Note 4: Loans and Allowance for Credit Losses

Loans are initially measured at fair value plus directly attributable costs, and are subsequently measured at amortized cost using the effective interest method. The effective interest method allocates interest income over the expected term of the loan by applying the effective interest rate to the carrying amount of the loan. The effective interest rate is defined as the rate that exactly discounts estimated future cash receipts through the expected term of the loan to the net carrying amount of the loan. Under the effective interest method, the amount recognized in interest, dividend and fee income, loans, varies over the term of the loan based on the principal outstanding. The treatment of interest income for impaired loans is described below.

Securities Borrowed or Purchased Under Resale Agreements

Securities borrowed or purchased under resale agreements represent the amounts we will receive as a result of our commitment to return or resell securities that we have borrowed or purchased, back to the original lender or seller, on a specified date at a specified price. We account for these instruments as if they were loans.

Lending Fees

Lending fees arise in Personal and Commercial Banking and Capital Markets. The accounting treatment for lending fees varies depending on the transaction. Some loan origination, restructuring and renegotiation fees are recorded as interest income over the term of the loan, while other lending fees are taken into income at the time of loan origination. Commitment fees are calculated as a percentage of the facility balance at the end

of the period. The fees are recorded as interest income over the term of the loan, unless we believe the loan commitment will not be used. In the latter case, commitment fees are recorded as lending fees earned over the commitment period. Loan syndication fees are payable and included in lending fees at the time the syndication is completed, unless the yield on any loans we retain is less than that of other comparable lenders involved in the financing. In the latter case, an appropriate portion of the syndication fee is recorded as interest income over the term of the loan.

Impaired Loans

We classify a loan as impaired when one or more loss events have occurred, such as bankruptcy, default or delinquency. Generally, consumer loans in both Canada and the U.S. are classified as impaired when payment is contractually 90 days past due, or one year past due for residential mortgages if guaranteed by the Government of Canada. Credit card loans are immediately written off when principal or interest payments are 180 days past due, and are not reported as impaired. In Canada, consumer instalment loans, other personal loans and some small business loans are normally written off when they are one year past due. In the U.S., all consumer loans are generally written off when they are 180 days past due, except for non-real estate term loans, which are generally written off when they are 120 days past due. For the purpose of measuring the amount to be written off, the determination of the recoverable amount includes an estimate of future recoveries.

Corporate and commercial loans are classified as impaired when we determine there is no longer reasonable assurance that principal or interest will be collected in their entirety on a timely basis. Generally, we consider corporate and commercial loans to be impaired when payments are 90 days past due. Corporate and commercial loans are written off following a review on an individual loan basis that confirms all recovery attempts have been exhausted.

A loan will be reclassified to performing status when we determine that there is reasonable assurance of full and timely repayment of interest and principal in accordance with the terms and conditions of the loan, and that none of the criteria for classification of the loan as impaired continue to apply.

Loans are in default when the borrower is unlikely to pay its credit obligations in full without recourse by the bank, such as realizing security, or when the borrower's payments are past due more than 90 days (180 days for credit card loans). Overdrafts are considered to be past due once the customer has breached an advised limit or been advised of a limit smaller than currently outstanding or, in the case of retail overdrafts, has not brought the overdraft down to a $nil balance within a specified time period.

Our average gross impaired loans were $2,115 million for the year ended October 31, 2018 ($2,248 million in 2017). Our average impaired loans, net of the specific allowance, were $1,706 million for the year ended October 31, 2018 ($1,838 million in 2017).

Once a loan is identified as impaired, we continue to recognize interest income based on the original effective interest rate on the loan amount net of its related allowance. In the periods following the recognition of impairment, adjustments to the allowance for these loans reflecting the time value of money are recognized and presented as interest income. Interest income on impaired loans of $67 million was recognized for the year ended October 31, 2018 ($75 million in 2017 and $74 million in 2016).

During the year ended October 31, 2018, we recorded a net gain of $4 million before tax ($28 million in 2017 and $5 million in 2016) on the sale of impaired and written-off loans.

