

Note 11: Goodwill and Intangible Assets

Goodwill

When we complete an acquisition, we allocate the purchase price paid to the assets acquired, including identifiable intangible assets, and the liabilities assumed. Any portion of the consideration transferred that is in excess of the fair value of those net assets is considered to be goodwill. Goodwill is not amortized and is instead tested for impairment annually.

In performing the impairment test, we utilize the fair value less costs to sell for each group of CGUs based on discounted cash flow projections. Cash flows were projected for the first 10 years based on actual operating results, expected future business performance and past experience. Beyond 10 years, cash flows were assumed to grow at perpetual annual rates of up to 2% (3% in 2017). The discount rates we applied in determining the recoverable amounts in 2018 ranged from 8.6% to 11.4% (8.3% to 12.2% in 2017), and were based on our estimate of the cost of capital for each CGU. The cost of capital for each CGU was estimated using the Capital Asset Pricing Model, based on the historical betas of publicly traded peer companies that are comparable to the CGU.

There were no write-downs of goodwill due to impairment during the years ended October 31, 2018 and 2017.

The key assumptions described above may change as market and economic conditions change. However, we estimate that reasonably possible changes in these assumptions are not expected to cause recoverable amounts of our CGUs to decline below their carrying amounts.

A continuity of our goodwill by group of CGUs for the years ended October 31, 2018 and 2017 is as follows:

(Canadian \$ in millions)	Personal and Commercial Banking			Wealth Management		BMO Capital Markets	Total	
	Canadian P&C	U.S. P&C	Total	Traditional Wealth Management	Insurance	Total		
Balance – October 31, 2016	97	3,861	3,958	2,117	2	2,119	304	6,381
Acquisitions (disposals) during the year	-	-	-	(4)	-	(4)	-	(4)
Foreign exchange and other (1)	-	(142)	(142)	24	-	24	(15)	(133)
Balance – October 31, 2017	97	3,719	3,816	2,137	2	2,139	289	6,244
Acquisitions (disposals) during the year	-	-	-	-	-	-	54	54
Foreign exchange and other (1)	-	78	78	(8)	-	(8)	5	75
Balance – October 31, 2018	97 (2)	3,797 (3)	3,894	2,129 (4)	2 (5)	2,131	348 (6)	6,373

(1) Other changes in goodwill included the effects of translating goodwill denominated in foreign currencies into Canadian dollars and purchase accounting adjustments related to prior-year purchases.

(2) Relates primarily to bcpbank Canada, Diners Club, Aver Media LP and GE Transportation Finance.

(3) Relates primarily to First National Bank & Trust, Ozaukee Bank, Merchants and Manufacturers Bancorporation, Inc., Diners Club, AMCORE, M&I and GE Transportation Finance.

(4) Relates to BMO Nesbitt Burns Inc., Guardian Group of Funds Ltd., Pyrford International plc, LGM Investments Limited, M&I, myCFO, Inc., Stoker Ostler Wealth Advisors, Inc., CTC Consulting LLC, AWMB and F&C Asset Management plc.

(5) Relates to AIG.

(6) Relates to Gerard Klauer Mattison, BMO Nesbitt Burns Inc., Paloma Securities L.L.C., M&I, Greene Holcomb Fisher and KGS.

Intangible Assets

Intangible assets related to our acquisitions are initially recorded at their fair value at the acquisition date and subsequently at cost less accumulated amortization. Software is recorded at cost less accumulated amortization. Amortization expense is recorded in amortization of intangible assets in our Consolidated Statement of Income. The following table presents the changes in the balance of these intangible assets:

(Canadian \$ in millions)	Customer relationships	Core deposits	Branch distribution networks	Software – amortizing	Software under development	Other	Total
Cost as at October 31, 2016	704	968	194	3,189	476	365	5,896
Additions (disposals)	(33)	-	-	546	(67)	-	446
Foreign exchange and other	(17)	(37)	(7)	(39)	(11)	11	(100)
Cost as at October 31, 2017	654	931	187	3,696	398	376	6,242
Additions (disposals)	35	-	-	422	94	12	563
Foreign exchange and other	(1)	20	4	9	4	(4)	32
Cost as at October 31, 2018	688	951	191	4,127	496	384	6,837

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

The following table presents the accumulated amortization of our intangible assets:

(Canadian \$ in millions)	Customer relationships	Core deposits	Branch distribution networks	Software – amortizing	Software under development	Other	Total
Accumulated amortization at October 31, 2016	398	735	194	2,329	-	62	3,718
Amortization	68	56	-	336	-	25	485
Disposals	(22)	-	-	(11)	-	-	(33)
Foreign exchange and other	(13)	(29)	(7)	(36)	-	(2)	(87)
Accumulated amortization at October 31, 2017	431	762	187	2,618	-	85	4,083
Amortization	46	51	-	387	-	19	503
Disposals	-	-	-	(20)	-	-	(20)
Foreign exchange and other	(2)	17	4	(15)	-	(5)	(1)
Accumulated amortization at October 31, 2018	475	830	191	2,970	-	99	4,565
Carrying value at October 31, 2018	213	121	-	1,157	496	285	2,272
Carrying value at October 31, 2017	223	169	-	1,078	398	291	2,159

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

Intangible assets are amortized to income over the period during which we believe the assets will benefit us, on either a straight-line or an accelerated basis, over a period not to exceed 15 years. We have \$165 million as at October 31, 2018 (\$169 million as at October 31, 2017) in intangible assets with indefinite lives that relate primarily to fund management contracts.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The useful lives of intangible assets are reviewed annually for any changes in circumstances. We test definite-life intangible assets for impairment when events or changes in circumstances indicate that their carrying value may not be recoverable. Indefinite-life intangible assets are tested annually for impairment. If any intangible assets are determined to be impaired, we write them down to their recoverable amount, the higher of value in use and fair value less costs to sell, when this is less than the carrying value.

There were write-downs of intangible assets of \$13 million during the year ended October 31, 2018 (\$5 million in 2017).
