Approach	5,570	5,483	5,194	446	376
22	Of which Advanced Measurement Approach	60,534	59,779	57,522	4,843	3,012
23	Amounts below the thresholds for deduction (subject to 250% risk weight)	13,335	12,461	11,251	1,067	2,084
24	Floor adjustment	-	-	-	-	-
25	**Total (1+4+7+8+9+10+11+12+16+19+23+24)**	**512,856**	**510,664**	**496,459**	**41,029**	**16,397**

[1] The minimum capital requirements for each category can be calculated by multiplying the total RWA by 8% as per OSFI CAR guidelines.

[2] October 31, 2018 amount reflects allowed phase-in of CVA of 86%.

[3] Includes RWA associated with CCP exposures, which EAD is calculated based on SA-CCR.

[4] Prior to the implementation of the revised securitization framework in 2019, the methodology SEC-ERBA was referred to as the IRB ratings based approach. Under the current framework, SEC-SA includes exposures that are risk weighted at 1250%, and SEC-ERBA includes exposures that are under Internal assessment approach (IAA).

During the year, Total RWA increased by $16 billion, driven by the following:

Credit risk
RWA increased $14 billion, primarily due to loan growth in all business segments.

Counterparty credit risk
RWA increased by $2 billion, mainly due to impact from adoption of SA-CCR, offset by increase in application of collateral for certain derivative exposures, which resulted in lower risk weighting.

Securitization exposures in banking book
RWA decreased by $3 billion. Excluding grandfathering adjustment of $7 billion, RWA increased by $4 billion, mainly reflecting impact from adoption of the Revised Securitization Framework.

Market risk
RWA decreased by $3 billion, due to reduction in inventories and model updates.

Operational risk
RWA increased by $3 billion, driven mainly by revenue growth.

RWA: Risk-Weighted Assets by Regulatory Approach

TOTAL CAPITAL RISK-WEIGHTED ASSETS [1]	Q4/2019						Q4/2019				
	Risk-weighted assets All-in Basis						Capital requirements	Risk-weighted assets All-in Basis			
(Millions of Canadian dollars, except percentage and per share amounts)	Exposure [2]	Average of risk weights [3]	Standardized approach	IRB approach	Other	Total [4]	Total [4]	Q3/2019 Total [4]	Q2/2019 Total [4]	Q1/2019 Total [4]	Q4/2018 Total [4]
Credit risk [5]											
Lending-related and other											
Residential mortgages	278,628	8%	8,204	15,425	-	23,629	1,890	23,000	22,451	22,114	21,919
Other retail (Personal, Credit cards and Small business treated as retail)	277,818	21%	6,635	52,808	-	59,443	4,755	59,534	58,488	57,676	55,669
Business (Corporate, Commercial, Medium-sized enterprises and Non-bank financial institutions)	364,274	59%	46,474	168,868	-	215,342	17,227	216,760	212,750	210,676	205,735
Sovereign (Government)	143,261	7%	1,045	8,355	-	9,400	752	9,605	10,301	11,785	11,437
Bank	35,425	22%	1,672	5,976	-	7,648	612	7,286	8,364	8,192	10,239
Total lending-related and other	1,099,406	29%	64,030	251,432	-	315,462	25,236	316,185	312,354	310,443	304,999
Trading - related											
Repo-style transactions [6]	909,124	1%	109	10,238	122	10,469	838	9,065	9,188	8,495	8,116
Derivatives - including CVA - CET1 phase-in adjustment [7]	90,896	37%	1,194	18,570	13,853	33,617	2,689	35,421	37,247	35,658	31,173
Total trading-related	1,000,020	4%	1,303	28,808	13,975	44,086	3,527	44,486	46,435	44,153	39,289
Total lending-related and other and trading-related	2,099,426	17%	65,333	280,240	13,975	359,548	28,763	360,671	358,789	354,596	344,288
Banking book equities [8]	3,248	141%	-	4,583	-	4,583	367	4,623	4,566	4,336	4,161
Securitization exposures	64,989	12%	4,962	2,832	-	7,794	624	7,586	9,472	10,072	9,984
Regulatory scaling factor [9]	n.a.	n.a.	n.a.	17,089	-	17,089	1,367	16,816	16,827	16,690	16,608
Other assets	20,155	143%	n.a.	n.a.	28,821	28,821	2,306	26,281	24,869	24,309	25,562
Total credit risk	**2,187,818**	**19%**	**70,295**	**304,744**	**42,796**	**417,835**	**33,427**	**415,977**	**414,523**	**410,003**	**400,603**
Market risk [10, 11]											
Interest rate			2,155	5,109	-	7,264	581	8,263	10,395	12,647	9,497
Equity			1,082	2,299	-	3,381	270	3,091	3,000	3,241	3,865
Foreign exchange			1,548	208	-	1,756	140	1,922	1,563	1,412	962
Commodities			237	59	-	296	24	223	332	244	190
Specific risk			7,144	1,741	-	8,885	711	8,666	8,088	8,039	8,005
Incremental risk charge [12, 13]			-	7,335	-	7,335	587	7,260	8,075	9,279	9,690
Total market risk			**12,166**	**16,751**	**-**	**28,917**	**2,313**	**29,425**	**31,453**	**34,862**	**32,209**
Operational risk			**5,570**	**60,534**	**n.a.**	**66,104**	**5,288**	**65,262**	**64,487**	**63,647**	**62,716**
CET1 capital risk-weighted assets	**2,187,818**		**88,031**	**382,029**	**42,796**	**512,856**	**41,028**	**510,664**	**510,463**	**508,512**	**495,528**
Additional CVA adjustment, prescribed by OSFI, for Tier 1 Capital [7]					-	-	-	-	-	-	465
Tier 1 capital risk-weighted assets	**2,187,818**		**88,031**	**382,029**	**42,796**	**512,856**	**41,028**	**510,664**	**510,463**	**508,512**	**495,993**
Additional CVA adjustment, prescribed by OSFI, for Total Capital [8]					-	-	-	-	-	-	466
Total capital risk-weighted assets (RWA)	**2,187,818**		**88,031**	**382,029**	**42,796**	**512,856**	**41,028**	**510,664**	**510,463**	**508,512**	**496,459**

[1] Calculated using guidelines issued by OSFI under the Basel III All-in framework.

[2] Total exposure represents exposure at default (EAD) which is the expected gross exposure upon the default of an obligor. This amount excludes any allowance against impaired loans or partial write-offs and does not reflect the impact of credit risk mitigation.

[3] Represents the average of counterparty risk weights within a particular category.

[4] The minimum capital requirements for each category can be calculated by multiplying the total RWA by 8% as per OSFI CAR guidelines.

[5] For credit risk, a majority of our portfolios use the Internal Ratings Based (IRB) Approach and the remainder use the Standardized Approach.

[6] Effective Q4 2019, exposures in which we act as an agent to a repo-style transaction and provide a guarantee to our customer have been reclassified to repo-style transactions to reflect all counterparty credit risk exposures and align with disclosures in this document.

[7] As per OSFI guidelines, the CVA regulatory capital charge applied to derivatives has a three tier capital approach with different scalars for each tier until the end of 2018. For 2018 the scalars percentages were 80%, 83% and 86% applied to CET1, Tier 1 and TC respectively.

[8] CAR guidelines define banking book equities based on the economic substance of the transaction rather than the legal form or accounting treatment associated with the financial instrument. As such, differences exist in the identification of equity securities held in the banking book and those reported in the financial statements. Banking book equities are financial instruments held for investment purposes and are not part of our trading book, consisting of publicly-traded and private equities, partnership units, venture capital and derivative instruments tied to equity interests.
As at Q4/19, the amount of publicly-traded equity exposures was $1,360 million and private equity exposures amounted to $1,887 million. Total exposure represents EAD, which is the expected gross exposure upon the default of an obligor.
Effective Q1/17, the Basel Committee on Banking Supervision issued new requirements for Equity Investments in Funds (BCBS 266). The Simple Risk Weight method under the Market-based Approach is being used to calculate RWA for Direct Equity exposures ($2,207 million). On the other hand, the calculation of RWA for Equity Investments in Funds ($1,040 million) uses the Mandate-based and Fall-Back Approaches.

[9] The scaling factor represents a calibration adjustment of 6% as prescribed by OSFI under the Basel III framework and is applied to RWA amounts for credit risk assessed under the IRB Approach.

[10] For market risk RWA measurement, we use an internal models approach where we have obtained regulatory approval, and a standardized approach for products yet to be approved. For standardized approach, we use internally validated models.

[11] Regulatory capital for our correlation trading portfolios is determined through the standardized approach as prescribed by OSFI. Therefore, we do not have a Comprehensive Risk Charge for these portfolios. Our securitization and resecuritization positions in our trading book also have capital requirements under the standardized approach. The changes in value due to market and credit risk in the securitization and resecuritization in the trading book are managed through the daily mark-to-market process. Furthermore, we employ market risk measures such as sensitivities to changes in option-adjusted spreads and underlying asset prices as well as value-at-risk (VaR) and stress testing measures.

[12] The incremental risk charge (IRC) was $536 million as at Q4/19. The average was $587 million, high was $678 million and low was $504 million for Q4/19. The IRC is measured over a one-year horizon at a 99.9% confidence level. We utilize a technique known as the Monte Carlo simulation process to generate a statistically relevant number of loss scenarios due to ratings migration and default in order to establish the losses at that confidence level. We also make certain assumptions about position liquidity (the length of time to close out a position) within the model that range from a floor of three months to maximum of one year. The determination of liquidity is based on issuer type and credit rating. Credit rating migration and default probabilities (PD) are based on historical data.

[13] The models are subject to the same internal independent vetting and validation procedures used for all regulatory capital models. Important assumptions are re-reviewed at least annually. Due to the long time horizon and high confidence level of the risk measure, we do not perform back-testing as we do for the VaR measure.

LINKAGES BETWEEN FINANCIAL STATEMENTS AND REGULATORY EXPOSURES

LI1: Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories

The following table provides the differences between carrying values presented in our financial statements prepared in accordance with International Financial Reporting Standards (IFRS) and our regulatory exposures. It further breaks down the amounts in our financial statements into regulatory risk categories.

As at October 31, 2019

	a	b	c	d	e	f	g
			Carrying values of items:[1]				
(Millions of Canadian dollars)	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	Subject to credit risk framework	Subject to counterparty credit risk framework	Subject to the securitization framework	Subject to the market risk framework	Not subject to capital requirements or subject to deduction from capital
Assets							
Cash and due from banks	26,310	26,309	26,309	-	-	-	-
Interest-bearing deposits with banks	38,345	38,345	38,345	-	-	-	-
Securities							
Trading	146,534	136,609	2,459	-	92	134,058	-
Investment, net of applicable allowance	102,470	100,028	85,083	-	14,945	-	-
	249,004	236,637	87,542	-	15,037	134,058	-
Assets purchased under reverse repurchase agreements and securities borrowed	306,961	306,961	-	306,961	-	-	-
Loans							
Retail	426,086	425,749	417,654	-	-	-	8,095
Wholesale	195,870	193,618	179,829	815	7,731	4,547	696
	621,956	619,367	597,483	815	7,731	4,547	8,791
Allowance for loan losses	(3,100)	(3,100)	-	-	-	-	(3,100)
	618,856	616,267	597,483	815	7,731	4,547	5,691
Segregated fund net assets	1,663	-	-	-	-	-	-
Other							
Customers' liability under acceptances	18,062	18,062	18,062	-	-	-	-
Derivatives[2]	101,560	102,392	-	102,392	-	98,847	-
Premises and equipment, net	3,191	3,188	3,188	-	-	-	-
Goodwill	11,236	11,236	-	-	-	-	11,236
Other intangibles	4,674	4,575	-	-	-	-	4,575
Other assets	49,073	51,046	24,803	22,126	12	3,812	293
	187,796	190,499	46,053	124,518	12	102,659	16,104
Total assets[2]	**1,428,935**	**1,415,018**	**795,732**	**432,294**	**22,780**	**241,264**	**21,795**
Liabilities and equity							
Deposits							
Personal	294,732	294,732	-	-	-	-	294,732
Business and government	565,482	565,885	-	-	-	-	565,885
Bank	25,791	25,791	-	-	-	-	25,791
	886,005	886,408	-	-	-	-	886,408
Segregated fund net liabilities	1,663	-	-	-	-	-	-
Other							
Acceptances	18,091	18,091	-	-	-	-	18,091
Obligations related to securities sold short	35,069	35,069	-	-	-	-	35,069
Obligations related to assets sold under repurchase agreements and securities loaned	226,586	226,586	-	226,586	-	-	-
Derivatives[2]	98,543	98,543	-	98,543	-	96,279	-
Insurance claims and policy benefit liabilities	11,401	-	-	-	-	-	-
Other liabilities	58,137	56,884	-	-	-	-	56,884
	447,827	435,173	-	325,129	-	96,279	110,044
Subordinated debentures	9,815	9,815	-	-	-	-	9,815
Total liabilities[2]	1,345,310	1,331,396	-	325,129	-	96,279	1,006,267
Equity attributable to shareholders							
Preferred shares	5,707	5,707	-	-	-	-	5,707
Common shares	17,587	17,587	-	-	-	-	17,587
Retained earnings	55,981	56,010	-	-	-	-	56,010
Other components of equity	4,248	4,216	-	-	-	-	4,216
	83,523	83,520	-	-	-	-	83,520
Non-controlling interests	102	102	-	-	-	-	102
Total equity	83,625	83,622	-	-	-	-	83,622
Total liabilities and equity[2]	**1,428,935**	**1,415,018**	**-**	**325,129**	**-**	**96,279**	**1,089,889**

[1] Column c to g reflect a further breakout of column b by providing the respective CAR guideline frameworks utilized.

[2] Derivative assets and liabilities are subject to both counterparty credit risk and market risk framework – hence column b will not equal to the sum of column c to g.

LI2: Main sources of differences between regulatory exposure amounts and carrying values in financial statements

The following table provides the key differences between the exposure amounts for regulatory purposes and the accounting carrying values as presented in our financial statements that are within the scope of regulatory consolidation.

As at October 31, 2019

		a	b	c	d	e
			Items subject to:			
	(Millions of Canadian dollars)	Total	Credit risk framework	Securitization framework	Counterparty credit risk framework	Market risk framework
1	**Asset carrying value amount under scope of regulatory consolidation (as per template LI1)[1]**	**1,393,223**	**795,732**	**22,780**	**432,294**	**241,264**
2	Liabilities carrying value amount under regulatory scope of consolidation (as per template LI1)[1]	325,129	-	-	325,129	96,279
3	Total net amount under regulatory scope of consolidation	1,068,094	795,732	22,780	107,165	144,985
4	Off-balance sheet amounts[2]	1,258,152	324,355	40,942	892,855	-
5	Differences due to Fair Value adjustment	(591)	(591)	-	-	(2,568)
6	Differences due to different netting rules, other than those already included in row 2	928	928	-	-	-
7	Differences due to consideration of provisions	463	463	-	-	-
8	Differences due to prudential filters	-	-	-	-	-
9	Difference due to accounting and risk treatment of securitizations and other items	3,189	1,922	1,267	-	-
10	**Exposure amounts considered for regulatory purposes**	**2,330,235**	**1,122,809**	**64,989**	**1,000,020**	**142,417**

[1] Amount reflects Table LI1 columns (c), (d), (e) and (f) from the previous page. Derivative assets and liabilities are subject to both counterparty credit risk and market risk framework – hence column a will not equal to the sum of column b to e.

[2] Off-balance sheet amounts reflect the application of credit conversion factors.

LIA: Explanations of differences between accounting and regulatory exposure amounts

Our consolidated balance sheet ("accounting balance sheet") is prepared in compliance with IFRS as issued by the International Accounting Standards Board. We leverage our accounting balance sheet to apply the required regulatory requirements prescribed by OSFI to determine our regulatory capital consolidated balance sheet.

In Template LI1: Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories, we identify the differences between our IFRS consolidated accounting balance sheet (column a in LI1) and our regulatory capital consolidated balance sheet (column b in LI1). Our regulatory capital consolidated balance sheet, on which capital adequacy requirements are determined, reflects all of our consolidated subsidiaries except for our insurance subsidiaries as prescribed by OSFI's CAR guidelines.

In Template LI2: Main sources of differences between regulatory exposure amounts and carrying values in financial statements, we quantify measurement differences other than regulatory consolidation.

Our banking book regulatory carrying values reflect our IFRS accounting balance sheet values except for our fair valued loans and debt securities carried at fair value through other comprehensive income (FVOCI), which under the Credit risk framework, are measured at amortized cost. Off-balance sheet regulatory asset values reflect prescribed conversion factors and undrawn amounts.

Regulatory carrying values for our Counterparty credit risk related to our derivative assets and liabilities, assets purchased under reverse repurchase agreements and securities borrowed and obligations related to assets sold under repurchase agreements and securities loaned are determined using OSFI's CAR guidelines Chapter 4 Settlement and Counterparty risk framework. On November 1, 2018, OSFI adopted the BCBS Standardized Approach for measuring Counterparty credit risk for derivative regulatory exposures and we have adopted this methodology for our derivative regulatory exposures. The main differences between the accounting and regulatory amounts for Counterparty credit risk relate to regulatory inclusion of potential future exposure amounts and differences in allowed IFRS and regulatory netting rules, and also application of financial collateral in the calculation of regulatory exposure amount.

The regulatory carrying value of exposures subject to the securitization framework includes our on-balance sheet third party securitization holdings as well as our securitized credit card exposures which meet the risk transference requirements under the CAR guidelines Chapter 7 but are not considered securitized for the purposes of our IFRS accounting balance sheet. Our regulatory carrying values are determined based on the BCBS revised securitization framework adopted by OSFI on November 1, 2018.

Our trading book regulatory carrying values are determined as prescribed under the CAR guidelines Chapter 9. We employ OSFI's prudent valuation guidance requirements, as stated in CAR Chapter 9 section 9.8 to our trading book. Refer to our 2019 Annual Report - Risk Management section which provides further insight into how we measure our market risk and the linkage of market risk to selected balance sheet items.

CREDIT RISK

CRA: General qualitative information about credit risk

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

	Pillar 3 disclosures requirement	RBC 2019 Annual Report section	Sub-section
a)	Translation of the business model into the components of the bank's credit risk profile	Credit risk	Overview
			Credit risk exposure
b)	Criteria and approach used for defining credit risk management policy and for setting credit risk limits	Enterprise risk management	Risk governance
			Risk appetite
			Risk measurement
			Risk control - *Authorities and limits*
		Credit risk	Overview
			Credit risk assessment
			Credit risk mitigation
			Credit risk approval
c)	Structure and organization of the credit risk management and control function	Enterprise risk management	Risk governance
			Risk control
d)	Interaction between the credit risk management, risk control, compliance and internal audit functions	Enterprise risk management	Risk governance
e)	Scope and content of the reporting on credit risk exposure to the executive management and to the board of directors	Enterprise risk management	Risk governance
			Risk control - *Reporting*

CR1: Credit quality of assets

The following table presents a comprehensive view of the credit quality of our on- and off-balance sheet assets. The format reflects OSFI's new disclosure requirements for CR 1 effective Q4 2019.

As at October 31, 2019

		a	b	c	d	e	f	g
		Gross carrying values of			Of which ECL accounting provisions on SA exposures			
	(Millions of Canadian dollars)	Defaulted exposures[1]	Non-defaulted exposures	Allowances/ impairments[2]	Allocated in regulatory category of Specific[3]	Allocated in regulatory category of General[3]	Of which ECL accounting provisions on IRB exposures	Net values (a+b-c)
1	Loans	2,856	594,627	3,100	168	425	2,507	594,383
2	Debt Securities	-	84,973	21	-	5	16	84,952
3	Off-Balance Sheet exposures[4]	1,033	254,914	318	-	2	316	255,629
4	**Total**	**3,889**	**934,514**	**3,439**	**168**	**432**	**2,839**	**934,964**

[1] Definition of default as per the CAR guidelines.

[2] Reflects Stage 1, 2 and 3 allowances under IFRS 9.

[3] Regulatory category of specific allowance reflects IFRS 9 Stage 3 allowances. Regulatory category of general allowances reflects Stage 1 & 2 allowances.

[4] Off balance sheet amounts are before the application of credit conversion factors and reflect guarantees given and irrevocable loan commitments. Revocable loan commitments are excluded as per BCBS requirements.

