

Hana Bank and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2019
and 2018 with independent auditor's report



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Independent auditor's report

The Shareholders and Board of Directors Hana Bank Co., Ltd. and its subsidiaries

Opinion

We have audited the consolidated financial statements of Hana Bank Co., Ltd. (the "Bank") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as of December 31, 2019 and 2018, and the consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2019 and 2018 and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("KIFRS").

Basis for opinion

We conducted our audits in accordance with Korean Auditing Standards ("KGAAS"). Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the consolidated financial statements section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audits of the consolidated financial statements in the Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of management and those charged with governance for the consolidated financial statements

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

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

Those charged with governance are responsible for overseeing the Group financial reporting process.

Auditor's responsibilities for the audit of the consolidated financial statements

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

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

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

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



March 6, 2020

This audit report is effective as of March 6, 2020, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the auditor's report date of the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report

Hana Bank Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2019 and 2018

"The accompanying consolidated financial statements, including all footnotes and disclosures, have been prepared by, and are the responsibility of, the Group"

Sung Kyu Ji
Chief Executive Officer
Hana Bank Co., Ltd.

Hana Bank Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2019 and 2018

(Korean won in millions)

	Notes	2019	2018
Assets			
Cash and due from banks	5, 6, 7, 9, 11, 50	₩ 20,002,427	₩ 20,452,123
Financial assets at FVTPL	4, 5, 6, 7, 8, 12, 15, 17	10,747,444	8,420,106
Derivative assets used for hedging	5, 6, 7, 8, 9, 17	66,527	6,755
Financial assets at FVOCI	4, 5, 6, 7, 8, 13, 15	35,886,874	34,845,060
Securities at amortized cost	4, 5, 6, 7, 8, 14, 15	15,624,150	13,582,381
Loans	5, 6, 7, 8, 9, 16	263,960,658	244,468,590
Investments in associates	18	2,106,463	988,345
Property and equipment	10, 19	2,227,269	1,861,622
Investment property	10, 20	604,037	527,668
Intangible assets	10, 21	302,305	285,862
Current tax assets		10,316	11,173
Deferred tax assets	47	39,218	55,845
Other assets	5, 6, 7, 8, 9, 23	14,680,563	11,340,624
Merchant banking account assets	5, 6, 7, 9, 23	3,255,106	2,940,272
Non-current assets held for sale	22	24,495	466,117
Total assets		₩ 369,537,852	₩ 340,252,543
Liabilities and equity			
Liabilities			
Deposits	5, 6, 7, 9, 24	₩ 270,978,957	₩ 246,754,859
Financial liabilities at FVTPL	4, 5, 6, 7, 8, 25	4,244,494	3,590,576
Derivative liabilities used for hedging	5, 6, 7, 8, 9, 17	27,303	98,797
Borrowings	5, 6, 7, 9, 26, 50	14,778,527	15,280,970
Bonds	5, 6, 7, 9, 27, 50	23,530,120	24,668,613
Net defined benefit liabilities	28	325,899	138,491
Provisions	29	451,217	235,186
Current tax liabilities		491,321	258,650
Deferred tax liabilities	47	113,847	184,364
Other liabilities	5, 6, 7, 8, 9, 30	27,041,203	22,193,235
Merchant banking account liabilities	5, 6, 7, 9, 30	2,088,517	2,339,383
Total liabilities		₩ 344,071,405	₩ 315,743,124
Equity			
Capital stock	31	5,359,578	5,359,578
Capital surplus	31	9,653,546	9,670,357
Hybrid equity securities	31	179,737	179,737
Capital adjustments	31	(37,553)	(41,895)
Retained earnings	33	10,913,867	10,122,654
(Regulatory reserve for bad debts in the amount of ₩2,139,549, ₩1,934,322 as of December 31, 2019, 2018, respectively)			
(Required provision for (reversal of) bad debts in the amount of ₩192,890, ₩205,227 as of December 31, 2019, 2018, respectively)			
(Planned provision for bad debts in the amount of ₩192,890, ₩205,227 as of December 31, 2019, 2018, respectively)			
Accumulated other comprehensive loss	34 32	(845,505)	(870,813)
Equity attributable to owners of the parent		25,223,670	24,419,618
Non-controlling interests		242,777	89,801
Total equity		25,466,447	24,509,419
Total liabilities and equity		₩ 369,537,852	₩ 340,252,543