Allowance for Credit Losses ("ACL")

The allowance for credit losses recorded in our Consolidated Balance Sheet is maintained at a level that we consider adequate to absorb credit-related losses on our loans and other credit instruments. The allowance for credit losses amounted to $1,870 million as at October 31, 2018, of which $1,639 million was recorded in loans and $231 million was recorded in other liabilities in our Consolidated Balance Sheet.

Allowance on Performing Loans

We maintain an allowance in order to cover impairment in the existing portfolio for loans that have not yet been individually identified as impaired. Our approach to establishing and maintaining the allowance on performing loans is based on the requirements of IFRS, considering guidelines issued by OSFI.

Under the IFRS 9 ECL methodology, an allowance is recorded for expected credit losses on financial assets regardless of whether there has been an actual impairment. We recognize a loss allowance at an amount equal to 12 month expected credit losses, if the credit risk at the reporting date has not increased significantly since initial recognition (Stage 1). We will record expected credit losses over the remaining life of performing financial assets which are considered to have experienced a significant increase in credit risk (Stage 2).

The determination of a significant increase in credit risk takes into account many different factors and varies by product and risk segment. The main factors considered in making this determination are relative changes in probability-weighted probability of default since origination and certain other criteria, such as 30-day past due and watchlist status.

For each exposure, ECL is a function of the probability of default ("PD"), exposure at default ("EAD") and loss given default ("LGD"), with the timing of the loss also considered, and is estimated by incorporating forward-looking economic information and through the use of experienced credit judgment to reflect factors not captured in ECL models.

PD represents the likelihood that a loan will not be repaid and will go into default in either a 12 month horizon for Stage 1 or a lifetime horizon for Stage 2. The PD for each individual instrument is modelled based on historical data and is estimated based on current market conditions and reasonable and supportable information about future economic conditions.

EAD is modelled on historical data and represents an estimate of the outstanding amount of credit exposure at the time a default may occur. For off-balance sheet and undrawn amounts, EAD includes an estimate of any further amounts to be drawn at the time of default.

LGD is the amount that may not be recovered in the event of default and is modelled based on historical data and reasonable and supportable information about future economic conditions, where appropriate. LGD takes into consideration the amount and quality of any collateral held.

We consider past events, current market conditions and reasonable forward-looking supportable information about future economic conditions in calculating the amount of expected losses. In assessing information about possible future economic conditions, we utilize multiple economic scenarios including our base case, which represents, in our view, the most probable outcome, as well as benign and adverse forecasts, all of which are developed by our Economics group. Key economic variables used in the determination of the allowance for credit losses reflect the geographic diversity of our portfolios, where appropriate.

In considering the lifetime of a loan, the contractual period of the loan, including prepayment, extension and other options, is generally used. For revolving instruments, such as credit cards, which may not have a defined contractual period, the lifetime is based on historical behaviour.

Our ECL methodology also requires the use of experienced credit judgment to incorporate the estimated impact of factors that are not captured in the modelled ECL results.

Allowance on Impaired Loans

We maintain an allowance on individually identified impaired loans (Stage 3) of $370 million on our gross impaired loans of $1,936 million, to reduce their carrying value to an expected recoverable amount of $1,566 million as at October 31, 2018 ($1,827 million as at October 31, 2017). We review our loans on an ongoing basis to assess whether any loans should be classified as impaired and whether an allowance or write-off should be recorded (excluding credit card loans, which are classified as impaired and written off when principal or interest payments are 180 days past due). The review of individually significant problem loans is conducted at least quarterly by the account managers, each of whom assesses the ultimate collectability and estimated recoveries for a specific loan based on all events and conditions that are relevant to the loan. This assessment is then reviewed and approved by an independent credit officer.

Individually Significant Impaired Loans

To determine the amount we expect to recover from an individually significant impaired loan, we use the value of the estimated future cash flows discounted at the loan's original effective interest rate. The determination of estimated future cash flows of a collateralized impaired loan reflects the expected realization of the underlying security, net of expected costs and any amounts legally required to be paid to the borrower. Security can vary by type of loan and may include cash, securities, real estate properties, accounts receivable, guarantees, inventory or other capital assets.