As at July 31, 2019

		a	b	c	g
		Gross carrying values of			
	(Millions of Canadian dollars)	Defaulted exposures[1]	Non-defaulted exposures	Allowances/ impairments[2]	Net values (a+b-c)
1	Loans	2,898	587,130	3,131	586,897
2	Debt Securities	-	83,152	27	83,125
3	Off-Balance Sheet exposures[3]	563	254,337	189	254,711
4	**Total**	**3,461**	**924,619**	**3,347**	**924,733**

[1] Definition of default as per the CAR guidelines.

[2] Reflects Stage 1, 2 and 3 allowances under IFRS 9.

[3] Off balance sheet amounts are before the application of credit conversion factors and reflect guarantees given and irrevocable loan commitments. Revocable loan commitments are excluded as per BCBS requirements.

CR2: Changes in stock of defaulted loans and debt securities

The following table presents our defaulted exposure balances, the flows between non-defaulted and defaulted exposure categories and reductions in the defaulted exposure balances due to write-offs.

For the six months ended October 31, 2019

	(Millions of Canadian dollars)	a
1	**Defaulted loans and debt securities at the end of April 30, 2019**	**2,886**
2	Loans and debt securities that have defaulted since the last reporting period	1,038
3	Returned to non-defaulted status	(138)
4	Amounts written off	(898)
5	Other changes	(32)
6	**Defaulted loans and debt securities at the end of October 31, 2019**	**2,856**

CRB: Additional disclosure related to the credit quality of assets

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement		RBC 2019 Annual Report section	Sub-section
a)	Definitions of past due and impaired exposures	Consolidated Financial Statements	Note 2 - Summary of significant accounting policies, estimates and judgments Allowance for credit losses - Definition of default Credit impaired financial assets (Stage 3) Note 5 – Loans and allowances for credit losses Loans past due but not impaired
b)	Extent of past due exposures	Consolidated Financial Statements	Note 5 – Loans and allowances for credit losses Loans past due but not impaired
c)	Description of methods used for determining accounting provisions for credit losses	Consolidated Financial Statements	Note 2 - Summary of significant accounting policies, estimates and judgments Allowance for credit losses
	Description of the categorization of ECL accounting provisions (general and specific) for standardized approach exposures	n/a	n/a - For regulatory calculations under both the Standardized and IRB approaches, the IFRS 9 stage 3 allowances are considered to be specific allowances and the IFRS 9 stage 1 and stage 2 allowances are considered to be general allowances
d)	Definition of a restructured exposure	Consolidated Financial Statements	Note 2 - Summary of significant accounting policies, estimates and judgments Allowance for credit losses - Modifications

CRB: Additional disclosure related to the credit quality of assets (continued)

(e) Breakdown of exposures by geographical areas, industry and residual maturity

The following table provides a breakdown of our credit risk exposures by industry, geographical areas and residual maturity. Our classification below reflects the Basel regulatory defined exposure classes. Amounts shown below reflect Exposures at default (EAD), which is the amount expected to be owed by an obligor at the time of default.

As at October 31, 2019

	a	b	c	d	e
	Credit Risk[1,2]			Counterparty Credit Risk[5]	
	On-balance sheet amount	Off-balance sheet amount[3]		Repo-style Transaction	Derivatives
(Millions of Canadian dollars)		Undrawn	Other[4]		
Retail					
Residential secured[6]	316,047	64,825			
Qualifying revolving	26,834	73,530			
Other retail	61,095	13,927	72		
Total Retail	**403,976**	**152,282**	**72**		
Wholesale					
Agriculture	9,084	1,744	46	-	79
Automotive	9,710	6,990	298	-	1,217
Banking	45,444	1,857	615	46,601	17,908
Consumer Discretionary	15,972	8,641	766	-	533
Consumer Staples	5,346	8,543	518	-	1,116
Oil & Gas	8,165	10,661	1,390	-	1,551
Financial Services	30,194	21,023	2,749	118,239	16,688
Financing Products	667	848	516	81	1,146
Forest Products	1,468	688	97	-	27
Governments	105,011	8,120	1,432	8,228	7,214
Industrial Products	7,793	8,237	565	-	644
Information Technology	4,604	5,704	229	9	2,355
Investments	16,507	2,722	398	9	309
Mining & Metals	1,698	4,209	878	-	227
Public Works & Infrastructure	1,738	1,769	397	-	192
Real Estate & Related	61,178	12,372	1,374	-	728
Other Services	25,528	11,811	1,148	35	1,645
Telecommunication & Media	4,855	9,645	109	-	1,872
Transportation	5,390	6,557	2,141	-	1,844
Utilities	9,189	19,233	4,266	-	3,347
Other Sectors	1,677	382	2	8	19,904
Total Wholesale	**371,218**	**151,756**	**19,934**	**173,210**	**80,546**
Total Exposure[1]	**775,194**	**304,038**	**20,006**	**173,210**	**80,546**
By Geography[7]					
Canada	551,503	224,258	9,890	65,915	37,273
United States	149,514	58,344	8,694	55,391	17,387
Europe	41,860	18,600	1,258	40,529	21,644
Other International	32,317	2,836	164	11,375	4,242
Total Exposure[1,7]	**775,194**	**304,038**	**20,006**	**173,210**	**80,546**
By Maturity					
Unconditionally cancellable	374,524	150,188	57	-	-
Within 1 year	176,868	51,962	11,259	173,210	40,435
1 to 5 year	183,903	93,637	7,314	-	24,382
Over 5 years	39,899	8,251	1,376	-	15,729
Total Exposure[1]	**775,194**	**304,038**	**20,006**	**173,210**	**80,546**

[1] Excludes securitization, banking book equities and other assets not subject to standardized or IRB approach.

[2] EAD for Standardized exposures are reported net of Stage 3 allowances and EAD for IRB exposures are reported gross of all allowances for credit loss and partial write-off as per regulatory definitions.

[3] EAD for Undrawn credit commitments and other off-balance sheet amounts are reported after the application of credit conversion factors.

[4] Includes other off-balance sheet exposures such as letters of credit & guarantees.

[5] Counterparty credit risk EAD reflects exposure amount after netting. Collateral is included in EAD for repo-style transactions to the extent allowed by regulatory guidelines.

[6] Includes residential mortgages and home equity lines of credit.

[7] Geographic profile is based on the country of residence of the borrower.

CRB: Additional disclosure related to the credit quality of assets (continued)

As at July 31, 2019

(Millions of Canadian dollars)	a	b	c	d	e
	Credit Risk[1,2]			Counterparty Credit Risk[5]	
	On-balance sheet amount	Off-balance sheet amount[3]		Repo-style Transaction	Derivatives
		Undrawn	Other[4]		
Retail					
Residential secured[6]	310,116	64,094			
Qualifying revolving	26,307	71,488			
Other retail	59,175	15,290	72		
Total Retail	**395,598**	**150,872**	**72**		
Wholesale					
Agriculture	8,979	1,874	38	-	72
Automotive	10,541	6,605	362	-	998
Banking	43,334	1,938	600	47,177	16,742
Consumer Discretionary	15,558	8,691	557	-	461
Consumer Staples	5,078	7,162	360	-	1,100
Oil & Gas	7,678	11,057	1,386	-	1,682
Financial Services	27,610	20,892	2,670	118,117	18,431
Financing Products	320	860	504	119	599
Forest Products	1,472	681	116	-	33
Governments	101,038	7,499	1,431	3,920	6,888
Industrial Products	7,582	8,721	570	-	652
Information Technology	5,351	5,349	214	-	2,945
Investments	16,135	907	402	12	261
Mining & Metals	1,977	4,234	883	-	212
Public Works & Infrastructure	2,040	1,712	488	-	193
Real Estate & Related	59,676	11,807	1,342	-	695
Other Services	24,683	11,046	1,030	35	1,483
Telecommunication & Media	8,605	9,782	111	-	1,842
Transportation	5,845	6,549	2,102	-	1,667
Utilities	8,766	19,758	4,231	-	3,056
Other Sectors	1,794	453	1	14	19,384
Total Wholesale	**364,062**	**147,577**	**19,398**	**169,394**	**79,396**
Total Exposure[1]	**759,660**	**298,449**	**19,470**	**169,394**	**79,396**
By Geography[7]					
Canada	542,331	217,583	9,771	66,205	36,072
United States	140,146	59,667	8,099	54,374	17,211
Europe	45,605	18,232	1,439	43,443	21,938
Other International	31,578	2,967	161	5,372	4,175
Total Exposure[1,7]	**759,660**	**298,449**	**19,470**	**169,394**	**79,396**
By Maturity					
Unconditionally cancellable	367,163	148,847	63	-	-
Within 1 year	161,366	48,819	10,535	169,394	41,543
1 to 5 year	193,498	94,294	7,515	-	23,236
Over 5 years	37,633	6,489	1,357	-	14,617
Total Exposure[1]	**759,660**	**298,449**	**19,470**	**169,394**	**79,396**

[1] Excludes securitization, banking book equities and other assets not subject to standardized or IRB approach.

[2] EAD for Standardized exposures are reported net of Stage 3 allowances and EAD for IRB exposures are reported gross of all allowances for credit loss and partial write-off as per regulatory definitions.

[3] EAD for Undrawn credit commitments and other off-balance sheet amounts are reported after the application of credit conversion factors.

[4] Includes other off-balance sheet exposures such as letters of credit & guarantees.

[5] Counterparty credit risk EAD reflects exposure amount after netting. Collateral is included in EAD for repo-style transactions to the extent allowed by regulatory guidelines.

[6] Includes residential mortgages and home equity lines of credit.

[7] Geographic profile is based on the country of residence of the borrower.

CRB: Additional disclosure related to the credit quality of assets (continued)

(f) Amounts of impaired exposures (according to the definition used by the bank for accounting purposes) and related allowances and write-offs, broken down by geographical areas and industry

The following tables provide a breakdown of impaired exposures by geographical areas and industry.

As at October 31, 2019

Impaired exposures by geography[1] and portfolio (Millions of Canadian dollars)	Gross impaired exposures	Allowance[2]	Net impaired exposures
Canada			
Retail	788	187	601
Wholesale	678	172	506
Securities	-	-	-
Total - Canada	**1,466**	**359**	**1,107**
United States			
Retail	36	1	35
Wholesale	869	141	728
Securities	-	-	-
Total - United States	**905**	**142**	**763**
Other International			
Retail	272	156	116
Wholesale	333	175	158
Securities	150	(7)	157
Total - Other International	**755**	**324**	**431**
Total			
Retail	1,096	344	752
Wholesale	1,880	488	1,392
Securities	150	(7)	157
Total impaired exposures	**3,126**	**825**	**2,301**

[1] Geographic information is based on residence of borrower.

[2] Allowance reflects only Stage 3 IFRS 9 allowances and includes allowances on acquired credit-impaired loans and securities.

As at July 31, 2019

Impaired exposures by geography[1] and portfolio (Millions of Canadian dollars)	Gross impaired exposures	Allowance[2]	Net impaired exposures
Canada			
Retail	727	174	553
Wholesale	664	163	501
Securities	-	-	-
Total - Canada	**1,391**	**337**	**1,054**
United States			
Retail	31	2	29
Wholesale	929	137	792
Securities	-	-	-
Total - United States	**960**	**139**	**821**
Other International			
Retail	302	168	134
Wholesale	337	160	177
Securities	144	(6)	150
Total - Other International	**783**	**322**	**461**
Total			
Retail	1,060	344	716
Wholesale	1,930	460	1,470
Securities	144	(6)	150
Total impaired exposures	**3,134**	**798**	**2,336**

[1] Geographic information is based on residence of borrower.

[2] Allowance reflects only Stage 3 IFRS 9 allowances and includes allowances on acquired credit-impaired loans and securities.

CRB: Additional disclosure related to the credit quality of assets (continued)

Net write-offs by geography[1] and portfolio (Millions of Canadian dollars)	**For the three months ended October 31, 2019**	**For the three months ended July 31, 2019**
Canada		
Retail	277	253
Wholesale	52	78
Total Canada	**329**	**331**
United States[2]		
Retail	7	1
Wholesale	35	11
Total United States	**42**	**12**
Other International		
Retail	2	9
Wholesale[2]	5	-
Total Other International	**7**	**9**
Total		
Retail	286	263
Wholesale	92	89
Total net write-offs	**378**	**352**

[1] Geographic information is based on residence of borrower.

[2] Includes acquired credit-impaired loans related to the acquisition of City National.

CRB: Additional disclosure related to the credit quality of assets (continued)

As at October 31, 2019

Impaired exposures by portfolio and sector (Millions of Canadian dollars)	Gross impaired exposures	Allowance[1]	Net impaired exposures
Retail			
Residential mortgages	732	179	553
Personal	307	143	164
Small business	57	22	35
Total Retail	**1,096**	**344**	**752**
Wholesale			
Agriculture	37	6	31
Automotive	28	5	23
Banking	10	-	10
Consumer Discretionary	171	35	136
Consumer Staples	51	12	39
Oil and Gas	509	121	388
Financial Services	81	19	62
Financial Products	-	-	-
Forest Products	35	12	23
Governments	5	5	-
Industrial Products	92	88	4
Information Technology	16	9	7
Investments	7	3	4
Mining and Metals	1	1	-
Public Works and Infrastructure	12	12	-
Real Estate and Related	408	63	345
Other Services	134	48	86
Telecommunication and Media	12	11	1
Transportation	13	10	3
Utilities	211	6	205
Other	47	22	25
Total Wholesale	**1,880**	**488**	**1,392**
Total impaired loans and acceptances	**2,976**	**832**	**2,144**
Securities	150	(7)	157
Total impaired exposures	**3,126**	**825**	**2,301**

[1] Allowance reflects only Stage 3 IFRS 9 allowances and includes allowances on acquired credit-impaired loans and securities.

CRB: Additional disclosure related to the credit quality of assets (continued)

As at July 31, 2019

Impaired exposures by portfolio and sector (Millions of Canadian dollars)	Gross impaired exposures	Allowance[1]	Net impaired exposures
Retail			
Residential mortgages	709	195	514
Personal	300	129	171
Small business	51	20	31
Total Retail	**1,060**	**344**	**716**
Wholesale			
Agriculture	48	3	45
Automotive	34	6	28
Banking	11	-	11
Consumer Discretionary	113	14	99
Consumer Staples	47	6	41
Oil and Gas	468	120	348
Financial Services	80	20	60
Financial Products	-	-	-
Forest Products	31	9	22
Governments	12	6	6
Industrial Products	84	65	19
Information Technology	48	34	14
Investments	16	6	10
Mining and Metals	1	1	-
Public Works and Infrastructure	9	1	8
Real Estate and Related	396	62	334
Other Services	154	51	103
Telecommunication and Media	25	13	12
Transportation	12	8	4
Utilities	281	8	273
Other	60	27	33
Total Wholesale	**1,930**	**460**	**1,470**
Total impaired loans and acceptances	**2,990**	**804**	**2,186**
Securities	144	(6)	150
Total impaired exposures	**3,134**	**798**	**2,336**

[1] Allowance reflects only Stage 3 IFRS 9 allowances and includes allowances on acquired credit-impaired loans and securities.

CRB: Additional disclosure related to the credit quality of assets (continued)

(g) Ageing analysis of accounting past-due exposures

The following table provides the ageing of our retail and wholesale past due exposures.

As at October 31, 2019

(Millions of Canadian dollars)	1 to 29 days	30 to 89 days	90 days and greater	Total
Retail	3,173	1,369	186	4,728
Wholesale	1,543	460	3	2,006
Total	**4,716**	**1,829**	**189**	**6,734**

As at July 31, 2019

(Millions of Canadian dollars)	1 to 29 days	30 to 89 days	90 days and greater	Total
Retail	3,025	1,285	186	4,496
Wholesale	1,301	405	21	1,727
Total	**4,326**	**1,690**	**207**	**6,223**

(h) Breakdown of restructured exposures between impaired and not impaired exposures

Amounts are deemed not significant for disclosure.

CRC: Qualitative disclosure requirements related to credit risk mitigation techniques

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

	Pillar 3 disclosures requirement	RBC 2019 Annual Report section	Sub-section
a)	Core features of policies and processes for, and an indication of the extent to which the bank makes use of, on- and off-balance sheet netting	Credit risk	Credit risk assessment – *Counterparty credit risk*
		Consolidated Financial Statements	Note 8 - Derivative financial instruments and hedging activities – *Derivative-related credit risk*
			Note 31 - Offsetting financial assets and financial liabilities
b)	Core features of policies and processes for collateral evaluation and management	Credit risk	Credit risk mitigation - *Collateral*
c)	Information about market or credit risk concentrations under the credit risk mitigation instruments used	Credit risk	Credit risk mitigation
			Credit risk approval – *Credit risk limits*
		Consolidated Financial Statements	Note 8 - Derivative financial instruments and hedging activities

CR3: Credit risk mitigation techniques – overview

We utilize allowed regulatory credit mitigation techniques to reduce capital requirements associated with our balance sheet exposures. The following table presents a detailed breakdown of our unsecured and secured loan and debt securities exposures. Secured exposures are mitigated by way of additional collateral or guarantees being requested of the borrower. We sometimes also utilize credit derivatives to mitigate our on-balance sheet exposures.

As at October 31, 2019

		a	b	c	d	e	f	g
	(Millions of Canadian dollars)	Exposures unsecured: carrying amount	Exposures secured by collateral	Exposures secured by collateral, of which: secured amount[1]	Exposures secured by financial guarantees[2]	Exposures secured by financial guarantees, of which: secured amount[3]	Exposures secured by credit derivatives	Exposures secured by credit derivatives, of which: secured amount
1	Loans[4]	154,461	333,925	331,819	105,997	73,186	-	-
2	Debt securities	67,465	17,487	17,487	-	-	-	-
3	**Total**	**221,926**	**351,412**	**349,306**	**105,997**	**73,186**	**-**	**-**
4	Of which defaulted[5]	724	1,705	1,705	272	272	-	-

[1] Column c is a subset of column b.

[2] Credit mitigation allocation for multi-secured exposures is made by way of order of priority of available mitigation to be utilized: financial guarantees portion first followed by collateral for any remaining balance.

[3] Column e is a subset of column d.

[4] Securitized mortgages that do not qualify as securitized under IFRS or regulatory capital requirements are recognized as collateralized in column b and column c.

[5] Defaulted exposures are net of Stage 3 allowances.

As at April 30, 2019

		a	b	c	d	e	f	g
	(Millions of Canadian dollars)	Exposures unsecured: carrying amount	Exposures secured by collateral	Exposures secured by collateral, of which: secured amount[1]	Exposures secured by financial guarantees[2]	Exposures secured by financial guarantees, of which: secured amount[3]	Exposures secured by credit derivatives	Exposures secured by credit derivatives, of which: secured amount
1	Loans[4]	173,806	294,531	285,956	108,370	70,998	-	-
2	Debt securities	65,926	20,257	20,257	-	-	-	-
3	**Total**	**239,732**	**314,788**	**306,213**	**108,370**	**70,998**	**-**	**-**
4	Of which defaulted	1,041	1,592	1,592	253	253	-	-

[1] Column c is a subset of column b.

[2] Credit mitigation allocation for multi-secured exposures is made by way of order of priority of available mitigation to be utilized: financial guarantees portion first followed by collateral for any remaining balance.

[3] Column e is a subset of column d.

[4] Securitized mortgages that do not qualify as securitized under IFRS or regulatory capital requirements are recognized as collateralized in column b and column c.

CRD: Qualitative disclosures on banks' use of external credit ratings under the standardized approach for credit risk

As detailed in section CR4, certain of our portfolios' RWA amounts are calculated as per OSFI's CAR Guideline Standardized Approach requirements. OSFI's Standardized Approach methodology allows for the reliance on the external credit ratings of counterparties, issued by independent rating agencies, for the determination of RWA. Five external rating agencies ratings, namely, Standard & Poor's (S&P), Moody's Investors Service, Fitch Rating Services, DBRS and Kroll Bond Rating Agency, Inc. have been approved by OSFI. Currently, external ratings are used to determine the RWA amounts associated with our wholesale exposures under the asset classes of corporate, sovereign, public sector entities, multilateral development banks, banks and securities firms. As well, external ratings are used for determining the risk weighting for certain of our securitizations exposures.