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

Hana Bank Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2019 and 2018

(Korean won in millions, except earnings per share)

	Notes	2019	2018
Net interest income	10, 35, 36		
Interest income		₩ 10,053,972	₩ 9,378,701
Interest expenses		(4,639,959)	(4,081,500)
		<u>5,414,013</u>	<u>5,297,201</u>
Net fee and commission income	10, 35, 37		
Fees and commission income		882,305	835,895
Fees and commission expenses		(206,984)	(195,502)
		<u>675,321</u>	<u>640,393</u>
Net gain on financial instruments at FVTPL	17, 35, 38	425,528	264,871
Net gain (loss) on derivative financial instruments used for hedging	35, 39	8,741	(12,003)
Net gain on financial instruments at FVOCI	35, 40	48,378	7,289
Impairment loss	35, 41	(228,030)	(181,167)
General and administrative expenses	10, 35, 42	(3,311,402)	(3,025,472)
Net other operating income			
Other operating income	35, 43	4,067,592	4,144,724
Other operating expenses	35, 44	(4,384,231)	(4,264,930)
		<u>(316,639)</u>	<u>(120,206)</u>
Operating income		<u>2,715,910</u>	<u>2,870,906</u>
Net non-operating income			
Non-operating income	10, 45	593,039	92,775
Non-operating expenses	10, 46	(377,653)	(92,981)
		<u>215,386</u>	<u>(206)</u>
Income before income tax expenses		<u>2,931,296</u>	<u>2,870,700</u>
Income tax expenses	10, 47	(780,799)	(778,268)
Net income		<u>2,150,497</u>	<u>2,092,432</u>
Net income			
Owners of the parent		2,139,759	2,085,920
(Adjusted income after regulatory reserve for bad debt in the amount of ₩1,946,869, ₩1,889,615 for the years ended December 31, 2019, 2018, respectively)	34		
Non-controlling interests		<u>10,738</u>	<u>6,512</u>
		<u>2,150,497</u>	<u>2,092,432</u>
Other comprehensive income (loss)	32		
Items that may be reclassified subsequently to profit or loss:			
Gain on valuation of debt securities at FVOCI		274,953	240,243
Gain (loss) on translation of foreign operations		112,570	(9,028)
Changes in equity on investments in associates		21,024	30,284
Loss on valuation of net investment hedges of foreign operations		(25,953)	(12,344)
Loss on valuation of fair value hedges		(3,220)	(9,340)
Income tax effect		(75,623)	(76,026)
		<u>303,751</u>	<u>163,789</u>
Items that will not be reclassified subsequently to profit or loss:			
Remeasurement of defined benefit plan		(226,379)	(130,393)
Gain (loss) on valuation of equity securities at FVOCI		(179,784)	222,315
Income tax effect		111,728	(25,279)
		<u>(294,435)</u>	<u>66,643</u>
		<u>9,316</u>	<u>230,432</u>
Total comprehensive income		<u>₩ 2,159,813</u>	<u>₩ 2,322,864</u>
Owners of the parent		2,140,300	2,319,300
Non-controlling interests		19,513	3,564
Earnings per share	48		
Basic earnings per share		₩ 1,987	₩ 1,937
Diluted earnings per share		<u>₩ 1,987</u>	<u>₩ 1,937</u>

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

Hana Bank Co., Ltd. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2019 and 2018
(Korean won in millions)