Individually Insignificant Impaired Loans

Residential mortgages, consumer instalment and other personal loans are individually insignificant and may be individually assessed or collectively assessed for losses at the time of impairment, taking into account historical loss experience and expectations of future economic conditions. Collectively assessed loans are grouped together by similar risk characteristics, such as type of instrument, geographic location, industry, type of collateral and term to maturity.

Loans Credit Risk Exposure

The following table sets out our credit risk exposure for all loans carried at amortized cost or FVTPL as at October 31, 2018. Stage 1 represents those performing loans carried with a 12 month expected credit loss, Stage 2 represents those performing loans carried with a lifetime expected credit loss, and Stage 3 represents those loans with a lifetime credit loss that are credit impaired.

(Canadian $ in millions)				2018
	Stage 1	Stage 2	Stage 3	Total
Loans: Residential mortgages				
Exceptionally low	–	–	–	–
Very low	76,314	125	–	76,439
Low	18,975	2,479	–	21,454
Medium	12,621	3,765	–	16,386
High	90	445	–	535
Not rated	4,250	181	–	4,431
Impaired	–	–	375	375
Allowance for credit losses	20	37	19	76
Carrying amount	112,230	6,958	356	119,544
Loans: Consumer instalment and other personal				
Exceptionally low	20,236	20	–	20,256
Very low	13,364	222	–	13,586
Low	12,581	364	–	12,945
Medium	7,707	4,153	–	11,860
High	127	1,657	–	1,784
Not rated	2,105	168	–	2,273
Impaired	–	–	521	521
Allowance for credit losses	83	312	143	538
Carrying amount	56,037	6,272	378	62,687
Loans: Credit cards				
Exceptionally low	2,403	4	–	2,407
Very low	1,140	11	–	1,151
Low	943	107	–	1,050
Medium	1,742	874	–	2,616
High	108	428	–	536
Not rated	568	1	–	569
Impaired	–	–	–	–
Allowance for credit losses	39	191	–	230
Carrying amount	6,865	1,234	–	8,099
Loans: Business and government (1)				
Acceptable				
Investment grade	109,774	2,148	–	111,922
Sub-investment grade	88,348	7,308	–	95,656
Watchlist	–	4,423	–	4,423
Impaired	–	–	1,040	1,040
Allowance for credit losses	232	355	208	795
Carrying amount	197,890	13,524	832	212,246
Commitments and financial guarantee contracts				
Acceptable				
Investment grade	116,108	1,722	–	117,830
Sub-investment grade	44,895	3,426	–	48,321
Watchlist	–	1,650	–	1,650
Impaired	–	–	242	242
Allowance for credit losses	108	96	27	231
Carrying amount	160,895	6,702	215	167,812

(1) Includes customers' liability under acceptances.

The following table shows the continuity in the loss allowance by each product type as at October 31, 2018.

(Canadian $ in millions)