External ratings utilized from the above-mentioned rating agencies are either an issuer rating or an issue-specific rating. We rely on an issue-specific rating if it is available for the purposes of determining RWA for the exposures we hold. We utilize the issuer rating only for our exposures which rank pari-passu with senior claims of the issuer.

Our supervisor, OSFI, specifies in its CAR guideline the required standard mapping of long term external ratings of the above rating agencies to an equivalent risk weight. We rely on OSFI's mapping to determine the appropriate risk buckets for our Standardized Approach portfolios under the guideline. OSFI's current mapping of external rating agencies rating is reflected in the table below:

	Long-term rating				
Standardized Risk Weight Category	**S&P**	**Moody's**	**Fitch**	**DBRS**	**Kroll**
Long Term					
(AAA to AA-)	AAA to AA-	Aaa to Aa3	AAA to AA-	AAA to AA (low)	AAA to AA-
(A+ to A-)	A+ to A-	A1 to A3	A+ to A-	A(high) to A(low)	A+ to A-
(BBB+ to BBB-)	BBB+ to BBB-	Baa1 to Baa3	BBB+ to BBB-	BBB(high) to BBB(low)	BBB+ to BBB-
(BB+ to BB-)	BB+ to BB-	Ba1 to Ba3	BB+ to BB-	BB(high) to BB(low)	BB+ to BB-
(B+ to B-)	B+ to B-	B1 to B3	B+ to B-	B(high) to B(low)	B+ to B-
(Below B-)	Below B-	Below B3	Below B-	CCC or lower	Below B-

We understand that OSFI annually reviews the list of acceptable rating agencies and will reflect any changes in allowed rating agencies in its annual update to the CAR guidelines.

CR4: Standardized approach – credit risk exposure and credit risk mitigation (CRM) effects

The following table provides the effect of CRM on the calculation of capital requirements under the standardized approach. It presents on-balance sheet and off-balance sheet exposures before and after credit conversion factors (CCF) and CRM as well as associated RWA and RWA density by asset classes. As noted in CRD, the external ratings of the counterparty is relied on to determine the prescribed regulatory risk weight to be assigned.

As at October 31, 2019

		a	b	c	d	e	f
	(Millions of Canadian dollars, except as otherwise noted)	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density	
	Asset Classes	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA density
1	Sovereigns and their central banks[1]	22,424	375	40,465	10	39	0.1%
2	Non-central government public sector entities	7,154	33	7,201	14	996	13.8%
3	Multilateral development banks	303	-	303	-	-	-
4	Banks	4,776	457	4,776	161	1,101	22.3%
5	Securities firms[1]	2,319	1,270	3,416	593	1,190	29.7%
6	Corporates[1]	45,513	26,495	39,637	6,510	45,341	98.0%
7	Regulatory retail portfolios	7,928	4,796	7,928	390	6,574	79.0%
8	Secured by residential property[1]	38,709	-	19,601	-	7,647	39.0%
9	Secured by commercial real estate	-	-	-	-	-	-
10	Equity	-	-	-	-	-	-
11	Past-due loans	405	1	405	-	570	140.7%
12	Higher-risk categories	233	301	233	148	572	150.0%
13	Other assets	14,298	-	14,298	-	15,457	108.1%
14	**Total**	**144,062**	**33,728**	**138,263**	**7,826**	**79,487**	**54.4%**

[1] When CRM is available in the form of an eligible guarantee, the portion that is covered by the guarantee will attract the risk weight of the protection provider and will be reflected in the protection provider's asset class in column c and d.

As at July 31, 2019

		a	b	c	d	e	f
	(Millions of Canadian dollars, except as otherwise noted)	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density	
	Asset Classes	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA density
1	Sovereigns and their central banks[1]	21,137	382	39,024	10	302	0.8%
2	Non-central government public sector entities	5,446	30	5,476	13	677	12.3%
3	Multilateral development banks	381	-	381	-	-	-
4	Banks	3,468	391	3,468	148	881	24.4%
5	Securities firms[1]	2,078	933	3,140	421	1,101	30.9%
6	Corporates[1]	49,887	30,770	44,073	7,198	49,776	97.0%
7	Regulatory retail portfolios	7,736	4,666	7,736	1,846	7,500	78.3%
8	Secured by residential property[1]	37,746	-	18,833	-	7,345	39.0%
9	Secured by commercial real estate	-	-	-	-	-	-
10	Equity	-	-	-	-	-	-
11	Past-due loans	468	1	467	1	647	138.2%
12	Higher-risk categories	161	346	161	172	500	150.0%
13	Other assets	12,018	-	12,018	-	12,970	107.9%
14	**Total**	**140,526**	**37,519**	**134,777**	**9,809**	**81,699**	**56.5%**

[1] When CRM is available in the form of an eligible guarantee, the portion that is covered by the guarantee will attract the risk weight of the protection provider and will be reflected in the protection provider's asset class in column c and d.

CR5: Standardized approach – exposures by asset classes and risk weights

The following table presents the breakdown of credit risk exposures under the standardized approach by asset classes and risk weight.

As at October 31, 2019

		a	b	c	d	e	f	g	h	i	j
	Asset Classes (Millions of Canadian dollars) / Risk weight	0%	10%	20%	35%	50%	75%	100%	150%	Others	Total credit exposures amount (post CCF and post-CRM)
1	Sovereigns and their central banks	40,399	-	1	-	73	-	2	-	-	40,475
2	Non-central government public sector entities	2,608	-	4,513	-	2	-	92	-	-	7,215
3	Multilateral development banks	303	-	-	-	-	-	-	-	-	303
4	Banks	-	-	4,788	-	11	-	138	-	-	4,937
5	Securities firms	-	-	2,980	-	869	-	160	-	-	4,009
6	Corporates	-	-	44	1,162	35	-	44,906	-	-	46,147
7	Regulatory retail portfolios	-	-	-	-	-	6,980	1,338	-	-	8,318
8	Secured by residential property	-	-	-	17,634	-	1,966	-	-	-	19,600
9	Secured by commercial real estate	-	-	-	-	-	-	-	-	-	-
10	Equity	-	-	-	-	-	-	-	-	-	-
11	Past-due loans	1	-	-	-	-	-	72	332	-	405
12	Higher-risk categories	-	-	-	-	-	-	-	381	-	381
13	Other assets	1,957	-	-	-	-	-	12,071	-	271	14,299
14	**Total**	**45,268**	**-**	**12,326**	**18,796**	**990**	**8,946**	**58,779**	**713**	**271**	**146,089**

As at July 31, 2019

		a	b	c	d	e	f	g	h	i	j
	Risk weight / Asset Classes (Millions of Canadian dollars)	0%	10%	20%	35%	50%	75%	100%	150%	Others	Total credit exposures amount (post CCF and post-CRM)
1	Sovereigns and their central banks	37,653	-	1,300	-	78	-	3	-	-	39,034
2	Non-central government public sector entities	2,486	-	2,905	-	4	-	94	-	-	5,489
3	Multilateral development banks	381	-	-	-	-	-	-	-	-	381
4	Banks	-	-	3,406	-	20	-	190	-	-	3,615
5	Securities firms	-	-	2,532	-	867	-	161	-	-	3,560
6	Corporates	-	-	856	1,207	46	-	49,165	-	-	51,274
7	Regulatory retail portfolios	-	-	-	-	-	8,326	1,256	-	-	9,582
8	Secured by residential property	-	-	-	16,949	-	1,884	-	-	-	18,833
9	Secured by commercial real estate	-	-	-	-	-	-	-	-	-	-
10	Equity	-	-	-	-	-	-	-	-	-	-
11	Past-due loans	-	-	-	-	-	-	108	359	-	467
12	Higher-risk categories	-	-	-	-	-	-	-	333	-	333
13	Other assets	2,055	-	-	-	-	-	9,702	-	261	12,018
14	**Total**	**42,575**	**-**	**10,999**	**18,156**	**1,015**	**10,210**	**60,679**	**692**	**261**	**144,586**

CRE: Qualitative disclosures related to internal risk-based (IRB) models

In measuring credit risk to determine regulatory capital, two principal approaches applied are: the Internal Ratings Based (IRB) approach and the Standardized approach. The majority of our credit risk exposures are reported under the IRB approach, as approved by OSFI. The remainder of our portfolios are reported under the Standardized approach. The Standardized approach uses risk weights prescribed by OSFI to calculate RWA for credit risk exposures.

Under the IRB approach, we determine our own estimates for Probability of Default (PD), Loss Given Default (LGD) and Exposure at Default (EAD). They are the key credit parameters that form the basis of our credit risk measures. Internal ratings for borrower facilities and their corresponding estimates are used for credit approval, risk management, internal capital allocations, and corporate governance functions. In addition, the IRB parameter estimates are critical inputs for enterprise and regulatory stress-testing.

In accordance with the IRB approach for credit risk, models are designed for wholesale and retail portfolios. For Wholesale portfolios, a PD is estimated for each internal borrower grade and LGD and EAD parameters are estimated for each credit facility. For Retail portfolios, borrowers are risk rated using internal credit scoring models. Credit scores are one of the key drivers for segmentation of the portfolios into pools. Retail PD, EAD and LGD parameters are estimated at the pool level. All IRB approach regulatory capital models for wholesale and retail credit risk are subject to approval by the Office of the Superintendent of Financial Institutions (OSFI).

Credit parameter estimates are based on our internal historical default and loan loss experience and are augmented by external data where appropriate. We employ a two-dimensional risk rating system for the majority of our credit portfolios. The first dimension is oriented to the risk of borrower default and quantified through the PD assigned to the borrower. The second dimension captures transaction-specific factors such as collateral, product type, and seniority, and is quantified by LGD and EAD estimates that apply at the credit facility level.

PD is an estimated percentage that represents the likelihood of default of an obligor within a given time period for a specific rating grade or for a particular pool of exposure. Each wholesale obligor is assigned a Borrower Risk Rating (BRR), reflecting an assessment of the credit quality of the obligor and each BRR has a PD calibrated against it. The assignment of BRRs is based on the evaluation of the obligor’s business risk and financial risk and is based on fundamental credit analysis, as well as data-driven modelling. PD estimates are designed to be a long-run average of our experience across the economic cycle with margins of conservatism related to the likely range of errors. The BRR differentiates the riskiness of obligors and represents our evaluation of the obligors’ ability and willingness to meet their contractual obligations on time over a three-year time horizon.

EAD is an amount expected to be owed by an obligor at the time of default. EAD is estimated based on the current exposure to the obligor and the possible future changes in that exposure driven by factors such as the nature of the credit commitment. Rates are estimated to reflect an economic downturn, with added conservatism to reflect data and statistical uncertainties identified in the modelling process.

LGD is an estimated percentage of EAD that is not expected to be recovered during the collection and recovery process. Each credit facility is assigned an LGD rate reflective of the extent of losses anticipated in the event the obligor defaults. Factors used in estimating LGD include seniority of debt, collateral security, and the industry sector in which the obligor operates. Estimated LGD rates draw primarily on internal loss experience and appropriate external data is used to supplement the estimation process when necessary. LGD rates are estimated to reflect conditions that might be expected to prevail in an economic downturn, with additional conservatism added to reflect data limitations and statistical uncertainties identified in the estimation process.

Estimates of PD, LGD and EAD are updated and then validated and back-tested by an independent validation team within the bank on an annual basis. In addition, quarterly monitoring and back-testing procedures are performed.

CRE: Qualitative disclosures related to internal risk-based (IRB) models (continued)

EAD Covered by the Various Approaches

The following table outlines the percentage of our EAD covered by the IRB and Standardized approaches for each of our portfolios. The Foundation Internal Ratings Based (FIRB) approach is currently not applied.

As at October 31, 2019

	EAD covered by the various approaches		
EAD (in %)	Standardized Approach[1]	IRB Approach	Other
Retail			
Residential secured	14%	86%	-
Qualifying revolving	-	100%	-
Other retail	5%	95%	-
Wholesale	-	-	-
Corporate	14%	86%	-
Sovereign	21%	79%	-
Bank	6%	94%	-
Equity	-	100%	-
Other assets not subject to Standardized or IRB Approaches	-	-	100%
Total	**11%**	**87%**	**2%**

[1] Standardized Approach includes assumptions and waivers granted by OSFI based on an OSFI approved rollout plan.

As at July 31, 2019

	EAD covered by the various approaches		
EAD (in %)	Standardized Approach[1]	IRB Approach	Other
Retail			
Residential secured	14%	86%	-
Qualifying revolving	-	100%	-
Other retail	5%	95%	-
Wholesale	-	-	-
Corporate	16%	84%	-
Sovereign	20%	80%	-
Bank	5%	95%	-
Equity	-	100%	-
Other assets not subject to Standardized or IRB Approaches	-	-	100%
Total	**12%**	**86%**	**2%**

[1] Standardized Approach includes assumptions and waivers granted by OSFI based on an OSFI approved rollout plan.

CRE: Qualitative disclosures related to internal risk-based (IRB) models (continued)

Parameters Governance

The techniques used to develop models are in accordance with banking industry standards and regulatory requirements. We calibrate our models to ensure that variations of default rates through an economic cycle are included in the underlying data. We also build conservatism into our model development process to reflect statistical uncertainties.

Our models have Model Development Owners (MDO) who are accountable for the development and performance of models within the framework set by our policies, standards and procedures. MDOs are responsible for collecting, defining and documenting model requirements, collecting and reviewing data, testing and evaluating, designing model performance monitoring, and documenting.

Our models are required to be independently reviewed and comprehensively evaluated by the Enterprise Model Risk Management (EMRM) team. EMRM is responsible for the review and challenge of the methodology underpinning the estimation of the parameters. EMRM issues a report at the end of each validation exercise that documents the scope, approach and findings of the review. The parameters reviewed by EMRM are presented to the Credit Models Governance Committee and approved by RBC's senior risk management committee.

Back-testing of Parameters and Model Performance

The IRB credit risk parameters are estimated, at a minimum, annually and more frequently if deemed necessary. In order to ensure that any material events are identified in a timely fashion, we engage in regular monitoring of realized results against established estimates. In cases where the actual results exceed predefined thresholds, a review of the results will be conducted and documented which may lead to a re-calibration of the parameters. Any recommended changes to the parameters would be approved by the Credit Models Governance Committee.

CR6: IRB – Credit risk exposures by portfolio and PD range

The following table provides the key parameters used for the calculation of capital requirements for credit risk exposures under the IRB approach, broken down by asset class and PD range.

As at October 31, 2019

			a	b	c	d	e	f	g	h	i	j	k	l
	(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF (%)	EAD post CRM and post-CCF	Average PD (%)	Number of obligors[2]	Average LGD (%)	Average maturity (in years)	RWA	RWA density (%)	EL	Provisions[3]
	Asset Classes													
1	**Sovereigns**													
		0.00 to < 0.15	95,883	30,656	53.52	165,067	0.02	1,476	19.60	1.27	8,486	5.0	9	
		0.15 to < 0.25	302	452	61.62	615	0.23	116	39.88	2.15	245	40.0	1	
		0.25 to < 0.50	181	143	52.61	254	0.37	134	33.39	1.87	112	44.0	-	
		0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
		0.75 to < 2.50	194	32	52.52	210	1.04	318	26.47	2.89	127	61.0	1	
		2.50 to < 10.00	4	18	40.93	12	3.06	19	34.64	2.73	13	108.0	-	
		10.00 to < 100.00	-	-	65.00	-	25.94	3	45.01	1.02	-	248.0	-	
		100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	
	Total Sovereigns		**96,564**	**31,301**	**53.62**	**166,158**	**0.03**	**2,066**	**19.71**	**1.27**	**8,983**	**5.0**	**11**	**-**
2	**Banks**													
		0.00 to < 0.15	24,064	2,847	45.13	32,542	0.06	192	32.89	2.01	6,041	19.0	6	
		0.15 to < 0.25	332	331	41.90	686	0.23	27	43.36	2.22	426	62.0	1	
		0.25 to < 0.50	119	171	53.63	246	0.72	37	44.76	2.06	179	73.0	-	
		0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
		0.75 to < 2.50	1,369	456	40.90	1,559	0.88	54	43.48	1.18	1,400	90.0	6	
		2.50 to < 10.00	77	103	33.90	112	4.94	20	44.21	2.12	189	169.0	2	
		10.00 to < 100.00	7	31	31.66	17	22.45	11	44.82	0.99	44	266.0	2	
		100.00 (default)	-	-	-	-	100.00	2	46.05	1.11	1	610.0	-	
	Total Banks		**25,968**	**3,939**	**44.34**	**35,162**	**0.13**	**343**	**33.69**	**1.98**	**8,280**	**24.0**	**17**	**-**
3	**Corporates**													
		0.00 to < 0.15	23,532	102,466	59.60	83,951	0.09	11,269	39.75	2.39	22,607	27.0	30	
		0.15 to < 0.25	11,383	32,514	58.77	29,119	0.23	5,677	41.06	2.67	14,039	48.0	27	
		0.25 to < 0.50	34,568	51,974	51.48	59,725	0.39	16,717	38.65	2.57	33,384	56.0	89	
		0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
		0.75 to < 2.50	69,912	57,322	43.37	89,589	1.20	33,575	33.92	2.52	64,320	72.0	363	
		2.50 to < 10.00	23,464	30,248	43.24	32,993	3.72	20,331	35.11	2.76	34,731	105.0	427	
		10.00 to < 100.00	1,065	509	44.35	1,187	19.72	1,215	35.70	1.96	2,036	172.0	86	
		100.00 (default)	1,748	1,084	21.23	1,945	100.00	1,101	36.26	2.36	5,813	299.0	433	
	Total Corporates		**165,671**	**276,118**	**52.78**	**298,510**	**1.63**	**89,885**	**37.36**	**2.53**	**176,930**	**59.0**	**1,454**	**599**
4	**Total Wholesale**		**288,203**	**311,358**	**52.76**	**499,830**	**0.99**	**92,294**	**31.23**	**2.07**	**194,193**	**39.0**	**1,482**	**599**

[1] Refer to “Internal ratings map” under the Credit Risk Assessment section in our 2019 Annual Report MD&A.
[2] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.
[3] Provisions reflect only IFRS 9 Stage 3 allowances under the IRB portfolio.

CR6: IRB – Credit risk exposures by portfolio and PD range (continued)

As at October 31, 2019

			a	b	c	d	e	f	g	h	i	j	k	l
	(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF (%)	EAD post CRM and post-CCF	Average PD (%)	Number of obligors[2]	Average LGD (%)	Average maturity (in years)	RWA	RWA density (%)	EL	Provisions[3]
	Asset Classes													
5	**Retail insured exposure secured by real estate[4]**													
		0.00 to < 0.15	35,672			30,722	0.09	196,428	10.09		694	2.0	3	
		0.15 to < 0.25	11,412			1,019	0.17	53,769	12.58		47	5.0	-	
		0.25 to < 0.50	14,265			426	0.38	63,493	14.32		41	10.0	-	
		0.50 to < 0.75	2,035			142	0.65	12,413	10.27		14	10.0	-	
		0.75 to < 2.50	8,886			351	1.08	39,672	10.51		47	13.0	-	
		2.50 to < 10.00	6,585			152	3.18	36,448	10.01		41	27.0	-	
		10.00 to < 100.00	1,061			-	66.87	4,648	10.18		-	32.0	-	
		100.00 (default)	267			-	-	1,572	-		-	-	-	
	Total Retail insured exposure secured by real estate		**80,182**			**32,812**	**0.12**	**408,443**	**10.23**		**884**	**3.0**	**4**	**-**
6	**Uninsured residential mortgages**													
		0.00 to < 0.15	95,256	336	100.00	95,592	0.06	362,664	18.32		2,928	3.0	10	
		0.15 to < 0.25	37,048	192	100.00	37,240	0.23	124,685	18.58		3,248	9.0	16	
		0.25 to < 0.50	3,065	258	100.00	3,323	0.45	8,033	19.53		501	15.0	3	
		0.50 to < 0.75	15,813	85	100.00	15,899	0.65	58,183	18.90		2,981	19.0	20	
		0.75 to < 2.50	29	153	100.00	182	1.11	729	19.63		48	26.0	-	
		2.50 to < 10.00	7,702	46	100.00	7,748	4.22	34,405	19.03		4,699	61.0	62	
		10.00 to < 100.00	1,105	-	-	1,105	39.70	4,290	18.26		975	88.0	81	
		100.00 (default)	228	-	-	228	100.00	2,682	18.75		120	53.0	37	
	Total Uninsured residential mortgages		**160,246**	**1,070**	**100.00**	**161,316**	**0.78**	**595,671**	**18.50**		**15,500**	**10.0**	**229**	**39**

[1] Refer to "Internal ratings map" under the Credit Risk Assessment section in our 2019 Annual Report MD&A.