	Capital stock	Capital surplus	Hybrid equity securities	Capital adjustments	Retained earnings	Accumulated other comprehensive loss	Equity attributable to owners of the parent	Non-controlling interests	Total
As of January 1, 2018	₩ 5,359,578	₩ 9,688,863	₩ 179,737	₩ (42,624)	₩ 8,735,759	₩ (751,704)	₩ 23,149,609	₩ 89,547	₩ 23,239,158
Effect of changes in accounting standards	-	-	-	-	301,831	(370,931)	(69,100)	(1,300)	(70,400)
Dividends	-	-	-	-	(972,600)	-	(972,600)	-	(972,600)
Dividends on hybrid equity securities	-	-	-	-	(9,814)	-	(9,814)	(2,010)	(11,824)
Stock option	-	1,494	-	729	-	-	2,223	-	2,223
Reclassification of valuation gain or loss on equity securities at FVOCI upon derecognition	-	-	-	-	(17,905)	17,905	-	-	-
Others	-	-	-	-	(537)	537	-	-	-
Net income	5,359,578	9,670,357	179,737	(41,895)	8,036,734	(1,104,193)	22,100,318	86,237	22,186,555
Gain (loss) on valuation of financial assets at FVOCI	-	-	-	-	2,085,920	-	2,085,920	6,512	2,092,432
Loss on transaction of foreign operations	-	-	-	-	-	335,029	335,029	(1,756)	333,273
Loss on valuation of net investment hedges of foreign operations	-	-	-	-	-	(13,246)	(13,246)	(1,295)	(14,541)
Loss on valuation of fair value hedges	-	-	-	-	-	(8,948)	(8,948)	-	(8,948)
Loss on valuation of fair value hedges	-	-	-	-	-	(6,772)	(6,772)	-	(6,772)
Remeasurement of defined benefit plan	-	-	-	-	-	(94,639)	(94,639)	103	(94,536)
Changes in equity on investments in associates	-	-	-	-	-	21,956	21,956	-	21,956
Total comprehensive income	-	-	-	-	2,085,920	233,380	2,319,300	3,564	2,322,864
As of December 31, 2018	₩ 5,359,578	₩ 9,670,357	₩ 179,737	₩ (41,895)	₩ 10,122,654	₩ (870,813)	₩ 24,419,618	₩ 89,801	₩ 24,509,419
As of January 1, 2019	₩ 5,359,578	₩ 9,670,357	₩ 179,737	₩ (41,895)	₩ 10,122,654	₩ (870,813)	₩ 24,419,618	₩ 89,801	₩ 24,509,419
Year-end Dividends	-	-	-	-	(886,800)	-	(886,800)	-	(886,800)
Interim dividends	-	-	-	-	(450,000)	-	(450,000)	-	(450,000)
Dividends on hybrid equity securities	-	-	-	-	(9,814)	-	(9,814)	(2,010)	(11,824)
Stock option	-	(3,561)	-	4,327	-	-	766	(1)	765
Reclassification of valuation gain or loss on equity securities at FVOCI upon derecognition	-	-	-	-	(64)	64	-	-	-
Changes in subsidiary equity	-	(13,250)	-	(1)	-	24,703	11,452	165,745	177,197
Others	-	-	-	46	(1,868)	-	(1,852)	(30,271)	(32,123)
Net income	5,359,578	9,653,546	179,737	(37,553)	8,774,108	(846,046)	23,083,370	223,264	23,306,634
Gain on valuation of financial assets at FVOCI	-	-	-	-	2,139,759	-	2,139,759	10,738	2,150,497
Gain on transaction of foreign operations	-	-	-	-	-	70,253	70,253	1,505	71,758
Loss on valuation of net investment hedges of foreign operations	-	-	-	-	-	100,294	100,294	7,267	107,561
Loss on valuation of fair value hedges	-	-	-	-	-	(18,816)	(18,816)	-	(18,816)
Loss on valuation of fair value hedges	-	-	-	-	-	(2,335)	(2,335)	-	(2,335)
Remeasurement of defined benefit plan	-	-	-	-	-	(164,098)	(164,098)	3	(164,095)
Changes in equity on investments in associates	-	-	-	-	-	15,243	15,243	-	15,243
Total comprehensive income	-	-	-	-	2,139,759	541	2,140,300	19,513	2,159,813
As of December 31, 2019	₩ 5,359,578	₩ 9,653,546	₩ 179,737	₩ (37,553)	₩ 10,913,867	₩ (845,505)	₩ 25,223,670	₩ 242,777	₩ 25,466,447

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

Hana Bank Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2019 and 2018

(Korean won in millions)