For the twelve months ended	Stage 1	Stage 2	Stage 3	Total
Loans: Residential mortgages				
Balance as at November 1, 2017	16	34	49	99
Transfer to Stage 1	34	(31)	(3)	–
Transfer to Stage 2	(1)	7	(6)	–
Transfer to Stage 3	–	(9)	9	–
Net remeasurement of loss allowance	(37)	42	19	24
Loan originations	10	–	–	10
Derecognitions and maturities	(2)	(6)	–	(8)
Total provision for credit losses (“PCL”) (1)	4	3	19	26
Write-offs	–	–	(20)	(20)
Recoveries of previous write-offs	–	–	7	7
Foreign exchange and other	–	1	(11)	(10)
Balance as at October 31, 2018	20	38	44	102
Loans: Consumer instalment and other personal				
Balance as at November 1, 2017	76	357	137	570
Transfer to Stage 1	214	(200)	(14)	–
Transfer to Stage 2	(22)	105	(83)	–
Transfer to Stage 3	(4)	(162)	166	–
Net remeasurement of loss allowance	(196)	272	162	238
Loan originations	39	–	–	39
Derecognitions and maturities	(18)	(50)	–	(68)
Total PCL (1)	13	(35)	231	209
Write-offs	–	–	(301)	(301)
Recoveries of previous write-offs	–	–	92	92
Foreign exchange and other	1	4	(15)	(10)
Balance as at October 31, 2018	90	326	144	560
Loans: Credit cards				
Balance as at November 1, 2017	83	254	–	337
Transfer to Stage 1	177	(177)	–	–
Transfer to Stage 2	(37)	37	–	–
Transfer to Stage 3	(1)	(195)	196	–
Net remeasurement of loss allowance	(164)	342	20	198
Loan originations	19	–	–	19
Derecognitions and maturities	(3)	(42)	–	(45)
Total PCL (1)	(9)	(35)	216	172
Write-offs	–	–	(319)	(319)
Recoveries of previous write-offs	–	–	103	103
Balance as at October 31, 2018	74	219	–	293
Loans: Business and government				
Balance as at November 1, 2017	268	410	234	912
Transfer to Stage 1	136	(128)	(8)	–
Transfer to Stage 2	(31)	66	(35)	–
Transfer to Stage 3	(1)	(61)	62	–
Net remeasurement of loss allowance	(155)	203	215	263
Loan originations	163	–	–	163
Derecognitions and maturities	(80)	(86)	–	(166)
Model changes	(7)	(3)	–	(10)
Total PCL (1)	25	(9)	234	250
Write-offs	–	–	(297)	(297)
Recoveries of previous write-offs	–	–	59	59
Foreign exchange and other	5	7	(21)	(9)
Balance as at October 31, 2018	298	408	209	915
Total as at October 31, 2018	482	991	397	1,870
Comprised of: Loans	374	895	370	1,639
Other credit instruments (2)	108	96	27	231

(1) Excludes provision for credit losses on other assets of $5 million.

(2) Recorded in other liabilities on the Consolidated Balance Sheet.

The following table shows the continuity of our allowance for credit losses under IAS 39 as at October 31, 2017:

(Canadian $ in millions)	Residential mortgages		Credit card, consumer instalment and other personal loans		Business and government loans		Total	
	2017	2016	2017	2016	2017	2016	2017	2016
Impairment allowances (specific ACL), beginning of year	59	69	123	113	250	210	432	392
Amounts written off	(27)	(38)	(631)	(616)	(296)	(349)	(954)	(1,003)
Recoveries of amounts written off in previous years	16	16	199	173	50	154	265	343
Charge to income statement (specific PCL)	11	24	464	478	347	269	822	771
Foreign exchange and other movements	(10)	(12)	(18)	(25)	(117)	(34)	(145)	(71)
Specific ACL, end of year	49	59	137	123	234	250	420	432
Collective ACL, beginning of year	71	111	596	714	1,015	835	1,682	1,660
Charge (recovery) to income statement (collective PCL)	(1)	(42)	(6)	(120)	(69)	162	(76)	–
Foreign exchange and other movements	(1)	2	(4)	2	(25)	18	(30)	22
Collective ACL, end of year	69	71	586	596	921	1,015	1,576	1,682
Total ACL	118	130	723	719	1,155	1,265	1,996	2,114
Comprised of: Loans	93	104	722	719	1,018	1,102	1,833	1,925
Other credit instruments (1)	25	26	1	–	137	163	163	189

(1) The total specific and collective allowances related to other credit instruments are included in other liabilities.

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

Significant changes in the gross balances, including originations, maturities and repayments in the normal course of operations, impact the allowance for credit losses.

Loans and allowance for credit losses by geographic region as at October 31, 2018 under IFRS 9 and as at October 31, 2017 under IAS 39 are as follows:

(Canadian $ in millions)	2018				2017			
	Gross amount	**Allowance on impaired loans** (2)	**Allowance on performing loans** (3)	**Net amount**	Gross amount	Specific allowance (2)	Collective allowance (3)	Net amount
By geographic region: (1)								
Canada	**244,837**	**189**	**689**	**243,959**	233,672	212	799	232,661
United States	**131,247**	**181**	**574**	**130,492**	115,029	161	641	114,227
Other countries	**9,546**	**–**	**6**	**9,540**	11,639	20	–	11,619
Total	**385,630**	**370**	**1,269**	**383,991**	360,340	393	1,440	358,507

(1) Geographic region is based upon the country of ultimate risk.
(2) Excludes allowance for credit losses on impaired loans of $27 million for other credit instruments, which is included in other liabilities ($27 million in 2017).
(3) Excludes allowance for credit losses on performing loans of $204 million for other credit instruments, which is included in other liabilities ($136 million in 2017).