[2] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.

[3] Provisions reflect only IFRS 9 Stage 3 allowances under the IRB portfolio.

[4] Retail insured exposures secured by real estate includes residential mortgages, qualifying revolving retail and other retail. Residential mortgages reflect 98% of this category. Exposures are insured with government and/or private insurance providers.

CR6: IRB – Credit risk exposures by portfolio and PD range (continued)

As at October 31, 2019

	(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	a Original on-balance sheet gross exposure	b Off-balance sheet exposures pre CCF	c Average CCF (%)	d EAD post CRM and post-CCF	e Average PD (%)	f Number of obligors[2]	g Average LGD (%)	h Average maturity (in years)	i RWA	j RWA density (%)	k EL	l Provisions[3]
	Asset Classes													
7	**HELOCs**													
		0.00 to < 0.15	24,312	78,457	72.73	81,377	0.05	621,574	21.02		2,471	3.0	8	
		0.15 to < 0.25	8,034	7,656	67.91	13,233	0.21	138,833	20.93		1,209	9.0	6	
		0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
		0.50 to < 0.75	3,789	1,842	65.77	5,001	0.73	61,645	21.64		1,161	23.0	8	
		0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
		2.50 to < 10.00	1,962	346	62.48	2,178	4.97	28,065	21.89		1,660	76.0	24	
		10.00 to < 100.00	367	94	66.12	429	43.34	3,473	20.60		431	100.0	39	
		100.00 (default)	115	1	-	115	100.00	887	23.03		78	68.0	26	
	Total HELOCs		**38,579**	**88,396**	**72.12**	**102,333**	**0.50**	**854,477**	**21.06**		**7,010**	**7.0**	**111**	**26**
8	**Qualifying revolving retail**													
		0.00 to < 0.15	9,867	54,527	95.03	61,683	0.08	6,836,772	89.90		2,753	4.0	41	
		0.15 to < 0.25	460	425	110.91	931	0.17	58,660	79.44		72	8.0	1	
		0.25 to < 0.50	2,072	6,718	102.77	8,976	0.35	3,827,092	89.89		1,433	16.0	28	
		0.50 to < 0.75	3,150	4,366	95.49	7,319	0.59	787,662	87.48		1,725	24.0	38	
		0.75 to < 2.50	6,965	8,254	96.34	14,917	1.49	3,523,077	90.39		7,287	49.0	200	
		2.50 to < 10.00	3,607	2,159	94.74	5,653	4.72	1,556,705	90.93		6,294	111.0	241	
		10.00 to < 100.00	647	200	85.97	819	38.30	583,765	89.94		2,098	256.0	285	
		100.00 (default)	66	2	-	66	100.00	39,043	85.66		172	261.0	43	
	Total Qualifying revolving retail		**26,834**	**76,652**	**95.93**	**100,364**	**0.99**	**17,212,776**	**89.76**		**21,832**	**22.0**	**877**	**43**
9	**Other retail**													
		0.00 to < 0.15	18,891	7,109	99.89	25,993	0.07	429,151	48.87		2,811	11.0	10	
		0.15 to < 0.25	10,763	1,507	98.67	12,250	0.20	350,922	55.33		2,781	23.0	13	
		0.25 to < 0.50	5,092	761	100.09	5,854	0.45	211,183	68.15		2,854	49.0	18	
		0.50 to < 0.75	2,701	864	117.02	3,712	0.63	152,135	53.84		1,677	45.0	12	
		0.75 to < 2.50	8,396	2,372	98.34	10,728	1.21	547,347	76.72		9,332	87.0	97	
		2.50 to < 10.00	4,933	962	92.22	5,820	4.01	380,351	73.98		6,555	113.0	172	
		10.00 to < 100.00	516	30	92.06	544	42.56	26,842	66.82		919	169.0	162	
		100.00 (default)	90	3	-	90	100.00	3,408	67.75		171	191.0	49	
	Total Other retail		**51,382**	**13,608**	**100.00**	**64,991**	**1.19**	**2,101,339**	**59.13**		**27,099**	**42.0**	**533**	**49**
10	**Total retail**		**357,223**	**179,726**	**84.55**	**461,816**	**0.77**	**21,172,706**	**39.68**	**-**	**72,325**	**16.0**	**1,754**	**157**
	Total		**645,426**	**491,084**	**64.39**	**961,646**	**0.88**	**21,265,000**	**35.29**	**2.07**	**266,518**	**28.0**	**3,236**	**756**

[1] Refer to "Internal ratings map" under the Credit Risk Assessment section in our 2019 Annual Report MD&A.

[2] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.

[3] Provisions reflect only IFRS 9 Stage 3 allowances under the IRB portfolio.

CR6: IRB – Credit risk exposures by portfolio and PD range (continued)

As at July 31, 2019

			a	b	c	d	e	f	g	h	i	j	k	l
	(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF (%)	EAD post CRM and post-CCF	Average PD (%)	Number of obligors[2]	Average LGD (%)	Average maturity (in years)	RWA	RWA density (%)	EL	Provisions[3]
	Asset Classes													
1	**Sovereigns**													
		0.00 to < 0.15	91,059	28,852	54.70	159,488	0.03	1,493	19.85	1.31	8,698	5.0	9	
		0.15 to < 0.25	102	563	57.09	450	0.23	104	40.62	2.33	194	43.0	-	
		0.25 to < 0.50	301	179	50.05	382	0.34	138	39.01	1.64	173	45.0	-	
		0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
		0.75 to < 2.50	192	36	36.86	205	1.05	310	26.51	2.89	125	61.0	1	
		2.50 to < 10.00	6	19	40.77	11	2.76	17	36.79	2.80	12	112.0	-	
		10.00 to < 100.00	-	-	65.00	-	25.94	2	45.02	1.03	-	248.0	-	
		100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	
	Total Sovereigns		**91,660**	**29,649**	**54.69**	**160,536**	**0.03**	**2,064**	**19.96**	**1.32**	**9,202**	**6.0**	**10**	**-**
2	**Banks**													
		0.00 to < 0.15	23,602	2,854	44.11	31,717	0.05	204	30.99	2.13	5,545	17.0	5	
		0.15 to < 0.25	484	462	41.01	882	0.23	30	38.98	1.96	471	53.0	1	
		0.25 to < 0.50	113	246	49.19	276	0.62	43	44.47	2.03	196	71.0	1	
		0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
		0.75 to < 2.50	313	516	40.12	523	1.01	51	40.20	1.18	418	80.0	2	
		2.50 to < 10.00	43	80	35.14	71	4.72	15	44.01	2.67	121	171.0	1	
		10.00 to < 100.00	4	33	32.24	14	21.47	12	44.68	0.99	38	263.0	1	
		100.00 (default)	5	-	-	5	100.00	2	60.00	1.30	-	2.0	4	
	Total Banks		**24,564**	**4,191**	**43.31**	**33,488**	**0.11**	**357**	**31.49**	**2.11**	**6,789**	**20.0**	**15**	**4**
3	**Corporates**													
		0.00 to < 0.15	25,326	100,008	58.91	83,547	0.09	10,212	40.54	2.43	22,938	27.0	30	
		0.15 to < 0.25	10,767	31,407	58.42	27,889	0.23	5,103	42.05	2.83	14,099	51.0	26	
		0.25 to < 0.50	34,195	51,304	52.13	59,067	0.39	15,933	38.56	2.66	33,467	57.0	88	
		0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
		0.75 to < 2.50	70,020	57,940	43.39	90,251	1.20	33,350	34.32	2.57	65,825	73.0	369	
		2.50 to < 10.00	21,835	25,263	43.99	29,760	3.69	19,499	34.83	2.67	30,153	101.0	381	
		10.00 to < 100.00	1,088	513	48.09	1,222	20.19	1,228	34.78	1.92	2,046	167.0	87	
		100.00 (default)	1,751	601	17.08	1,820	100.00	1,091	37.64	2.03	5,446	299.0	425	
	Total Corporates		**164,982**	**267,036**	**52.80**	**293,557**	**1.57**	**86,416**	**37.75**	**2.58**	**173,974**	**59.0**	**1,406**	**569**
4	**Total Wholesale**		**281,206**	**300,876**	**52.85**	**487,581**	**0.96**	**88,837**	**31.46**	**2.13**	**189,965**	**39.0**	**1,431**	**573**

[1] Refer to “Internal ratings map” under the Credit Risk Assessment section in our 2018 Annual Report MD&A.
[2] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.
[3] Provisions reflect only IFRS 9 Stage 3 allowances under the IRB portfolio.

CR6: IRB – Credit risk exposures by portfolio and PD range (continued)

As at July 31, 2019

			a	b	c	d	e	f	g	h	i	j	k	l
	(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF (%)	EAD post CRM and post-CCF	Average PD (%)	Number of obligors[2]	Average LGD (%)	Average maturity (in years)	RWA	RWA density (%)	EL	Provisions[3]
	Asset Classes													
5	**Retail insured exposure secured by real estate[4]**													
		0.00 to < 0.15	36,542			32,306	0.09	104,449	10.09		729	2.0	3	
		0.15 to < 0.25	11,685			1,031	0.17	56,107	12.09		46	4.0	-	
		0.25 to < 0.50	14,304			417	0.38	17,087	13.65		39	9.0	-	
		0.50 to < 0.75	2,238			156	0.65	6,641	10.26		16	10.0	-	
		0.75 to < 2.50	8,944			358	1.08	67,359	10.27		46	13.0	-	
		2.50 to < 10.00	6,736			165	3.18	26,899	10.01		45	27.0	1	
		10.00 to < 100.00	1,096			-	68.42	21,766	10.00		-	32.0	-	
		100.00 (default)	251			-	-	3,759	-		-	-	-	
	Total Retail insured exposure secured by real estate		**81,796**			**34,434**	**0.12**	**304,067**	**10.19**		**921**	**3.0**	**4**	**-**
6	**Uninsured residential mortgages**													
		0.00 to < 0.15	89,997	438	100.00	90,435	0.06	485,629	18.42		2,786	3.0	10	
		0.15 to < 0.25	35,937	237	100.00	36,174	0.23	124,335	18.75		3,183	9.0	15	
		0.25 to < 0.50	2,656	300	100.00	2,956	0.45	55,383	19.57		445	15.0	3	
		0.50 to < 0.75	15,575	77	100.00	15,653	0.65	65,830	19.10		2,966	19.0	19	
		0.75 to < 2.50	31	197	100.00	228	1.12	267	17.13		53	23.0	-	
		2.50 to < 10.00	7,552	69	100.00	7,621	4.21	63,384	19.01		4,621	61.0	61	
		10.00 to < 100.00	1,064	-	-	1,064	41.74	7,326	18.17		918	86.0	82	
		100.00 (default)	210	-	-	210	100.00	1,041	19.22		121	57.0	34	
	Total Uninsured residential mortgages		**153,022**	**1,319**	**100.00**	**154,340**	**0.80**	**803,195**	**18.61**		**15,094**	**10.0**	**224**	**36**

[1] Refer to "Internal ratings map" under the Credit Risk Assessment section in our 2018 Annual Report MD&A.
[2] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.
[3] Provisions reflect only IFRS 9 Stage 3 allowances under the IRB portfolio.
[4] Retail insured exposures secured by real estate includes residential mortgages, qualifying revolving retail and other retail. Residential mortgages reflect 98% of this category. Exposures are insured with government and/or private insurance providers.

CR6: IRB – Credit risk exposures by portfolio and PD range (continued)

As at July 31, 2019

			a	b	c	d	e	f	g	h	i	j	k	l
	(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF (%)	EAD post CRM and post-CCF	Average PD (%)	Number of obligors[2]	Average LGD (%)	Average maturity (in years)	RWA	RWA density (%)	EL	Provisions[3]
	Asset Classes													
7	**HELOCs**													
		0.00 to < 0.15	24,322	76,940	72.66	80,224	0.05	612,757	21.08		2,443	3.0	8	
		0.15 to < 0.25	8,451	7,889	67.73	13,794	0.21	142,552	21.04		1,266	9.0	6	
		0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
		0.50 to < 0.75	3,948	1,909	65.63	5,200	0.73	63,132	21.73		1,212	23.0	8	
		0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
		2.50 to < 10.00	2,024	342	62.04	2,236	4.97	28,710	21.86		1,701	76.0	24	
		10.00 to < 100.00	355	98	66.54	420	44.50	3,468	21.41		432	103.0	41	
		100.00 (default)	114	1	-	114	100.00	913	22.99		78	68.0	26	
	Total HELOCs		**39,214**	**87,179**	**72.01**	**101,988**	**0.51**	**851,532**	**21.13**		**7,132**	**7.0**	**113**	**26**
8	**Qualifying revolving retail**													
		0.00 to < 0.15	9,530	52,742	94.98	59,622	0.08	6,704,656	89.83		2,666	4.0	40	
		0.15 to < 0.25	465	410	110.62	918	0.17	57,588	79.13		70	8.0	1	
		0.25 to < 0.50	2,038	6,567	102.76	8,786	0.35	3,785,811	89.80		1,401	16.0	28	
		0.50 to < 0.75	3,114	4,353	95.47	7,270	0.59	790,904	87.43		1,712	24.0	37	
		0.75 to < 2.50	6,899	8,172	96.28	14,767	1.49	3,518,031	90.29		7,213	49.0	198	
		2.50 to < 10.00	3,583	2,107	94.89	5,582	4.73	1,564,107	90.81		6,214	111.0	238	
		10.00 to < 100.00	616	197	86.49	786	38.51	585,025	89.30		2,002	255.0	273	
		100.00 (default)	63	2	-	63	100.00	38,339	85.69		174	275.0	41	
	Total Qualifying revolving retail		**26,307**	**74,551**	**95.89**	**97,795**	**0.99**	**17,044,461**	**89.67**		**21,453**	**22.0**	**856**	**41**
9	**Other retail**													
		0.00 to < 0.15	17,958	7,202	99.62	25,132	0.07	421,194	49.92		2,791	11.0	10	
		0.15 to < 0.25	10,411	1,506	98.22	11,891	0.20	348,778	55.29		2,698	23.0	12	
		0.25 to < 0.50	5,058	766	100.08	5,824	0.45	212,329	67.69		2,816	48.0	18	
		0.50 to < 0.75	2,547	816	117.03	3,502	0.63	152,105	53.78		1,580	45.0	11	
		0.75 to < 2.50	8,186	2,283	98.08	10,425	1.20	542,178	76.70		9,059	87.0	94	
		2.50 to < 10.00	4,862	951	92.02	5,738	4.00	372,202	73.73		6,438	112.0	168	
		10.00 to < 100.00	498	28	94.10	525	43.05	25,692	67.81		898	171.0	159	
		100.00 (default)	86	3	-	86	100.00	3,252	64.93		155	181.0	45	
	Total Other retail		**49,607**	**13,555**	**99.71**	**63,123**	**1.20**	**2,077,730**	**59.54**		**26,436**	**42.0**	**518**	**45**
10	**Total retail**		**349,946**	**176,604**	**84.43**	**451,680**	**0.78**	**21,080,985**	**39.64**	**-**	**71,036**	**16.0**	**1,715**	**148**
	Total		**631,152**	**477,480**	**64.53**	**939,261**	**0.87**	**21,169,822**	**35.39**	**2.13**	**261,001**	**28.0**	**3,146**	**721**

[1] Refer to “Internal ratings map” under the Credit Risk Assessment section in our 2018 Annual Report MD&A.

[2] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.

[3] Provisions reflect only IFRS 9 Stage 3 allowances under the IRB portfolio.

CR7: IRB – Effect on RWA of credit derivatives used as CRM techniques

The following table provides the effect of credit derivatives used as mitigation techniques in determining RWA amounts.

As at October 31, 2019

		a	b
	(Millions of Canadian dollars)	Pre-credit derivatives RWA	Actual RWA
2	Sovereign - AIRB	-	-
4	Banks - AIRB	-	-
6	Corporate - AIRB	-	-
8	Specialised lending - AIRB	-	-
9	Retail - qualifying revolving (QRRE)	-	-
10	Retail - residential mortgage exposures	-	-
11	Retail - SME	-	-
12	Other retail exposures	-	-
14	Equity - AIRB	-	-
16	Purchased receivables - AIRB	-	-
17	**Total**	**-**	**-**

As at July 31, 2019

		a	b
	(Millions of Canadian dollars)	Pre-credit derivatives RWA	Actual RWA
2	Sovereign - AIRB	-	-
4	Banks - AIRB	-	-
6	Corporate - AIRB	-	-
8	Specialised lending - AIRB	-	-
9	Retail - qualifying revolving (QRRE)	-	-
10	Retail - residential mortgage exposures	-	-
11	Retail - SME	-	-
12	Other retail exposures	-	-
14	Equity - AIRB	-	-
16	Purchased receivables - AIRB	-	-
17	**Total**	**-**	**-**

CR8: RWA flow statements of credit risk exposures

The following table presents the changes in Standardized and IRB RWA amounts over the reporting period for the key drivers of credit risk.

		RWA amounts[1]	
	(Millions of Canadian dollars)	As at October 31, 2019	As at July 31, 2019
1	**RWA as at end of previous reporting period**	**371,568**	**368,072**
2	Asset size[2]	6,314	6,117
3	Asset quality[3]	170	585
4	Model updates[4]	(2,962)	-
5	Methodology and policy[5]	-	-
6	Acquisitions and disposals	-	-
7	Foreign exchange movements	108	(3,581)
8	Other	(334)	375
9	**RWA as at end of reporting period**	**374,864**	**371,568**

[1] RWA flow amounts include both IRB and Standardized Approach figures reflecting our approved roll-out plan for transition to IRB.

[2] Organic changes in portfolio size and composition (including new business and maturing loans).

[3] Quality of book changes caused by experience such as underlying customer behaviour or demographics and credit mitigation.

[4] Updates to the model to reflect recent experience, model implementation, change in model scope or any change to address model malfunctions including changes through model calibrations/realignments.

[5] Methodology changes to the calculations driven by regulatory policy changes.

CR9: IRB – Backtesting of probability of default (PD) per portfolio

The following table presents a comparison of the PD used in our IRB models with the effective default rates of the bank's obligors in order to validate the reliability of our PD calculations.

As at October 31, 2019

	a	b	c					d	e	f		g	h	i
	(Millions of Canadian dollars, except as otherwise noted)		External rating equivalent							Number of obligors[3]				
	Asset Classes	PD Range[1]	S&P	Moody's	Fitch	DBRS	Kroll	Weighted average PD[2]	Arithmetic average PD by obligors[2]	End of previous year[7]	End of the year	Defaulted obligors in the year[4,6]	of which: new defaulted obligors in the year[5,6]	Average historical annual default rate
1	**Sovereigns**													
		0.00 to < 0.15	AAA to A-	Aaa to A3	AAA to A-	AAA to AL	AAA to A-	0.02	0.08	1,859	1,476	-	-	-
		0.15 to < 0.25	BBB+ to BBB	Baa1 to Baa2	BBB+ to BBB	BBBH to BBB	BBB+ to BBB	0.23	0.23	101	116	-	-	-
		0.25 to < 0.50	BBB- to BB+	Baa3 to Ba1	BBB- to BB+	BBBL to BBH	BBB- to BB+	0.37	0.38	81	134	-	-	-
		0.50 to < 0.75	BB	Ba2	BB	BB	BB	-	-	-	-	-	-	-
		0.75 to < 2.50	BB- to B+	Ba3 to B1	BB- to B+	BBL to BH	BB- to B+	1.04	1.06	55	318	-	-	-
		2.50 to < 10.00	B to CCC+	B2 to Caa1	B to CCC+	BL to CCCH	B to CCC+	3.06	4.66	75	19	-	-	-
		10.00 to < 100.00	CCC to CC	Caa2 to Ca	CCC or CC	CCC or CC	CCC or CC	25.94	25.94	2	3	-	-	5.00%
		100.00 (default)	C or lower	C or lower	C or lower	C or lower	C or lower	-	100.00	3	-	-	-	-
	Total Sovereigns							**0.03**	**0.44**	**2,176**	**2,066**	**-**	**-**	
2	**Banks**													
		0.00 to < 0.15	AAA to A-	Aaa to A3	AAA to A-	AAA to AL	AAA to A-	0.06	0.09	238	192	-	-	-
		0.15 to < 0.25	BBB+ to BBB	Baa1 to Baa2	BBB+ to BBB	BBBH to BBB	BBB+ to BBB	0.23	0.23	44	27		-	-
		0.25 to < 0.50	BBB- to BB+	Baa3 to Ba1	BBB- to BB+	BBBL to BBH	BBB- to BB+	0.72	0.37	70	37	-	-	-
		0.50 to < 0.75	BB	Ba2	BB	BB	BB	-	-	-	-	-	-	-
		0.75 to < 2.50	BB- to B+	Ba3 to B1	BB- to B+	BBL to BH	BB- to B+	0.88	1.13	101	54	-	-	-
		2.50 to < 10.00	B to CCC+	B2 to Caa1	B to CCC+	BL to CCCH	B to CCC+	4.94	4.54	15	20	-	-	-
		10.00 to < 100.00	CCC to CC	Caa2 to Ca	CCC or CC	CCC or CC	CCC or CC	22.45	21.37	13	11	-	-	-
		100.00 (default)	C or lower	C or lower	C or lower	C or lower	C or lower	100.00	100.00	1	2	-	-	-
	Total Banks							**0.13**	**1.68**	**482**	**343**	**-**	**-**	

[1] Refer to "Internal ratings map" under the Credit Risk Assessment section in our 2019 Annual Report MD&A.