	2019	2018
Operating activities		
Income before income taxes	₩ 2,931,296	₩ 2,870,700
Adjustments to income:		
Interest expenses	4,639,959	4,081,500
Interest income	(10,053,972)	(9,378,701)
Dividend income	(9,901)	(12,724)
	(5,423,914)	(5,309,925)
Adjustments to non-cash items:		
Gain on valuation of financial instruments at FVTPL	(415,800)	(248,250)
Loss (gain) on disposal of financial instruments at FVTPL	(12,056)	21,195
Net loss on valuation of derivative instruments used for hedging	1,629	8,016
Gain on disposal of financial assets at FVOCI	(48,378)	(7,289)
Provision (reversal of) loss (gain) on credit risk of financial assets at FVOCI	409	(1,956)
Provision for securities at amortized cost	1,740	2,418
Provision of net allowance for doubtful accounts for loans and other assets	225,882	180,705
Loss (gain) on disposal of investments in subsidiaries and associates	(63,676)	387
Impairment loss on investments in associates	136,336	-
Share of loss (profit) of associates	27,414	(21,687)
Depreciation and amortization	430,751	203,654
Loss (gain) on disposal of property and equipment and intangible assets	11,662	(14,292)
Impairment loss on property and equipment and intangible assets	21,237	-
Loss (gain) on termination of right-of-use assets	313	-
Gain on disposal of right-of-use assets	(16,408)	-
Retirement benefits	168,028	207,839
Share-based payment expenses	8,250	7,588
Loss (gain) provisions transferred in (reversed), net	204,067	(49,960)
Gain on disposal of non-current assets held for sale	(429,305)	-
Gain on foreign currency translation	(308,892)	(319,092)
Others	(221)	33
	(57,018)	(30,691)
Changes in operating assets and liabilities:		
Financial assets at FVTPL	(997,854)	3,671,995
Derivative assets used for hedging	17,433	2,340
Loans	(18,006,317)	(20,325,536)
Other assets	(3,207,827)	(1,484,092)
Merchant banking account assets	(314,614)	25,719
Deposits	23,031,353	16,092,934
Financial liabilities at FVTPL	844,887	(3,136,594)
Derivative liabilities used for hedging	(40,537)	(15,264)
Net defined benefit liabilities	(207,427)	(160,334)
Provisions	11,440	(2,190)
Other liabilities	4,070,517	1,448,291
Merchant banking account liabilities	(250,866)	321,136
	4,950,188	(3,561,595)
Cash provided by operating activities:		
Interest received	9,991,076	9,279,719
Dividend received	12,127	14,947
	10,003,203	9,294,666
Cash used in operating activities:		
Interest paid	(4,584,288)	(4,623,627)
Income taxes paid	(563,705)	(1,077,013)
	(5,147,993)	(5,700,640)
Net cash provided by (used in) operating activities	7,255,762	(2,437,485)

(Continued)

Hana Bank Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2019 and 2018 (cont'd)
(Korean won in millions)

	2019	2018
Investing activities		
Decrease (increase) in restricted due from banks, net	₩ 1,694,202	₩ (3,459,485)
Increase in financial assets at FVTPL (other than short-term trades)	(2,216,685)	(6,500,728)
Decrease in financial assets at FVTPL (other than short-term trades)	1,147,981	7,364,421
Increase in financial assets at FVOCI	(19,215,159)	(5,764,284)
Decrease in financial assets at FVOCI	18,602,868	12,624,626
Increase in securities at amortized cost	(3,022,657)	(8,046,303)
Decrease in securities at amortized cost	1,059,404	657,040
Increase in investments in associates	(1,024,914)	(31,026)
Decrease in investments in subsidiaries, associates	54,367	9,305
Acquisition of property and equipment	(127,668)	(137,353)
Disposal of property and equipment	4,454	55,295
Disposal of investment property	42,110	-
Acquisition of intangible assets	(104,570)	(119,759)
Disposal of intangible assets	847	1,072
Increase in non-current assets held for sale	(293)	(22,474)
Disposal of non-current assets held for sale	797,687	14,050
Increase (decrease) in guarantee deposits paid, net	(7,611)	71,157
Net cash used in investing activities	(2,315,637)	(3,284,446)
Financing activities		
Net increase (decrease) in borrowings	(878,547)	1,373,999
Issuance of bonds	9,104,658	10,678,388
Redemption of bonds	(10,471,626)	(8,463,741)
Dividends paid	(1,336,800)	(972,600)
Dividends on hybrid equity securities	(11,824)	(11,824)
Repayment of lease liabilities	(226,668)	-
Changes in subsidiary equity	177,197	-
Net cash flows provided by (used in) financing activities	(3,643,610)	2,604,222
Net increase (decrease) in cash and cash equivalents	1,296,515	(3,117,709)
Cash, cash equivalents at the beginning of the year	4,373,091	7,439,041
Effect of change in exchange rate on cash and cash equivalents	(32,141)	51,759
Cash and cash equivalents at the end of the year (Note 50)	₩ 5,637,465	₩ 4,373,091

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

Hana Bank Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2019 and 2018

1. Company information

General information on Hana Bank Co., Ltd., formerly Korea Exchange Bank (the “Bank” or the “Parent company”) and its subsidiaries (collectively referred to as the “Group”) in accordance with KIFRS 1110 is as follows.