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

Impaired loans, including the related allowances, as at October 31, 2018 under IFRS 9 and as at October 31, 2017 under IAS 39 are as follows:

(Canadian $ in millions)	Gross impaired amount (1)		**Allowance on impaired loans** (3)	Specific allowance (3)	**Net**	Net impaired amount
	2018	2017	**2018**	2017	**2018**	2017
Residential mortgages	**375**	391	**19**	24	**356**	367
Consumer instalment and other personal loans	**521**	556	**143**	136	**378**	420
Business and government loans	**1,040**	1,273	**208**	233	**832**	1,040
Total	**1,936**	2,220	**370**	393	**1,566**	1,827
By geographic region: (2)						
Canada	**735**	793	**189**	212	**546**	581
United States	**1,201**	1,377	**181**	161	**1,020**	1,216
Other countries	**–**	50	**–**	20	**–**	30
Total	**1,936**	2,220	**370**	393	**1,566**	1,827

(1) Excludes purchased credit impaired loans.
(2) Geographic region is based upon the country of ultimate risk.
(3) Excludes allowance for credit losses on impaired loans of $27 million for other credit instruments, which is included in other liabilities ($27 million in 2017).

Fully secured loans with amounts past due between 90 and 180 days that we have not classified as impaired totalled $49 million and $62 million as at October 31, 2018 and 2017, respectively.

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

Loans Past Due Not Impaired

Loans that are past due but not classified as impaired are loans where our customers have failed to make payments when contractually due, but for which we expect the full amount of principal and interest payments to be collected, or which are held at fair value. The following table presents loans that are past due but not classified as impaired as at October 31, 2018 and 2017.

(Canadian $ in millions)	1 to 29 days		30 to 89 days		90 days or more		Total	
	2018	2017	**2018**	2017	**2018**	2017	**2018**	2017
Residential mortgages (1)	**660**	649	**513**	438	**21**	19	**1,194**	1,106
Credit card, consumer instalment and other personal loans	**1,431**	1,480	**415**	466	**88**	94	**1,934**	2,040
Business and government loans	**611**	589	**268**	297	**55**	72	**934**	958
Total	**2,702**	2,718	**1,196**	1,201	**164**	185	**4,062**	4,104

(1) The percentage of loans 90 days or more past due but not impaired that were guaranteed by the Government of Canada is 66% for 2018 and 67% for 2017.

ECL Sensitivity and Key Economic Variables

The allowance for performing loans is sensitive to changes in both economic forecasts and the probability-weight assigned to each forecast scenario. Many of the factors have a high degree of interdependency although there is no single factor to which loan impairment allowances as a whole are sensitive.

If we assumed a 100% base case economic forecast and included the impact of loan migration by restaging, with other assumptions held constant including the application of experienced credit judgment, the allowance for performing loans would be approximately $1,250 million as at October 31, 2018 compared to the reported allowance for performing loans of $1,473 million.

If we assumed a 100% adverse economic forecast and included the impact of loan migration by restaging, with other assumptions held constant including the application of experienced credit judgment, the allowance for performing loans would be approximately $2,650 million as at October 31, 2018, compared to the reported allowance for performing loans of $1,473 million.

Actual results in a recession will differ as our portfolio will change through time due to migration, growth, risk mitigation actions and other factors. In addition, our allowance will reflect the three economic scenarios used in assessing the allowance with weightings attached to adverse and benign scenarios often unequally weighted and the weightings will change through time.

The following table shows the key economic variables we use to estimate our allowance on performing loans during the forecast period. The values shown represent the end of period national average values for the first 12 months and then the national average for the remaining horizon. While the values disclosed below are national variables, in our underlying models we use regional variables where considered appropriate.