[2] Weighted average PD means PD (after CRM) weighted by EAD as at October 31, 2019. Arithmetic average PD is the sum of all the PDs (after CRM) over the number of accounts as at October 31, 2019.

[3] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.

[4] Number of defaulted obligors in the year includes i) existing obligors not in default at the beginning of the year who went into default during the year; and ii) new obligors in the year who went into default.

[5] Number of new defaulted obligors in the year reflects the amount in column g that relates to new obligors in the year who went into default.

[6] Defaulted obligors reflects obligors who were in default after 90 days that have either returned to performing status or were written-off. For example, unadvised overdraft facilities have been included that returned to performing status.

[7] Number of obligors by PD range for the prior year has been updated to align with current period PD methodology updates.

[8] Retail insured exposures secured by real estate includes residential mortgages, qualifying revolving retail and other retail. Residential mortgages reflect 98% of this category. Exposures are insured with government and/or private insurance providers.

CR9: IRB – Backtesting of probability of default (PD) per portfolio (continued)

As at October 31, 2019

	a	b	c					d	e	f		g	h	i
	(Millions of Canadian dollars, except as otherwise noted)		External rating equivalent							Number of obligors[3]				
	Asset Classes	PD Range[1]	S&P	Moody's	Fitch	DBRS	Kroll	Weighted average PD[2]	Arithmetic average PD by obligors[2]	End of previous year[7]	End of the year	Defaulted obligors in the year[4,6]	of which: new defaulted obligors in the year[5,6]	Average historical annual default rate
3	**Corporates**													
		0.00 to < 0.15	AAA to A-	Aaa to A3	AAA to A-	AAA to AL	AAA to A-	0.09	0.10	9,097	11,269	5	1	0.02%
		0.15 to < 0.25	BBB+ to BBB	Baa1 to Baa2	BBB+ to BBB	BBBH to BBB	BBB+ to BBB	0.23	0.23	4,647	5,677	3	-	0.04%
		0.25 to < 0.50	BBB- to BB+	Baa3 to Ba1	BBB- to BB+	BBBL to BBH	BBB- to BB+	0.39	0.40	14,979	16,717	16	-	0.07%
		0.50 to < 0.75	BB	Ba2	BB	BB	BB	-	-	-	-	-	-	0.10%
		0.75 to < 2.50	BB- to B+	Ba3 to B1	BB- to B+	BBL to BH	BB- to B+	1.20	1.25	30,554	33,575	92	7	0.32%
		2.50 to < 10.00	B to CCC+	B2 to Caa1	B to CCC+	BL to CCCH	B to CCC+	3.72	4.17	27,533	20,331	334	26	0.98%
		10.00 to < 100.00	CCC to CC	Caa2 to Ca	CCC or CC	CCC or CC	CCC or CC	19.72	20.29	1,514	1,215	181	33	8.51%
		100.00 (default)	C or lower	C or lower	C or lower	C or lower	C or lower	100.00	100.00	1,163	1,101	-	-	-
	Total Corporates							**1.63**	**3.09**	**89,487**	**89,885**	**631**	**67**	
4	**Total Wholesale**									**92,145**	**92,294**	**631**	**67**	
5	**Retail residential mortgages excl. HELOCs[8]**													
		0.00 to < 0.15						0.06	0.07	519,908	559,092	102	4	0.02%
		0.15 to < 0.25						0.23	0.21	179,443	178,454	116	1	0.01%
		0.25 to < 0.50						0.45	0.37	72,663	71,526	92	1	0.06%
		0.50 to < 0.75						0.65	0.65	73,936	70,596	150	4	0.16%
		0.75 to < 2.50						1.11	0.85	42,860	40,401	137	3	0.34%
		2.50 to < 10.00						4.22	3.75	76,017	70,853	865	18	0.79%
		10.00 to < 100.00						39.70	43.07	9,075	8,938	1,601	3	10.30%
		100.00 (default)						100.00	100.00	2,672	4,254	-	-	
	Total Retail residential mortgages excl. HELOCs[8]							**0.78**	**1.10**	**976,574**	**1,004,114**	**3,063**	**34**	

[1] Refer to "Internal ratings map" under the Credit Risk Assessment section in our 2019 Annual Report MD&A.

[2] Weighted average PD means PD (after CRM) weighted by EAD as at October 31, 2019. Arithmetic average PD is the sum of all the PDs (after CRM) over the number of accounts as at October 31, 2019.

[3] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.

[4] Number of defaulted obligors in the year includes i) existing obligors not in default at the beginning of the year who went into default during the year; and ii) new obligors in the year who went into default.

[5] Number of new defaulted obligors in the year reflects the amount in column g that relates to new obligors in the year who went into default.

[6] Defaulted obligors reflects obligors who were in default after 90 days that have either returned to performing status or were written-off. For example, unadvised overdraft facilities have been included that returned to performing status.

[7] Number of obligors by PD range for the prior year has been updated to align with current period PD methodology updates.

[8] Retail insured exposures secured by real estate includes residential mortgages, qualifying revolving retail and other retail. Residential mortgages reflect 98% of this category. Exposures are insured with government and/or private insurance providers.

CR9: IRB – Backtesting of probability of default (PD) per portfolio (continued)

As at October 31, 2019

	a	b	c					d	e	f		g	h	i
	(Millions of Canadian dollars, except as otherwise noted)		External rating equivalent							Number of obligors[3]				
	Asset Classes	PD Range[1]	S&P	Moody's	Fitch	DBRS	Kroll	Weighted average PD[2]	Arithmetic average PD by obligors[2]	End of previous year[7]	End of the year	Defaulted obligors in the year[4,6]	of which: new defaulted obligors in the year[5,6]	Average historical annual default rate
6	**HELOCs**													
		0.00 to < 0.15						0.05	0.05	586,545	621,574	52	-	0.01%
		0.15 to < 0.25						0.21	0.21	153,554	138,833	75	-	0.01%
		0.25 to < 0.50						-	-	-	-	-	-	-
		0.50 to < 0.75						0.73	0.73	67,949	61,645	120	1	0.07%
		0.75 to < 2.50						-	-	-	-	-	-	0.18%
		2.50 to < 10.00						4.97	4.97	31,099	28,065	346	2	0.79%
		10.00 to < 100.00						43.34	45.29	3,764	3,473	515	-	9.77%
		100.00 (default)						100.00	100.00	925	887	-	-	
	Total HELOCs							**0.50**	**0.59**	**843,836**	**854,477**	**1,108**	**3**	
7	**Qualifying revolving retail[6]**													
		0.00 to < 0.15						0.08	0.07	6,345,031	6,836,772	789	50	-
		0.15 to < 0.25						0.17	0.16	57,029	58,660	10	1	0.02%
		0.25 to < 0.50						0.35	0.30	3,371,429	3,827,092	1,580	227	0.02%
		0.50 to < 0.75						0.59	0.58	784,376	787,662	1,083	47	0.05%
		0.75 to < 2.50						1.49	1.54	3,590,109	3,523,077	14,662	1,735	0.25%
		2.50 to < 10.00						4.72	4.84	1,686,755	1,556,705	21,482	4,335	1.11%
		10.00 to < 100.00						38.30	39.38	551,565	583,765	172,369	71,010	14.88%
		100.00 (default)						100.00	100.00	45,703	39,043	-	-	
	Total Qualifying revolving retail							**0.99**	**2.41**	**16,431,997**	**17,212,776**	**211,975**	**77,405**	
8	**Other retail**													
		0.00 to < 0.15						0.07	0.09	481,274	429,151	6	-	0.02%
		0.15 to < 0.25						0.20	0.19	338,863	350,922	199	27	0.03%
		0.25 to < 0.50						0.45	0.46	217,618	211,183	406	18	0.08%
		0.50 to < 0.75						0.63	0.59	136,800	152,135	40	6	0.05%
		0.75 to < 2.50						1.21	1.26	518,091	547,347	2,433	447	0.27%
		2.50 to < 10.00						4.01	4.08	331,274	380,351	3,814	346	0.84%
		10.00 to < 100.00						42.56	40.52	23,829	26,842	7,391	1,181	7.32%
		100.00 (default)						100.00	100.00	3,086	3,408	-	-	
	Total Other retail							**1.19**	**1.90**	**2,050,835**	**2,101,339**	**14,289**	**2,025**	
9	**Total retail**									**20,303,242**	**21,172,706**	**230,435**	**79,467**	
	Total									**20,395,387**	**21,265,000**	**231,066**	**79,534**	

[1] Refer to "Internal ratings map" under the Credit Risk Assessment section in our 2019 Annual Report MD&A.

[2] Weighted average PD means PD (after CRM) weighted by EAD as at October 31, 2019. Arithmetic average PD is the sum of all the PDs (after CRM) over the number of accounts as at October 31, 2019.

[3] Number of obligors is defined as the number of borrowers in each PD band. For Retail exposures, a borrower can appear in multiple PD bands if the borrower has more than one type of product with the bank. Wholesale obligors are reflected as unique borrowers. For example, sovereign obligors include central banks or agencies, public sector entities and multilateral development banks which are each reflected as unique borrowers in the sovereign asset class.

[4] Number of defaulted obligors in the year includes i) existing obligors not in default at the beginning of the year who went into default during the year; and ii) new obligors in the year who went into default.

[5] Number of new defaulted obligors in the year reflects the amount in column g that relates to new obligors in the year who went into default.

[6] Defaulted obligors reflects obligors who were in default after 90 days that have either returned to performing status or were written-off. For example, unadvised overdraft facilities have been included that returned to performing status.

[7] Number of obligors by PD range for the prior year has been updated to align with current period PD methodology updates.

COUNTERPARTY CREDIT RISK

CCRA: Qualitative disclosure related to counterparty credit risk

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

<table>
<tr><th colspan="2">Pillar 3 disclosures requirement</th><th>RBC 2019 Annual Report section</th><th>Sub-section</th></tr>
<tr><td rowspan="2">a)</td><td rowspan="2">Risk management objectives and policies related to counterparty credit risk</td><td>Credit Risk</td><td>Credit risk assessment – Counterparty credit risk</td></tr>
<tr><td>Consolidated Financial Statements</td><td>Note 8 - Derivative financial instruments and hedging activities – Derivative-related credit risk</td></tr>
<tr><td>b)</td><td>The method used to assign the operating limits defined in terms of internal capital for counterparty credit exposures and for CCP exposures</td><td>Credit Risk</td><td>Credit risk assessment – Counterparty credit risk</td></tr>
<tr><td rowspan="3">c)</td><td rowspan="3">Policies relating to guarantees and other risk mitigants and assessments concerning counterparty credit risk, including exposures towards CCPs</td><td>Credit Risk</td><td>Credit risk assessment – Counterparty credit risk</td></tr>
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</table>

CCR1: Analysis of counterparty credit risk (CCR) exposure by approach

The following table provides a comprehensive view of the methods used to calculate counterparty credit risk exposures and the main parameters used within each method, if applicable. Refer to CCR 8 for our central counterparty clearing house exposures. Figures below reflect both house and client trades.

As at October 31, 2019

		a	b	c	d	e	f
	(Millions of Canadian dollars, except as otherwise noted)	Replacement Cost	Potential future exposure	EEPE	Alpha used for computing regulatory EAD	EAD post-CRM[1]	RWA[2]
1	SA-CCR (for derivatives)[1,2]	14,078	27,960		1.4	58,680	20,878
1a	Current Exposure Method (CEM - for derivatives)						
2	Internal Model Method (for derivatives and SFTs)						
3	Simple Approach for credit risk mitigation (for SFTs)						
4	Comprehensive Approach for credit risk mitigation (for SFTs)					167,116	10,961
5	VaR for SFTs						
6	**Total**						**31,839**

[1] Effective Q1 2019, OSFI adopted the BCBS Standardized approach for measuring counterparty credit risk. EAD post CRM is calculated as 1.4 times the sum of replacement cost and potential future exposure less associated CVA losses.

[2] RWA includes a calibration adjustment of 1.06% as prescribed by OSFI under the Basel III framework.

As at July 31, 2019

		a	b	c	d	e	f
	(Millions of Canadian dollars, except as otherwise noted)	Replacement Cost	Potential future exposure	EEPE	Alpha used for computing regulatory EAD	EAD post-CRM[1]	RWA[2]
1	SA-CCR (for derivatives)[1,2]	14,360	28,103		1.4	59,274	21,934
1a	Current Exposure Method (CEM - for derivatives)						
2	Internal Model Method (for derivatives and SFTs)						
3	Simple Approach for credit risk mitigation (for SFTs)						
4	Comprehensive Approach for credit risk mitigation (for SFTs)					162,568	10,758
5	VaR for SFTs						
6	**Total**						**32,692**

[1] Effective Q1 2019, OSFI adopted the BCBS Standardized approach for measuring counterparty credit risk. EAD post CRM is calculated as 1.4 times the sum of replacement cost and potential future exposure less associated CVA losses.

[2] RWA includes a calibration adjustment of 1.06% as prescribed by OSFI under the Basel III framework.

CCR2: Credit valuation adjustment (CVA) capital charge

The following table presents a breakdown of the CVA capital charge by advanced and standardized approaches.

As at October 31, 2019

		a	b
	(Millions of Canadian dollars)	EAD post-CRM[2]	RWA[1,2]
	Total portfolios subject to the Advanced CVA capital charge		
1	(i) VaR component (including the 3x multiplier)		
2	(ii) Stressed VaR component (including the 3x multiplier)		
3	All portfolios subject to the Standardized CVA capital Charge	58,854	13,369
4	**Total subject to the CVA capital charge**	**58,854**	**13,369**

[1] CVA phase-in is no longer applicable in 2019 and not reflected in RWA.

[2] Effective Q1 2019, OSFI has allowed a 0.7 scalar to be applied to the exposure amount determined under SA-CCR for the purpose of determining CVA.

As at July 31, 2019

		a	b
	(Millions of Canadian dollars)	EAD post-CRM[2]	RWA[1,2]
	Total portfolios subject to the Advanced CVA capital charge		
1	(i) VaR component (including the 3x multiplier)		
2	(ii) Stressed VaR component (including the 3x multiplier)		
3	All portfolios subject to the Standardized CVA capital Charge	59,448	14,211
4	**Total subject to the CVA capital charge**	**59,448**	**14,211**

[1] CVA phase-in is no longer applicable in 2019 and not reflected in RWA.

[2] Effective Q1 2019, OSFI has allowed a 0.7 scalar to be applied to the exposure amount determined under SA-CCR for the purpose of determining CVA.

CCR3: Standardized approach – CCR exposures by regulatory portfolio and risk weights

The following table presents a breakdown of counterparty credit risk exposures calculated according to the standardized approach by portfolio and risk weight.

As at October 31, 2019

	a	b	c	d	e	f	g	h	i
Risk weight / Regulatory portfolio (Millions of Canadian dollars)	0%	10%	20%	50%	75%	100%	150%	Others	Total credit exposure
Sovereigns	-	-	-	-	-	-	-	-	-
Non-central government public sector entities (PSEs)	-	-	-	-	-	-	-	-	-
Multilateral development banks (MDBs)	-	-	-	-	-	-	-	-	-
Banks	-	-	-	-	-	41	-	-	41
Securities firms	-	-	45	-	-	32	-	-	77
Corporates	-	-	498	-	-	1,122	-	-	1,620
Regulatory retail portfolios	-	-	-	-	-	-	-	-	-
Other assets	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**543**	**-**	**-**	**1,195**	**-**	**-**	**1,738**

As at July 31, 2019

	a	b	c	d	e	f	g	h	i
Risk weight / Regulatory portfolio (Millions of Canadian dollars)	0%	10%	20%	50%	75%	100%	150%	Others	Total credit exposure
Sovereigns	-	-	-	-	-	-	-	-	-
Non-central government public sector entities (PSEs)	-	-	-	-	-	-	-	-	-
Multilateral development banks (MDBs)	-	-	-	-	-	-	-	-	-
Banks	-	-	-	-	-	44	-	-	44
Securities firms	-	-	23	-	-	110	-	-	133
Corporates	-	-	516	-	-	1,246	-	-	1,762
Regulatory retail portfolios	-	-	-	-	-	-	-	-	-
Other assets	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**539**	**-**	**-**	**1,400**	**-**	**-**	**1,939**

CCR4: IRB – CCR exposures by portfolio and PD scale

The following table presents a detailed view of CCR exposures subject to IRB approach by asset classes and PD scale.

As at October 31, 2019

(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	a EAD post-CRM	b Average PD (%)	c Number of obligors	d Average LGD (%)	e Average maturity (in years)	f RWA	g RWA density (%)
Asset classes								
Sovereigns	0.00 to < 0.15	22,805	0.05	337	19.35	1.80	1,561	7
	0.15 to < 0.25	29	0.23	11	43.86	2.23	13	45
	0.25 to < 0.50	388	0.33	26	43.29	0.96	163	42
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	36	0.85	8	39.32	2.13	29	83
	2.50 to < 10.00	22	3.22	3	42.82	1.88	27	124
	10.00 to < 100.00	-	-	-	-	-	-	-
	100.00 (default)	-	-	-	-	-	-	-
Total sovereigns		**23,280**	**0.06**	**385**	**19.83**	**1.79**	**1,793**	**8**
Banks								
	0.00 to < 0.15	96,442	0.08	221	12.53	0.27	5,443	6
	0.15 to < 0.25	11,518	0.23	64	12.02	0.18	1,232	11
	0.25 to < 0.50	7,102	0.37	71	19.00	0.46	1,511	21
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	1,724	0.86	47	5.22	0.11	162	9
	2.50 to < 10.00	63	3.81	5	45.00	1.08	81	129
	10.00 to < 100.00	-	13.37	1	45.00	1.00	-	241
	100.00 (default)	-	-	-	-	-	-	-
Total banks		**116,849**	**0.13**	**409**	**12.78**	**0.27**	**8,429**	**7**
Corporates								
	0.00 to < 0.15	63,972	0.07	4,609	36.44	0.60	8,599	13
	0.15 to < 0.25	5,924	0.23	804	40.92	1.41	2,429	41
	0.25 to < 0.50	8,486	0.37	1,054	35.32	1.18	3,768	44
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	3,798	1.08	763	40.26	2.07	3,310	87
	2.50 to < 10.00	1,635	3.55	485	38.08	1.69	1,868	114
	10.00 to < 100.00	88	13.63	10	45.87	4.23	220	251
	100.00 (default)	26	100.00	9	34.90	1.18	120	462
Total corporates		**83,929**	**0.27**	**7,734**	**36.85**	**0.80**	**20,314**	**24**
Total		**224,058**	**0.18**	**8,528**	**22.53**	**0.63**	**30,536**	**14**

[1] Refer to "Internal ratings map" in the Credit risk assessment section in our 2019 Annual Report MD&A.

CCR4: IRB – CCR exposures by portfolio and PD scale (continued)

As at July 31, 2019

		a	b	c	d	e	f	g
(Millions of Canadian dollars, except as otherwise noted)	PD scale[1]	EAD post-CRM	Average PD (%)	Number of obligors	Average LGD (%)	Average maturity (in years)	RWA	RWA density (%)
Asset classes								
Sovereigns	0.00 to < 0.15	17,762	0.04	339	23.44	2.20	1,477	8
	0.15 to < 0.25	34	0.23	11	44.98	1.98	15	44
	0.25 to < 0.50	351	0.30	26	43.38	0.97	140	40
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	26	0.96	7	37.65	2.93	25	97
	2.50 to < 10.00	32	2.65	3	43.72	1.55	37	115
	10.00 to < 100.00	-	-	-	-	-	-	-
	100.00 (default)	-	-	-	-	-	-	-
Total sovereigns		**18,205**	**0.05**	**386**	**23.92**	**2.18**	**1,694**	**9**
Banks								
	0.00 to < 0.15	99,477	0.09	217	13.87	0.26	6,272	6
	0.15 to < 0.25	11,729	0.23	57	10.30	0.16	1,068	9
	0.25 to < 0.50	6,449	0.37	71	20.58	0.47	1,562	24
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	1,742	0.86	43	6.17	0.12	195	11
	2.50 to < 10.00	29	3.08	4	45.00	1.08	34	120
	10.00 to < 100.00	-	13.37	1	45.00	1.00	-	241
	100.00 (default)	-	-	-	-	-	-	-
Total banks		**119,426**	**0.13**	**393**	**13.77**	**0.26**	**9,131**	**8**
Corporates								
	0.00 to < 0.15	63,794	0.07	4,465	34.82	0.65	8,572	13
	0.15 to < 0.25	6,097	0.23	834	41.06	1.45	2,536	42
	0.25 to < 0.50	7,122	0.35	1,069	43.79	1.45	3,881	55
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	3,560	1.11	785	40.09	2.32	3,165	89
	2.50 to < 10.00	1,562	3.49	473	37.93	1.77	1,743	112
	10.00 to < 100.00	108	14.27	12	53.62	4.32	323	301
	100.00 (default)	29	100.00	8	36.45	1.25	138	483
Total corporates		**82,272**	**0.27**	**7,646**	**36.37**	**0.88**	**20,358**	**25**
Total		**219,903**	**0.18**	**8,425**	**23.07**	**0.65**	**31,183**	**14**

[1] Refer to "Internal ratings map" in the Credit risk assessment section in our 2018 Annual Report MD&A.

CCR5: Composition of collateral for CCR exposure

The following table presents a breakdown of collateral posted or received to support or reduce the CCR exposures related to derivative transactions or securities financing transactions (SFTs), including transactions cleared through a central counterparty clearing house (CCP).

As at October 31, 2019

	a	b	c	d	e	f
	Collateral used in derivative transactions				Collateral used in SFTs	
	Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received	Fair value of posted collateral
(Millions of Canadian dollars)	Segregated	Unsegregated	Segregated	Unsegregated		
Cash - domestic currency	14	2,587	14	2,200	34,028	41,209
Cash - other currencies	1,505	17,393	4,061	17,279	270,812	345,589
Domestic sovereign debt	-	984	-	1,325	111,176	117,149
Other sovereign debt	2,561	2,864	3,310	1,395	259,714	220,348
Government agency debt	68	166	206	1,537	78,257	90,398
Corporate bonds	259	307	-	-	29,826	27,861
Equity securities	-	-	-	563	105,071	132,654
Other collateral	-	17	-	-	31,799	5,318
Total	**4,407**	**24,318**	**7,591**	**24,299**	**920,683**	**980,526**

As at April 30, 2019

	a	b	c	d	e	f
	Collateral used in derivative transactions				Collateral used in SFTs	
	Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received	Fair value of posted collateral
(Millions of Canadian dollars)	Segregated	Unsegregated	Segregated	Unsegregated		
Cash - domestic currency	3	2,140	3	2,718	29,690	41,643
Cash - other currencies	1,635	13,050	3,966	15,973	242,595	318,170
Domestic sovereign debt	-	972	6	852	101,547	112,203
Other sovereign debt	2,260	2,987	2,873	647	233,005	192,292
Government agency debt	57	202	23	1,145	75,180	84,221
Corporate bonds	99	267	5	-	28,593	27,395
Equity securities	-	-	-	495	125,626	156,264
Other collateral	-	16	-	-	35,506	4,806
Total	**4,054**	**19,634**	**6,876**	**21,830**	**871,742**	**936,994**

CCR6: Credit derivatives exposures

The following table presents credit derivatives bought or sold by notional and fair values.

As at October 31, 2019

	a	b
(Millions of Canadian dollars)	Protection bought	Protection sold
Notionals		
Single-name credit default swaps	3,383	4,560
Index credit default swaps	9,763	3,148
Total return swaps	-	-
Credit options	-	-
Other credit derivatives	-	-
Total notionals	**13,146**	**7,708**
Fair values		
Positive fair value (asset)	1	168
Negative fair value (liability)	277	5

As at April 30, 2019

	a	b
(Millions of Canadian dollars)	Protection bought	Protection sold
Notionals		
Single-name credit default swaps	2,893	5,802
Index credit default swaps	9,852	3,714
Total return swaps	-	-
Credit options	-	-
Other credit derivatives	-	-
Total notionals	**12,745**	**9,516**
Fair values		
Positive fair value (asset)	5	182
Negative fair value (liability)	272	9

CCR7: RWA flow statements of CCR exposures under the Internal Model Method (IMM)

We currently do not apply the IMM to our counterparty credit risk exposures.

CCR8: Exposures to central counterparties

The following table presents a comprehensive view of our exposures to central counterparty clearing houses (CCPs), including due to operations, margins and contributions to default funds, and related RWA.

As at October 31, 2019

	(Millions of Canadian dollars)	a EAD (post-CRM)	b RWA
1	**Exposures to QCCPs (total)**	**38,311**	**606**
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	27,962	585
3	(i) OTC derivatives	2,107	68
4	(ii) Exchange-traded derivatives	19,760	395
5	(iii) Securities financing transactions	6,095	122
6	(iv) Netting sets where cross-product netting has been approved	-	-
7	Segregated initial margin	2,305	
8	Non-segregated initial margin	2,657	-
9	Pre-funded default fund contributions	775	21
10	Unfunded default fund contributions[1]	4,612	-
11	**Exposures to non-QCCPs (total)**		
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions); of which		
13	(i) OTC derivatives		
14	(ii) Exchange-traded derivatives		
15	(iii) Securities financing transactions		
16	(iv) Netting sets where cross-product netting has been approved		
17	Segregated initial margin		
18	Non-segregated initial margin		
19	Pre-funded default fund contributions		
20	Unfunded default fund contributions		

[1] Unfunded default fund contributions are risk weighted at 0%.

CCR8: Exposures to central counterparties (continued)

As at July 31, 2019

	(Millions of Canadian dollars)	a EAD (post-CRM)	b RWA
1	**Exposures to QCCPs (total)**	**37,226**	**575**
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	26,948	550
3	(i) OTC derivatives	1,180	34
4	(ii) Exchange-traded derivatives	18,942	379
5	(iii) Securities financing transactions	6,826	137
6	(iv) Netting sets where cross-product netting has been approved	-	-
7	Segregated initial margin	2,302	
8	Non-segregated initial margin	2,525	-
9	Pre-funded default fund contributions	742	25
10	Unfunded default fund contributions[1]	4,709	-
11	**Exposures to non-QCCPs (total)**		
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions); of which		
13	(i) OTC derivatives		
14	(ii) Exchange-traded derivatives		
15	(iii) Securities financing transactions		
16	(iv) Netting sets where cross-product netting has been approved		
17	Segregated initial margin		
18	Non-segregated initial margin		
19	Pre-funded default fund contributions		
20	Unfunded default fund contributions		

[1] Unfunded default fund contributions are risk weighted at 0%.

SECURITIZATION

SECA: Qualitative disclosure requirements related to securitization exposures

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement		RBC 2019 Annual Report section	Sub-section
a)	Objectives in relation to securitization activities	Off-balance sheet arrangements	"Off-balance sheet arrangements"
		Consolidated Financial Statements	Note 6 - Derecognition of financial assets
		Consolidated Financial Statements	Note 7 - Structured entities
b)	List of SPEs where RBC is sponsor / provides implicit support	Consolidated Financial Statements	Note 7 - Structured entities
c)	Accounting policies for securitization	Consolidated Financial Statements	Note 2 - Summary of significant accounting policies, estimates and judgments - Basis of consolidation - Derecognition of financial assets
		Critical accounting policies and estimates	Consolidation of structured entities
d)	The names of external credit assessment institution (ECAIs) used for securitizations and the types of securitization exposure for which each agency is used	Capital Management (also refer to CRD in this document)	Regulatory capital approach for securitization exposures
e)	Use of Basel IAA for capital purposes	Credit risk	n/a
		Capital Management	Regulatory capital approach for securitization exposures
f)	Use of other internal assessment for capital purposes	Credit risk	Credit risk assessment

SEC1: IRB – Securitization exposures in the banking book

The following table presents the breakdown of our balance sheet banking book carrying values by our role and type.

As at October 31, 2019

		a	b	c	e	f	g	i	j	k
		Bank acts as originator[1]			Bank acts as sponsor[2]			Bank acts as investor[3]		
(Millions of Canadian dollars)		Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total
1	**Retail (total) - of which**	**1,281**	**-**	**1,281**	**36,418**	**-**	**36,418**	**4,929**	**-**	**4,929**
2	residential mortgage	-	-	-	1,519	-	1,519	4,205	-	4,205
3	credit card	1,265	-	1,265	8,069	-	8,069	314	-	314
4	other retail exposures	16	-	16	26,830	-	26,830	410	-	410
4a	of which student loans	-	-	-	3,802	-	3,802	119	-	119
4b	of which auto loans and leases	-	-	-	17,314	-	17,314	291	-	291
4c	of which consumer loans	-	-	-	5,153	-	5,153	-	-	-
4d	of which other retail	16	-	16	561	-	561	-	-	-
5	re-securitization	-	-	-	-	-	-	-	-	-
6	**Wholesale (total) – of which**	**-**	**-**	**-**	**12,256**	**-**	**12,256**	**10,105**	**-**	**10,105**
7	loans to corporates	-	-	-	2,784	-	2,784	8,298	-	8,298
8	commercial mortgage	-	-	-	-	-	-	680	-	680
9	lease and receivables	-	-	-	-	-	-	-	-	-
10	other wholesale	-	-	-	9,472	-	9,472	1,127	-	1,127
10a	of which dealer floor plan receivable	-	-	-	2,084	-	2,084	-	-	-
10b	of which equipment receivable	-	-	-	2,645	-	2,645	-	-	-
10c	of which trade receivable	-	-	-	-	-	-	-	-	-
10d	of which other wholesale	-	-	-	4,743	-	4,743	1,127	-	1,127
11	re-securitization	-	-	-	-	-	-	-	-	-

[1] Bank acts as originator reflects securitization activities in which we securitize our own assets (e.g. Golden credit card securitization).

[2] Bank acts as sponsor reflects securitization activities in which RBC works with its client to originate securitization transactions. RBC provides the liquidity and credit enhancement facilities to the SPE.

[3] Bank acts as investor reflects purchases of securitization assets from the market.

SEC1: IRB – Securitization exposures in the banking book (continued)

As at July 31, 2019

		a	b	c	e	f	g	i	j	k
		Bank acts as originator[1]			Bank acts as sponsor[2]			Bank acts as investor[3]		
(Millions of Canadian dollars)		Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total
1	**Retail (total) - of which**	**1,291**	**-**	**1,291**	**37,468**	**-**	**37,468**	**4,588**	**-**	**4,588**
2	residential mortgage	-	-	-	1,668	-	1,668	3,733	-	3,733
3	credit card	1,274	-	1,274	8,289	-	8,289	379	-	379
4	other retail exposures	17	-	17	27,511	-	27,511	476	-	476
4a	of which student loans	-	-	-	4,053	-	4,053	126	-	126
4b	of which auto loans and leases	-	-	-	18,410	-	18,410	350	-	350
4c	of which consumer loans	-	-	-	5,046	-	5,046	-	-	-
4d	of which other retail	17	-	17	2	-	2	-	-	-
5	re-securitization	-	-	-	-	-	-	-	-	-
6	**Wholesale (total) – of which**	**-**	**-**	**-**	**11,389**	**-**	**11,389**	**9,631**	**-**	**9,631**
7	loans to corporates	-	-	-	2,426	-	2,426	7,724	-	7,724
8	commercial mortgage	-	-	-	-	-	-	769	-	769
9	lease and receivables	-	-	-	-	-	-	-	-	-
10	other wholesale	-	-	-	8,963	-	8,963	1,138	-	1,138
10a	of which dealer floor plan receivable	-	-	-	2,090	-	2,090	-	-	-
10b	of which equipment receivable	-	-	-	2,897	-	2,897	-	-	-
10c	of which trade receivable	-	-	-	-	-	-	-	-	-
10d	of which other wholesale	-	-	-	3,976	-	3,976	1,138	-	1,138
11	re-securitization	-	-	-	-	-	-	-	-	-

[1] Bank acts as originator reflects securitization activities in which we securitize our own assets (e.g. Golden credit card securitization).

[2] Bank acts as sponsor reflects securitization activities in which RBC works with its client to originate securitization transactions. RBC provides the liquidity and credit enhancement facilities to the SPE.

[3] Bank acts as investor reflects purchases of securitization assets from the market.

SEC2: IRB – Securitization exposures in the trading book

The following table presents the breakdown of our balance sheet trading book carrying values by our role and type.

As at October 31, 2019

		a	b	c	e	f	g	i	j	k
		Bank acts as originator[1]			Bank acts as sponsor[2]			Bank acts as investor[3]		
	(Millions of Canadian dollars)	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total
1	**Retail (total) - of which**	**-**	**-**	**-**	**-**	**-**	**-**	**1,017**	**-**	**1,017**
2	residential mortgages	-	-	-	-	-	-	499	-	499
3	credit cards	-	-	-	-	-	-	89	-	89
4	other retail exposures	-	-	-	-	-	-	429	-	429
4a	of which student loans	-	-	-	-	-	-	30	-	30
4b	of which auto loans and leases	-	-	-	-	-	-	341	-	341
4c	of which consumer loans	-	-	-	-	-	-	49	-	49
4d	of which other retail	-	-	-	-	-	-	9	-	9
5	re-securitization	-	-	-	-	-	-	-	-	-
6	**Wholesale (total) - of which**	**-**	**-**	**-**	**-**	**-**	**-**	**5,856**	**-**	**5,856**
7	loans to corporates	-	-	-	-	-	-	331	-	331
8	commercial mortgages	-	-	-	-	-	-	5,065	-	5,065
9	leases and receivables	-	-	-	-	-	-	-	-	-
10	other wholesale exposures	-	-	-	-	-	-	460	-	460
10a	of which dealer floor plan receivables	-	-	-	-	-	-	33	-	33
10b	of which equipment receivables	-	-	-	-	-	-	30	-	30
10c	of which trade receivables	-	-	-	-	-	-	-	-	-
10d	of which other wholesale	-	-	-	-	-	-	397	-	397
11	re-securitization	-	-	-	-	-	-	-	-	-

[1] Bank acts as originator reflects securitization activities in which we securitize our own assets.

[2] Bank acts as sponsor reflects securitization activities in which RBC works with its client to originate securitization transactions. RBC provides the liquidity and credit enhancement facilities to the SPE.

[3] Bank acts as investor reflects purchases of securitization assets from the market.

SEC2: IRB – Securitization exposures in the trading book (continued)

As at July 31, 2019

		a	b	c	e	f	g	i	j	k
		Bank acts as originator[1]			Bank acts as sponsor[2]			Bank acts as investor[3]		
	(Millions of Canadian dollars)	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total
1	**Retail (total) - of which**	**-**	**-**	**-**	**-**	**-**	**-**	**1,076**	**-**	**1,076**
2	residential mortgages	-	-	-	-	-	-	608	-	608
3	credit cards	-	-	-	-	-	-	26	-	26
4	other retail exposures	-	-	-	-	-	-	442	-	442
4a	of which student loans	-	-	-	-	-	-	48	-	48
4b	of which auto loans and leases	-	-	-	-	-	-	278	-	278
4c	of which consumer loans	-	-	-	-	-	-	80	-	80
4d	of which other retail	-	-	-	-	-	-	36	-	36
5	re-securitization	-	-	-	-	-	-	-	-	-
6	**Wholesale (total) - of which**	**-**	**-**	**-**	**-**	**-**	**-**	**5,903**	**-**	**5,903**
7	loans to corporates	-	-	-	-	-	-	240	-	240
8	commercial mortgages	-	-	-	-	-	-	5,123	-	5,123
9	leases and receivables	-	-	-	-	-	-	-	-	-
10	other wholesale exposures	-	-	-	-	-	-	540	-	540
10a	of which dealer floor plan receivables	-	-	-	-	-	-	2	-	2
10b	of which equipment receivables	-	-	-	-	-	-	11	-	11
10c	of which trade receivables	-	-	-	-	-	-	-	-	-
10d	of which other wholesale	-	-	-	-	-	-	527	-	527
11	re-securitization	-	-	-	-	-	-	-	-	-

[1] Bank acts as originator reflects securitization activities in which we securitize our own assets.

[2] Bank acts as sponsor reflects securitization activities in which RBC works with its client to originate securitization transactions. RBC provides the liquidity and credit enhancement facilities to the SPE.

[3] Bank acts as investor reflects purchases of securitization assets from the market.

SEC3: Securitization exposures in the banking book and associated regulatory capital requirements – bank acting as originator or as sponsor

The following table presents a breakdown of securitization exposures in the banking book by risk weight and by regulatory approach when we act as originator or sponsor, and the associated capital requirements.

As at October 31, 2019

		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands)					Exposure values (by regulatory approach)				RWA[3] (by regulatory approach)				Capital charge after cap (by regulatory approach)			
	(Millions of Canadian dollars)	≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC – IRBA [1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%
1	**Total exposures**	**44,372**	**2,979**	**1,628**	**962**	**14**	**1,269**	**40,269**	**8,403**	**14**	**422**	**5,581**	**2,645**	**170**	**34**	**446**	**211**	**14**
2	Traditional securitization	44,372	2,979	1,628	962	14	1,269	40,269	8,403	14	422	5,581	2,645	170	34	446	211	14
3	Of which securitization	44,372	2,979	1,628	962	14	1,269	40,269	8,403	14	422	5,581	2,645	170	34	446	211	14
4	Of which retail underlying	35,736	984	623	342	14	1,269	31,898	4,518	14	422	4,300	579	170	34	344	46	14
5	Of which wholesale	8,636	1,995	1,005	620	-	-	8,371	3,885	-	-	1,281	2,066	-	-	102	165	-
6	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Synthetic securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Of which securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Of which retail underlying	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Of which wholesale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Total before Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	422	5,581	2,645	170	-	-	-	-
17	Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	(308)	(3,673)	1,199	-	-	-	-	-
18	Total after Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	114	1,908	3,844	170	-	-	-	-

[1] OSFI adopted BCBS Revised Securitization Framework in Q1 2019.

[2] As per disclosure requirements Internal assessment approach (IAA) exposures have been included with securitization external rating based approach.

[3] Under the revised securitization framework, OSFI has removed the 1.06% IRB scalar for securitization exposures not risk weighted at 1250%.

[4] SEC-IRBA exposures reflect exposures where we have underlying IRB approval currently.