	Benign scenario		**Base scenario**		**Adverse scenario**	
As at October 31, 2018	**First 12 months**	**Remaining horizon** (1)	**First 12 months**	**Remaining horizon** (1)	**First 12 months**	**Remaining horizon** (1)
Real gross domestic product (2)						
Canada	**3.1%**	**2.4%**	**1.8%**	**1.6%**	**(3.2)%**	**0.8%**
U.S.	**2.9%**	**1.9%**	**2.4%**	**1.6%**	**(2.9)%**	**0.9%**
Corporate BBB 10-year spread						
Canada	**2.0%**	**2.1%**	**2.3%**	**2.3%**	**4.7%**	**3.9%**
U.S.	**1.8%**	**2.0%**	**2.2%**	**2.3%**	**4.3%**	**3.5%**
Unemployment rates						
Canada	**5.4%**	**5.2%**	**5.6%**	**5.6%**	**9.3%**	**9.3%**
U.S.	**3.2%**	**3.1%**	**3.6%**	**3.7%**	**6.7%**	**6.8%**
Housing Price Index						
Canada (3)	**2.4%**	**2.6%**	**1.4%**	**1.8%**	**(12.8)%**	**(3.2)%**
U.S. (4)	**5.1%**	**4.3%**	**3.6%**	**3.0%**	**(7.3)%**	**(1.2)%**

(1) The remaining forecast period is two years.
(2) Real gross domestic product is based on year over year growth.
(3) In Canada, we use the HPI Benchmark Composite.
(4) In the U.S., we use the National Case-Shiller House Price Index.

The ECL approach requires the recognition of credit losses based on up to 12 months of expected losses for performing loans (Stage 1) and the recognition of lifetime expected losses on performing loans that have experienced a significant increase in credit risk since origination (Stage 2). Under our current probability-weighted scenarios, if all our performing loans were in Stage 1, our models would generate an allowance for performing loans of approximately $1,000 million compared to the reported allowance for performing loans of $1,473 million.

Renegotiated Loans

From time to time we modify the contractual terms of a loan due to the poor financial condition of the borrower. We assess renegotiated loans for impairment consistent with our existing policies for impairment. When renegotiation leads to significant concessions being granted, and the concessions are for economic or legal reasons related to the borrower's financial difficulty that we would not otherwise consider, the loan is classified as impaired. We consider one or a combination of the following to be significant concessions: (1) a reduction of the stated interest rate, (2) an extension of the maturity date or dates at a stated interest rate lower than the current market rate for a new loan with similar terms, or (3) forgiveness of principal or accrued interest.

Renegotiated loans are permitted to remain in performing status if the modifications are not considered to be significant, or are returned to performing status when none of the criteria for classification as impaired continue to apply.

The carrying value of our renegotiated loans was $1,129 million as at October 31, 2018 ($1,064 million in 2017). Renegotiated loans of $541 million were classified as performing during the year ended October 31, 2018 ($509 million in 2017). Renegotiated loans of $53 million were written off in the year ended October 31, 2018 ($36 million in 2017).

Foreclosed Assets

Property or other assets that we receive from borrowers to satisfy their loan commitments are classified as either held for use or held for sale according to management's intention and are recorded at their carrying amount.

During the year ended October 31, 2018, we foreclosed on impaired loans and received $117 million of real estate properties that we classified as held for sale ($62 million in 2017).

As at October 31, 2018, real estate properties held for sale totalled $58 million ($55 million in 2017). These properties are disposed of when considered appropriate. During the year ended October 31, 2018, we recorded an impairment loss of $10 million on real estate properties classified as held for sale ($10 million in 2017 and $18 million in 2016).

Write-offs Subject to Collection Efforts

Generally, we continue to seek recovery on amounts that were written off during the period unless the loan is sold, we no longer have the right to collect or we have exhausted all reasonable efforts to collect.

Collateral

Collateral is used to manage credit risk related to securities borrowed or purchased under resale agreements, residential mortgages, consumer instalment and other personal loans and business and government loans. Additional information on our collateral requirements is included in Notes 14 and 24 as well as in the blue-tinted font in the Enterprise-Wide Risk Management section of Management's Discussion and Analysis on pages 87 and 88 of this report.