As at July 31, 2019

(Millions of Canadian dollars)		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands)					Exposure values (by regulatory approach)				RWA[3] (by regulatory approach)				Capital charge after cap (by regulatory approach)			
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC – IRBA [1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%
1	**Total exposures**	**44,410**	**3,114**	**1,769**	**841**	**14**	**1,279**	**41,102**	**7,753**	**14**	**427**	**5,914**	**2,336**	**176**	**34**	**473**	**187**	**14**
2	Traditional securitization	44,410	3,114	1,769	841	14	1,279	41,102	7,753	14	427	5,914	2,336	176	34	473	187	14
3	Of which securitization	44,410	3,114	1,769	841	14	1,279	41,102	7,753	14	427	5,914	2,336	176	34	473	187	14
4	Of which retail underlying	36,350	1,078	1,097	219	14	1,279	32,504	4,962	14	427	4,503	635	176	34	360	51	14
5	Of which wholesale	8,060	2,036	672	622	-	-	8,598	2,791	-	-	1,411	1,701	-	-	113	136	-
6	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Synthetic securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Of which securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Of which retail underlying	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Of which wholesale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Total before Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	427	5,914	2,336	176	-	-	-	-
17	Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	(308)	(3,673)	1,199	-	-	-	-	-
18	Total after Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	119	2,241	3,535	176	-	-	-	-

[1] OSFI adopted BCBS Revised Securitization Framework in Q1 2019. Column headings have been revised to reflect the new methodology.

[2] As per disclosure requirements Internal assessment approach (IAA) exposures have been included with securitization external rating based approach.

[3] Under the revised securitization framework, OSFI has removed the 1.06% IRB scalar for securitization exposures not risk weighted at 1250%.

[4] SEC-IRBA exposures reflect exposures where we have underlying IRB approval currently.

SEC4: Securitization exposures in the banking book and associated capital requirements – bank acting as investor

The following table presents a breakdown of securitization exposures in the banking book by risk weight and by regulatory approach when we act as investor, and the associated capital requirements.

As at October 31, 2019

		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands)					Exposure values (by regulatory approach)				RWA[3] (by regulatory approach)				Capital charge after cap (by regulatory approach)			
	(Millions of Canadian dollars)	≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%
1	**Total exposures**	**9,320**	**770**	**4,274**	**670**	**-**	**-**	**15,034**	**-**	**-**	**-**	**5,864**	**-**	**-**	**-**	**469**	**-**	**-**
2	Traditional securitization	9,320	770	4,274	670	-	-	15,034	-	-	-	5,864	-	-	-	469	-	-
3	Of which securitization	9,320	770	4,274	670	-	-	15,034	-	-	-	5,864	-	-	-	469	-	-
4	Of which retail underlying	136	583	4,202	7	-	-	4,929	-	-	-	3,210	-	-	-	257	-	-
5	Of which wholesale	9,184	187	72	663	-	-	10,105	-	-	-	2,654	-	-	-	212	-	-
6	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Synthetic securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Of which securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Of which retail underlying	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Of which wholesale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Total before Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	-	5,864	-	-	-	-	-	-
17	Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	-	(4,106)	-	-	-	-	-	-
18	Total after Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	-	1,758	-	-	-	-	-	-

[1] OSFI adopted BCBS Revised Securitization Framework in Q1 2019.

[2] As per disclosure requirements Internal assessment approach (IAA) exposures have been included with securitization external rating based approach.

[3] Under the revised securitization framework, OSFI has removed the 1.06% IRB scalar for securitization exposures not risk weighted at 1,250%.

[4] SEC-IRBA exposures reflect exposures where we have underlying IRB approval currently.

As at July 31, 2019

(Millions of Canadian dollars)		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands)					Exposure values (by regulatory approach)				RWA[3] (by regulatory approach)				Capital charge after cap (by regulatory approach)			
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%	SEC – IRBA[1,4]	SEC – ERBA[1,2]	SEC – SA[1]	1250%
1	**Total exposures**	**8,556**	**935**	**4,055**	**673**	**-**	**-**	**14,219**	**-**	**-**	**-**	**5,621**	**-**	**-**	**-**	**449**	**-**	**-**
2	Traditional securitization	8,556	935	4,055	673	-	-	14,219	-	-	-	5,621	-	-	-	449	-	-
3	Of which securitization	8,556	935	4,055	673	-	-	14,219	-	-	-	5,621	-	-	-	449	-	-
4	Of which retail underlying	77	769	3,735	8	-	-	4,588	-	-	-	2,955	-	-	-	236	-	-
5	Of which wholesale	8,479	166	320	665	-	-	9,631	-	-	-	2,666	-	-	-	213	-	-
6	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Synthetic securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Of which securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Of which retail underlying	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Of which wholesale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Of which senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Of which non-senior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Total before Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	-	5,621	-	-	-	-	-	-
17	Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	-	(4,106)	-	-	-	-	-	-
18	Total after Transitional grandfathering adjustment	-	-	-	-	-	-	-	-	-	-	1,515	-	-	-	-	-	-

[1] OSFI adopted BCBS Revised Securitization Framework in Q1 2019. Column headings have been revised to reflect the new methodology.

[2] As per disclosure requirements Internal assessment approach (IAA) exposures have been included with securitization external rating based approach.

[3] Under the revised securitization framework, OSFI has removed the 1.06% IRB scalar for securitization exposures not risk weighted at 1,250%.

[4] SEC-IRBA exposures reflect exposures where we have underlying IRB approval currently.

MARKET RISK

MRA: Qualitative disclosure requirements related to market risk

Market risk management strategies and processes

Market risk arises from our trading and non-trading portfolios. The primary objective of trading is to generate an optimal return on our capital while ensuring that risks remain within our risk appetite. Trading activities involve market making, facilitating client transactions and hedging risks generated from these activities.

Market risk also arises from our non-trading portfolio as a result of: managing interest rate risk from client-originating banking products (such as loans and deposits) and related hedge transactions, corporate treasury portfolio used for asset-liability management and liquidity management, exposures designated as FVOCI, and exposures from our insurance operations.

To ensure that market risk remains within our risk appetite, we hedge our market risk exposures where appropriate. We use cash and derivative financial instruments, as permitted by regulatory and jurisdictional requirements, to manage the market risk related to our trading and non-trading activities.

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement		RBC 2019 Annual Report section	Sub-Section
a)	Processes implemented to identify, measure, monitor and control the bank's market risks	Market Risk	Market risk controls – FVTPL positions
			Stress Tests
			Market risk measures – FVTPL positions
			Market risk measures for assets and liabilities of RBC Insurance
			Market risk controls – Structural Interest Rate Risk (SIRR) positions
			SIRR measurement
			Market risk measures – Structural Interest Rate Sensitivities
			Market risk measures for other material non-trading portfolios
	Policies for hedging risk and strategies/processes for monitoring the continuing effectiveness of hedges	Consolidated Financial Statements	Note 2 - Summary of significant accounting policies, estimates and judgements – Hedge accounting

MRA: qualitative disclosure requirements related to market risk (continued)

Market risk management structure and organization

The Enterprise Market Risk Management Framework is the governance and control framework for the management of market risk within the bank. The market risk management structure is designed to ensure strong corporate governance over all market risk in the context of each business considering operating environment, industry best practices, and regulatory requirements. Drivers of market risk are considered in the bank's policies, practices and standards which are continuously updated given dynamic market, and regulatory conditions.

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

	Pillar 3 disclosures requirement	RBC 2019 Annual Report section	Sub-Section
b)	Description of the market risk governance structure established to implement the strategies and processes of the bank	Enterprise Risk Management	Risk governance
			Risk appetite
			Risk measurement
			Risk control
			Risk measurement - Stress testing
			Conduct and risk culture
	Description of the relationships and the communication mechanisms between the different parties involved in market risk management	Enterprise Risk Management	Risk governance
			Risk control

Scope and nature of risk reporting and/or measurement systems

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

	Pillar 3 disclosures requirement	RBC 2019 Annual Report section	Sub-Section
c)	Scope and nature of risk reporting and/or measurement systems	Enterprise Risk Management	Risk measurement
			Risk control
			Risk measurement – Stress testing
		Market Risk	Market risk controls – FVTPL positions
			Stress Tests
			Market risk measures – FVTPL positions
			Market risk measures for assets and liabilities of RBC Insurance
			Market risk controls – Structural Interest Rate Risk (SIRR) positions
			SIRR measurement
			Market risk measures – Structural Interest Rate Sensitivities
			Market risk measures for other material non-trading portfolios

MRB: Qualitative disclosures for banks using the internal models approach (IMA)

Internal models used for measuring Market Risk

Measure	Description	Percentage of market risk regulatory capital[1]
Regulatory Value at Risk (VaR)	VaR is a statistical measure of potential loss for a financial portfolio computed at a given level of confidence and over a defined holding period. We measure VaR at the 99th percentile confidence level for a one-day holding period, and then scale up to a ten-day holding period for regulatory capital measurement. The measure is computed daily, using a full-revaluation approach to generate potential profit or loss values arising from historically observed daily market movements. The historical period used to compute VaR is comprised of the recent two years of equally weighted market data, and is rolled forward at least monthly. A mix of absolute and relative returns are used in generating the historical market changes.	6%
Stressed VaR (SVaR)	SVaR is calculated daily in a similar manner as VaR, but based on a ten-day holding period directly and using a one year period of heightened volatility. We currently use the historical period from September 2008 to August 2009, given the market volatility during that time in relation to the risks within our portfolio. This historical period is assessed quarterly to ensure that it continues to reflect the one year period of greatest potential loss for our portfolio.	27%
Incremental Risk Charge (IRC)	IRC captures the risk of losses under default or rating changes for issuers of traded instruments. IRC is measured over a one-year horizon at a 99.9% confidence level, and captures different liquidity horizons for instruments and concentrations in issuers under a constant level of risk assumption.	25%

[1] As at October 31, 2019.

VaR and SVaR

The VaR and SVaR models are used for computing regulatory capital for trading book positions across the enterprise, where we have obtained approval from our regulator. We model a general market risk measure, a debt specific risk measure, and an equity total risk measure; along with a total correlated risk measure which combines the above distributions. For portions of our portfolio for which we do not have regulatory approval for models based capital, we use the Standardized Approach to compute regulatory capital.

For management purposes, VaR and SVaR are both computed with one-day holding periods and are applied to all positions that impact the bank's revenue across the trading book and non-trading book. A sensitivity-ladder interpolation approach is applied for some positions instead of full-revaluation, and inactive non-trading book positions are refreshed monthly.

MRB: Qualitative disclosures for banks using the internal models approach (continued)

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement		RBC 2019 Annual Report section	Sub-Section
c)	General description of the models (VaR/stressed VaR)	Market Risk	Market Risk Controls – FVTPL positions
g)	Description of stress testing applied to the modelling parameters	Market Risk	Stress Tests

The VaR and SVaR models are governed by a model risk governance framework, which requires that models are validated on a regular basis by a model validation group that is independent of the model developers. The VaR and SVaR models are also subject to ongoing model performance monitoring. The VaR model is back tested by comparing marked-to-market revenue to the computed VaR on a daily basis, in order to ensure that actual outcomes in trading revenue do not exceed the VaR projections beyond the expectations of the applied confidence interval. Backtesting is also performed using a hypothetical profit and loss calculation which allows for comparisons to the total correlated VaR, the general market risk VaR, and asset class VaR measures separately.

While the majority of market risks are reflected in our VaR models, there is the potential for certain risks to be inadequately captured. This can occur due to infrastructure limitations, lack of historical market data or missing risk factors within our VaR models. These Risks Not in VaR (RNIV) are identified through backtesting and other model monitoring processes, and are incorporated into the VaR models, where possible. An assessment of residual RNIV materiality is reviewed and monitored against thresholds regularly.

Incremental Risk Charge

Our IRC model is applied to debt instruments, credit products, and credit derivatives within our trading portfolios. A probability modelling technique known as the Monte Carlo simulation process is used to generate a statistically relevant number of loss scenarios due to issuer ratings migration and default in order to establish the losses at that confidence level. These scenarios are determined using a transition probability matrix which is calibrated using recent 20 years of historical issuer ratings migration and default observations. Correlations between issuer regions and sectors are calibrated using five years of historical equity time series data. For the Monte Carlo process, each position is assigned a liquidity horizon (the length of time to close out a position) of three months, six months, or one year, depending on its issuer type, credit rating, and maturity profile.

The IRC model is also subject to the same independent vetting, validation procedures and model risk governance framework as the VaR and SVaR models. Model performance monitoring includes reviews and stress testing of model assumptions, which includes stress testing the historical correlation and liquidity assumptions. Due to the long time horizon and high confidence level of the risk measure, we do not perform back-testing of the IRC model as we do for the VaR measure.

MR1: Market risk under standardized approach

The following table presents the components of the capital requirement under the standardized approach for Market risk.

		RWA	
	(Millions of Canadian dollars)	As at October 31, 2019	As at July 31, 2019
	Outright products		
1	Interest rate risk (general and specific)	5,166	4,743
2	Equity risk (general and specific)	390	444
3	Foreign exchange risk	1,369	1,700
4	Commodity risk	228	200
	Options		
5	Simplified approach	-	-
6	Delta-plus method	-	-
7	Scenario approach	3,429	3,767
8	**Securitization**	1,584	1,670
9	**Total**	**12,166**	**12,524**

MR2: RWA flow statements of market risk exposures under an IMA

The following table presents variations in the Market RWA determined under an internal model approach.

As at October 31, 2019

		a	b	c	d	e	f
	(Millions of Canadian dollars)	VaR	Stressed VaR	IRC	CRM	Other	Total RWA
1	**RWA at previous quarter end**	**2,138**	**7,503**	**7,260**	**-**	**-**	**16,901**
2	Movement in risk levels[1]	(830)	200	55	-	-	(575)
3	Model updates/changes[2]	441	(36)	-	-	-	405
4	Methodology and policy[3]	-	-	-	-	-	-
5	Acquisitions and disposals	-	-	-	-	-	-
6	Foreign exchange movements[4]	-	-	20	-	-	20
7	Other	-	-	-	-	-	-
8	**RWA at end of Reporting Period**	**1,749**	**7,667**	**7,335**	**-**	**-**	**16,751**

[1] Change in risk due to position changes and market movements.

[2] Updates to the model to reflect recent experience, model implementation, change in model scope or any change to address model malfunctions including changes through model calibrations/realignments.

[3] Methodology changes to the calculations driven by regulatory policy changes.

[4] Foreign exchange movements for VaR and Stressed VaR are embedded within movement in risk levels.

As at July 31, 2019

		a	b	c	d	e	f
	(Millions of Canadian dollars)	VaR	Stressed VaR	IRC	CRM	Other	Total RWA
1	**RWA at previous quarter end**	**2,435**	**7,609**	**8,075**	**-**	**-**	**18,119**
2	Movement in risk levels[1]	126	(566)	(823)	-	-	(1,263)
3	Model updates/changes[2]	(423)	460	81	-	-	118
4	Methodology and policy[3]	-	-	-	-	-	-
5	Acquisitions and disposals	-	-	-	-	-	-
6	Foreign exchange movements[4]	-	-	(73)	-	-	(73)
7	Other	-	-	-	-	-	-
8	**RWA at end of Reporting Period**	**2,138**	**7,503**	**7,260**	**-**	**-**	**16,901**

[1] Change in risk due to position changes and market movements.

[2] Updates to the model to reflect recent experience, model implementation, change in model scope or any change to address model malfunctions including changes through model calibrations/realignments.

[3] Methodology changes to the calculations driven by regulatory policy changes.

[4] Foreign exchange movements for VaR and Stressed VaR are embedded within movement in risk levels.

MR3: IMA values for trading portfolios

The following table presents minimum, maximum, average and period-end regulatory 10 day VaR, regulatory 10 day stressed VaR, incremental risk charge and comprehensive risk capital charge. These measures are based on the scope of the global trading book with internal models approach (IMA) approval from OSFI for calculating regulatory market risk capital.

As at October 31, 2019

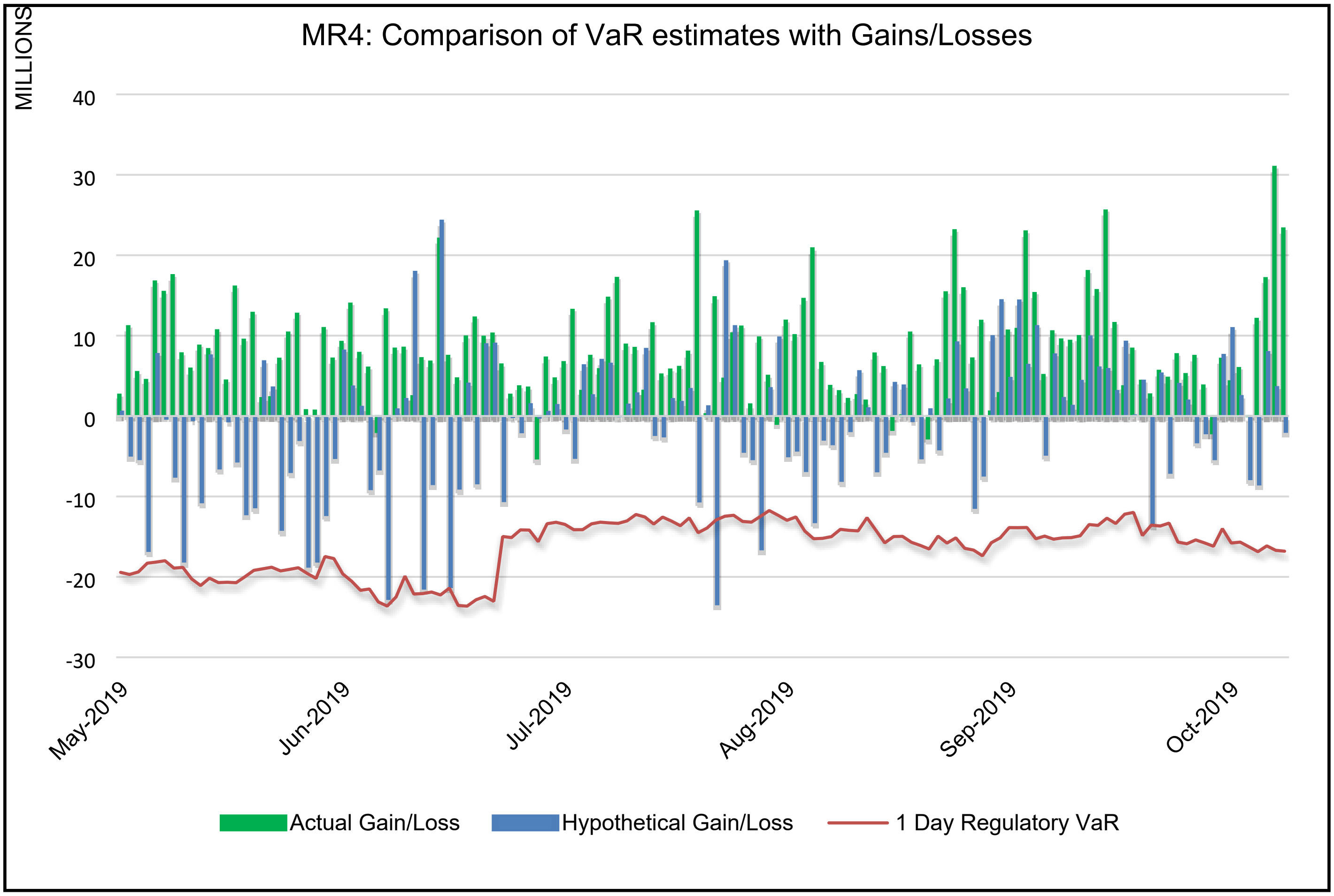
(Millions of Canadian dollars)		Value	
VaR (10 day 99%)[1]		As at October 31, 2019	As at July 31, 2019
1	Maximum value	55	75
2	Average value	46	57
3	Minimum value	37	39
4	Period end	53	45
Stressed VaR (10 day 99%)[1]			
5	Maximum value	257	287
6	Average value	206	206
7	Minimum value	164	136
8	Period end	200	197
Incremental Risk Charge (99.9%)			
9	Maximum value	678	665
10	Average value	587	570
11	Minimum value	504	496
12	Period end	536	581
Comprehensive Risk capital charge (99.9%)			
13	Maximum value	-	-
14	Average value	-	-
15	Minimum value	-	-
16	Period end	-	-
17	Floor (standardized measurement method)	-	-

[1] The portfolio included in regulatory VaR and SVaR represents a subset of the portfolio captured in management VaR and SVaR reported in the Market Risk section of the 2019 Annual Report.

Average VaR of $46 million decreased $11 million due to the integration of certain fixed income products into the Internal Models Approach from prior quarter.

MR4: Comparison of VaR estimates with gains/losses

The following graph compares the results of the 1 day regulatory VaR model with both hypothetical and actual trading gains and losses, for all trading portfolios included in Internal Models Approach (IMA) based market risk capital.



Actual Gain/Loss reported in this graph is the gain or loss which occurred as a result of all portfolio changes impacting income over the holding period and therefore includes reserves and intraday trading but excludes commissions and fees. Hypothetical Gain/Loss is the gain or loss which would have occurred if end of day positions remained unchanged.

Refer to table MRB for further details into our backtesting program and a list of the key models used at the group-wide level with explanations as to the extent they represent the models used at the group-wide level.

During the six month period ending October 31st 2019, the bank experienced no backtesting exceptions of Total Risk VaR against Actual Gain/Loss.

During the six month period ending October 31st 2019, the bank experienced two Hypothetical Gain/Loss exceptions. On August 2nd, the Hypothetical Loss exceeded 1 Day Regulatory VaR by 10 million and on August 9th, it exceeded it by 4 million. Both exceptions were driven by sizable declines in US interest rates.

LEVERAGE

LR1: Summary comparison of accounting assets vs leverage ratio exposure measure

The following table presents a reconciliation of our total assets per our published financial statements to our leverage ratio exposure measure

LEVERAGE RATIO [1] Summary comparison of accounting assets vs. leverage ratio exposure measure (Millions of Canadian dollars)		Q4/2019	Q3/2019	Q2/2019	Q1/2019	Q4/2018
1	**Total consolidated assets as per published financial statements**	**1,428,935**	**1,406,893**	**1,378,876**	**1,366,207**	**1,334,734**
2	Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	(14,749)	(14,448)	(13,876)	(13,051)	(12,474)
3	Adjustment for securitized exposures that meet the operational requirements for the recognition of risk transfer [2]	(6,831)	(7,070)	(7,070)	(7,072)	
4	Adjustment for fiduciary assets recognized on the balance sheet pursuant to the operative accounting framework but excluded from the leverage ratio exposure measure	-	-	-	-	-
5	Adjustments for derivative financial instruments	(20,391)	(18,922)	2,499	(4,249)	(17,256)
6	Adjustment for securities financing transactions (SFT) (i.e. repo assets and similar secured lending)	13,233	(3,522)	(7,277)	(6,363)	(6,374)
7	Adjustments for off-balance sheet items (i.e., credit equivalent amounts of off-balance sheet exposures)	201,314	199,483	199,563	196,093	183,528
8	Other adjustments	(31,051)	(33,045)	(31,518)	(29,735)	(31,389)
9	**Leverage Ratio Exposure**	**1,570,460**	**1,529,369**	**1,521,197**	**1,501,830**	**1,450,769**

[1] From Q1 2019 and onwards, based on OSFI's Leverage Requirements Guideline issued in October 2018 with prior quarters based on OSFI's October 2014 Leverage Requirements Guideline. Historical periods reflect the Leverage Ratio Exposure-All-in basis.

[2] OSFI's October 2018 Leverage Requirements Guideline now allows for the exclusion of securitized exposures that meet the operational requirements for risk transference. This exclusion is not applicable for prior quarters.

LR2: Leverage ratio common disclosure template

The following table presents a detailed breakdown of the components of our leverage ratio. Maintaining a prescribed minimum level of leverage helps neutralizes leverage risk in the event of unexpected economic crises. OSFI requires maintenance of a minimum leverage ratio of 3% at all times.

	LEVERAGE RATIO COMMON DISCLOSURE TEMPLATE [1] (Millions of Canadian dollars, except percentages)	Q4/2019	Q3/2019	Q2/2019	Q1/2019	Q4/2018
	On-balance sheet exposures					
1	On-balance sheet items (excluding derivatives, SFTs and grandfathered securitization exposures, but including collateral)	997,866	976,170	962,689	962,610	932,572
2	Gross-up for derivatives collateral provided where deducted from balance sheet assets pursuant to the operative accounting framework (IFRS) [2]	-	-	-	-	-
3	(Deductions of receivables assets for cash variation margin provided in derivatives transactions) [2]	(15,233)	(17,122)	(14,409)	(13,157)	(14,148)
4	(Asset amounts deducted in determining Basel III Tier 1 capital)	(15,664)	(15,641)	(16,723)	(16,096)	(16,670)
5	**Total on-balance sheet exposure (excluding derivatives and SFTs) (sum of lines 1 and 4) [2]**	**966,969**	**943,407**	**931,557**	**933,357**	**901,754**
	Derivatives exposures					
6	Replacement cost associated with all derivatives transactions (i.e., net of eligible cash variation margin)	28,057	27,095	24,791	23,748	17,836
7	Add-on amounts for potential future exposure (PFE) associated with all derivatives transactions	52,663	52,475	57,405	53,368	57,904
8	(Exempted central counterparty (CCP)-leg of client-cleared trade exposures)	-	-	-	-	-
9	Adjusted effective notional amount of written credit derivatives	449	282	5,115	3,452	1,042
10	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	-	-	-	-	-
11	**Total derivative exposures (sum of lines 6 to 10) [2]**	**81,169**	**79,852**	**87,311**	**80,568**	**76,782**
	Securities financing transaction exposures					
12	Gross SFT assets recognized for accounting purposes (with no recognition of netting), after adjusting for sale accounting transactions	378,609	381,796	346,107	326,384	315,685
13	(Netted amounts of cash payables and cash receivables of gross SFT assets)	(70,834)	(87,496)	(54,006)	(44,985)	(36,209)
14	Counterparty credit risk (CCR) exposure for SFTs	13,233	12,327	10,665	10,413	9,229
15	Agent transaction exposures	-	-	-	-	-
16	**Total securities financing transaction exposures (sum of lines 12 to 15)**	**321,008**	**306,627**	**302,766**	**291,812**	**288,705**
	Other off-balance sheet exposures					
17	Off-balance sheet exposures at gross notional amount	567,383	557,567	551,914	543,381	546,043
18	(Adjustments for conversion to credit equivalent amounts)	(366,069)	(358,084)	(352,351)	(347,288)	(362,515)
19	**Off-balance sheet items (sum of lines 17 and 18)**	**201,314**	**199,483**	**199,563**	**196,093**	**183,528**
	Capital and Total Exposures					
20	**Tier 1 capital**	**67,861**	**66,615**	**65,992**	**64,341**	**63,279**
21	**Total Exposures (sum of lines 3,11,16 and 19)**	**1,570,460**	**1,529,369**	**1,521,197**	**1,501,830**	**1,450,769**
	Leverage ratio					
22	**Basel III leverage ratio**	**4.3%**	**4.4%**	**4.3%**	**4.3%**	**4.4%**

[1] From Q1 2019 onwards, Leverage ratio based on OSFI's Leverage Requirements Guideline issued October 2018 with prior quarters based on OSFI's October 2014 Leverage Requirements Guideline. Historical periods reflect the Leverage Ratio Exposure-All-in basis.

[2] Prior period disclosures have been restated to reflect new OSFI leverage disclosure presentation format requirements.

Our Leverage ratio of 4.3% was down 10 bps year over year, mainly reflecting higher leverage ratio exposures, share repurchases, and the net redemption of preferred shares, partially offset by internal capital generation. The increase in leverage exposures was primarily attributable to growth in retail and wholesale lending, repo-style transactions, securities and the impact of regulatory changes.

TOTAL LOSS ABSORBING CAPACITY (TLAC) DISCLOSURE REQUIREMENTS

KM2: Key metrics – TLAC requirements (at resolution group level)

The following summary table provides information about our total loss-absorbing capacity (TLAC) available, and TLAC requirements applied, at the resolution group level under a Single Point of Entry. TLAC requirements establish two minimum standards, which are required to be met effective November 1, 2021: the risk-based TLAC ratio, which builds on the risk-based capital ratios described in the CAR guideline, and the TLAC leverage ratio, which builds on the leverage ratio described in OSFI's Leverage Requirements guideline. The risk-based TLAC ratio is defined as TLAC divided by Total risk-weighted assets (RWA) while the TLAC leverage ratio is defined as TLAC divided by the Leverage ratio exposure. OSFI has provided notification requiring systemically important banks to maintain a minimum TLAC ratio of 23.5% (inclusive of the revised domestic stability buffer of 2% in Q4 2019) and a TLAC leverage ratio of 6.75%. Our TLAC ratio is expected to increase through normal course refinancing of maturing debt through the effective date of the TLAC requirements.

	(Millions of Canadian dollars, except as otherwise noted)	a October 31 2019	b July 31 2019	c April 30 2019	d January 31 2019	d Change (a) - (b)
Resolution group[1,2]						
1	Total loss-absorbing capacity (TLAC) available	98,034	91,324	83,985	79,794	6,710
2	Total RWA at the level of the resolution group	512,856	510,664	510,463	508,512	2,192
3	TLAC ratio: TLAC as a percentage of RWA (row 1/row 2) (%)	19.1%	17.9%	16.5%	15.7%	1.2%
4	Leverage ratio exposure measure at the level of the resolution group	1,570,460	1,529,369	1,521,197	1,501,831	41,091
5	TLAC Leverage Ratio: TLAC as a percentage of leverage ratio exposure measure (row 1/row 4) (%)	6.2%	6.0%	5.5%	5.3%	0.2%
6a	Does the subordination exemption in the antepenultimate paragraph of Section 11 of the FSB TLAC Term Sheet apply?	Yes	Yes	Yes	Yes	-
6b	Does the subordination exemption in the penultimate paragraph of Section 11 of the FSB TLAC Term Sheet apply?	No	No	No	No	-
6c	If the capped subordination exemption applies, the amount of funding issued that ranks pari passu with Excluded Liabilities and that is recognized as external TLAC, divided by funding issued that ranks pari passu with Excluded Liabilities and that would recognized as external TLAC if no cap was applied (%)	N/A	N/A	N/A	N/A	-

[1] OSFI's TLAC ratio disclosure requirement became effective Q1 2019.

[2] Table incorporates the impact of expected credit loss accounting (ECL) on regulatory capital. Lines 1a, 3a, 5a have been excluded from this table as OSFI does not provide transitional arrangement for ECL.

Our TLAC ratio of 19.1% was up 120 bps reflecting a $7 billion increase in available TLAC. The TLAC leverage ratio of 6.2% was up 20 bps, reflecting increase in available TLAC, partly offset by higher leverage exposure.

TLAC1: TLAC composition (at resolution group level)

The following table presents details of the composition of our TLAC.

As at October 31, 2019

	(Millions of Canadian dollars, except as otherwise noted)	Amount[1]
	Regulatory capital elements of TLAC and adjustments	
1	Common Equity Tier 1 capital (CET1)	62,184
2	Additional Tier 1 capital (AT1) before TLAC adjustments	5,678
3	AT1 ineligible as TLAC as issued out of subsidiaries to third parties	-
4	Other adjustments	-
5	AT1 instruments eligible under the TLAC framework	5,678
6	Tier 2 capital (T2) before TLAC adjustments	10,027
7	Amortised portion of T2 instruments where remaining maturity > 1 year	44
8	T2 capital ineligible as TLAC as issued out of subsidiaries to third parties	-
9	Other adjustments	-
10	T2 instruments eligible under the TLAC framework	10,071
11	TLAC arising from regulatory capital	77,932
	Non-regulatory capital elements of TLAC	
12	External TLAC instruments issued directly by the bank and subordinated to excluded liabilities	-
13	External TLAC instruments issued directly by the bank which are not subordinated to excluded liabilities but meet all other TLAC term sheet requirements	20,148
14	Of which: amount eligible as TLAC after application of the caps	20,148
15	External TLAC instruments issued by funding vehicles prior to January 1, 2022	-
16	Eligible ex ante commitments to recapitalise a G-SIB in resolution	-
17	TLAC arising from non-regulatory capital instruments before adjustments	20,148
	Non-regulatory capital elements of TLAC: adjustments	
18	TLAC before deductions	98,080
19	Deductions of exposures between MPE resolution groups that correspond to items eligible for TLAC (not applicable to SPE G-SIBs and D-SIBs)	-
20	Deduction of investments in own other TLAC liabilities	(46)
21	Other adjustments to TLAC	-
22	TLAC available after deductions	98,034
	Risk-weighted assets and leverage exposure measure for TLAC purposes	
23	Total risk-weighted assets adjusted as permitted under the TLAC regime	512,856
24	Leverage exposure measure	1,570,460
	TLAC ratios and buffers	
25	TLAC Ratio (as a percentage of risk-weighted assets adjusted as permitted under the TLAC regime, row 22 / row 23)	19.1%
26	TLAC Leverage Ratio (as a percentage of leverage exposure)	6.2%
27	CET1 (as a percentage of risk-weighted assets) available after meeting the resolution group's minimum capital and TLAC requirements	N/A
28	Institution-specific buffer (capital conservation buffer plus countercyclical buffer plus higher loss absorbency, expressed as a percentage of risk-weighted assets)	3.5%
29	Of which: capital conservation buffer	2.5%
30	Of which: bank specific countercyclical buffer	0.0%
31	Of which: higher loss absorbency	1.0%

[1] OSFI's TLAC ratio disclosure requirement became effective Q1 2019.

TLAC1: TLAC composition (at resolution group level) (continued)

As at July 31, 2019

(Millions of Canadian dollars, except as otherwise noted)		Amount[1]
	Regulatory capital elements of TLAC and adjustments	
1	Common Equity Tier 1 capital (CET1)	60,938
2	Additional Tier 1 capital (AT1) before TLAC adjustments	5,677
3	AT1 ineligible as TLAC as issued out of subsidiaries to third parties	-
4	Other adjustments	-
5	AT1 instruments eligible under the TLAC framework	5,677
6	Tier 2 capital (T2) before TLAC adjustments	9,948
7	Amortised portion of T2 instruments where remaining maturity > 1 year	44
8	T2 capital ineligible as TLAC as issued out of subsidiaries to third parties	-
9	Other adjustments	-
10	T2 instruments eligible under the TLAC framework	9,992
11	TLAC arising from regulatory capital	76,607
	Non-regulatory capital elements of TLAC	
12	External TLAC instruments issued directly by the bank and subordinated to excluded liabilities	-
13	External TLAC instruments issued directly by the bank which are not subordinated to excluded liabilities but meet all other TLAC term sheet requirements	14,783
14	Of which: amount eligible as TLAC after application of the caps	14,783
15	External TLAC instruments issued by funding vehicles prior to January 1, 2022	-
16	Eligible ex ante commitments to recapitalise a G-SIB in resolution	-
17	TLAC arising from non-regulatory capital instruments before adjustments	14,783
	Non-regulatory capital elements of TLAC: adjustments	
18	TLAC before deductions	91,390
19	Deductions of exposures between MPE resolution groups that correspond to items eligible for TLAC (not applicable to SPE G-SIBs and D-SIBs)	-
20	Deduction of investments in own other TLAC liabilities	(66)
21	Other adjustments to TLAC	-
22	TLAC available after deductions	91,324
	Risk-weighted assets and leverage exposure measure for TLAC purposes	
23	Total risk-weighted assets adjusted as permitted under the TLAC regime	510,664
24	Leverage exposure measure	1,529,369
	TLAC ratios and buffers	
25	TLAC Ratio (as a percentage of risk-weighted assets adjusted as permitted under the TLAC regime, row 22 / row 23)	17.9%
26	TLAC Leverage Ratio (as a percentage of leverage exposure)	6.0%
27	CET1 (as a percentage of risk-weighted assets) available after meeting the resolution group's minimum capital and TLAC requirements	N/A
28	Institution-specific buffer (capital conservation buffer plus countercyclical buffer plus higher loss absorbency, expressed as a percentage of risk-weighted assets)	3.5%
29	Of which: capital conservation buffer	2.5%
30	Of which: bank specific countercyclical buffer	0.0%
31	Of which: higher loss absorbency	1.0%

[1] OSFI's TLAC ratio disclosure requirement became effective Q1 2019.

TLAC2: Material subgroup entity – creditor ranking at legal entity level (G-SIBs only)

TLAC 2 is a G-SIB disclosure requirement to provide the ranking of the liability structure of all our material subsidiaries in foreign jurisdictions as defined by the FSB TLAC term sheet. RBC US Group Holdings LLC ("RBC IHC") is a material subsidiary entity for which TLAC 2 disclosure would be required. However, RBC IHC has been granted an extension to comply with TLAC rules by the Board of Governors of the Federal Reserve System until January 1, 2021. As such, OSFI has granted us an exemption for TLAC 2 disclosure until January 1, 2021. OSFI does require us to disclose TLAC 2 for any other material subsidiary identified, however, at this time RBC IHC is our only material subsidiary.

TLAC3: Resolution entity – creditor ranking at legal entity level

The following table provides information regarding the ranking of our unsecured liabilities structure at the resolution entity level.

As at October 31, 2019

		Creditor ranking					
		1	2	3	4	5	Sum
(Millions of Canadian dollars, except as otherwise noted)		(most junior)					
1	Description of creditor ranking	Common shares	Preferred shares	Subordinated Debt	Bail-in Debt[1]	Other Liabilities excluding Bail-in Debt and Subordinated Debt [2]	
2	Total capital and liabilities net of credit risk mitigation	17,645	5,706	9,794	20,317	-	53,462
3	Subset of row 2 that are excluded liabilities	58	-	14	46	-	118
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)	17,587	5,706	9,780	20,271	-	53,344
5	Subset of row 4 that are *potentially* eligible as TLAC	17,587	5,675	9,524	20,271	-	53,057
6	Subset of row 5 with 1 year ≤ residual maturity < 2 years			-	1,954	-	1,954
7	Subset of row 5 with 2 years ≤ residual maturity < 5 years			110	12,377	-	12,487
8	Subset of row 5 with 5 years ≤ residual maturity < 10 years			8,961	5,224	-	14,185
9	Subset of row 5 with residual maturity ≥ 10 years, but excluding perpetual securities			453	716	-	1,169
10	Subset of row 5 that is perpetual securities	17,587	5,675	-	-	-	23,262

[1] Under the Bail-in Regime, Bail-in Debt which would ordinarily rank equally to Other Liabilities in liquidation, is subject to conversion under statutory resolution powers whereas Other Liabilities are not subject to such conversion.

[2] Completion of this column is not required by OSFI at this time.

TLAC3: Resolution entity – creditor ranking at legal entity level (continued)

As at July 31, 2019

(Millions of Canadian dollars, except as otherwise noted)		Creditor ranking 1 (most junior)	2	3	4	5	Sum
1	Description of creditor ranking	Common shares	Preferred shares	Subordinated Debt	Bail-in Debt[1]	Other Liabilities excluding Bail-in Debt and Subordinated Debt[2]	
2	Total capital and liabilities net of credit risk mitigation	17,652	5,706	9,900	14,869	-	48,127
3	Subset of row 2 that are excluded liabilities	59	1	70	66	-	196
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)	17,593	5,705	9,830	14,803	-	47,931
5	Subset of row 4 that are *potentially* eligible as TLAC	17,593	5,674	9,474	14,803	-	47,544
6	Subset of row 5 with 1 year ≤ residual maturity < 2 years			-	1,899	-	1,899
7	Subset of row 5 with 2 years ≤ residual maturity < 5 years			110	12,392	-	12,502
8	Subset of row 5 with 5 years ≤ residual maturity < 10 years			8,910	38	-	8,948
9	Subset of row 5 with residual maturity ≥ 10 years, but excluding perpetual securities			454	474	-	928
10	Subset of row 5 that is perpetual securities	17,593	5,674	-	-	-	23,267

[1] Under the Bail-in Regime, Bail-in Debt which would ordinarily rank equally to Other Liabilities in liquidation, is subject to conversion under statutory resolution powers whereas Other Liabilities are not subject to such conversion.

[2] Completion of this column is not required by OSFI at this time.

OPERATIONAL RISK

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement		RBC 2019 Annual Report section	Sub-section
a)	Details of the approach for operational risk capital assessment for which the bank qualifies	Operational risk	Operational risk capital
b)	Description of the advanced measurement approaches for operational risk (AMA)	Operational risk	Operational risk capital
c)	Description of the use of insurance for the purpose of mitigating operational risk	Operational risk	Operational risk capital

INTEREST RATE RISK IN THE BANKING BOOK

The table below presents an overview of Pillar 3 disclosure requirements that have been met within our 2019 Annual Report and incorporated by reference into this Pillar 3 report. Our 2019 Annual Report is available free of charge on our website at http://www.rbc.com/investorrelations

Pillar 3 disclosures requirement	RBC 2019 Annual Report section	Sub-section
Interest rate risk in the banking book	Market Risk	Market Risk