1.1 The Bank

The Bank was established on January 30, 1967, as a government-controlled bank to engage in foreign exchange and trade finance business under the *Korea Exchange Bank Act* enacted on July 28, 1966. On December 30, 1989, the *Korea Exchange Bank Act* was repealed, and the Bank was reorganized as a corporation under the Commercial Code of the Republic of Korea. On April 4, 1994, the Bank was listed on the Korea Exchange (formerly, Korea Stock Exchange). On February 28, 2004, the Bank merged its subsidiary, Korea Exchange Bank Credit Service Co., Ltd. On August 31, 2014, the Bank spun off its credit card division.

On February 9, 2012, Hana Financial Group Inc. (“HFG”) acquired 52.27% equity interest in the Bank, and later on April 5, 2013, the Bank became a wholly owned subsidiary of HFG after HFG acquired the remaining interest in the Bank through the mutual exchange of the shares.

The Bank changed to its current name on September 1, 2015 following the merger of Korea Exchange Bank (“KEB Bank”) and Hana Bank.

The Bank provides commercial banking service, trust banking service, merchant banking service, foreign exchange and other related services as permitted under the *Banking Act* of the Republic of Korea. As of December 31, 2019, the Bank’s headquarters is located in Seoul, with its 724 domestic branches (including 70 satellite offices) and 24 overseas branches (including 1 satellite offices and 4 offices). The Bank is authorized to issue 2,000 million shares (par value amount : ₩5,000) of common stock, and as of December 31, 2019, after a number of capital increases and decreases, stock splits and conversion of preferred shares to common shares, the Bank has 1,071,915,717 shares of common stock issued and outstanding with the total paid-in capital amounting to ₩5,359,578 million.

As of December 31, 2019, the Group’s consolidated financial statements were approved for issuance at the Board of Directors’ meeting held on March 2, 2020.

1.2 Scope and overview of consolidation

The Group’s ownership percentages in its consolidated subsidiaries as of December 31, 2019 are summarized as follows (ownership in %):

Company name	Country	Major business	Share ratio (%)	Reporting date
Subsidiaries of Hana Bank				
Hana Bank (China) Co., Ltd.	China	Bank	100.00	December 31, 2019
Hana Micro Finance Ltd.	Myanmar	Other financial business	99.99	December 31, 2019
DGB Leading Solution PEF Invest Trust 143 (*)	Korea	Asset management company	100.00	December 31, 2019
Hana UBS Power PEF Invest Trust 21 (*)	Korea	Asset management company	100.00	December 31, 2019
Hyundai Trust PEF Invest 16 (*)	Korea	Asset management company	100.00	December 31, 2019
Kyobo AXA Tomorrow PEF Invest Trust KH-1 (*)	Korea	Asset management company	100.00	December 31, 2019
Sevenstar Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Marine Solution Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Joong-ang star Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Antakya Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Hana Display First Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Hana Indonesia Green Forest Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Bulls Hana 1st Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Ocean Betts The First Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Greenline The Fist Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Speedygel 1st LLC. (*)	Korea	Other financial business	-	December 31, 2019
Hana H in the holdings 1st LLC (*)	Korea	Other financial business	-	December 31, 2019

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1.2 Scope and overview of consolidation (cont'd)

Company name	Country	Major business	Share ratio (%)	Reporting date
HANAFUTURELIFES (*)	Korea	Other financial business	-	December 31, 2019
BEST ONE Q 1st (*)	Korea	Other financial business	-	December 31, 2019
H-Plus 1st, L.L.C. (*)	Korea	Other financial business	-	December 31, 2019
HanaGreen, 1st L.L.C.	Korea	Other financial business	-	December 31, 2019
YDPP 1st Co., Ltd. (*)	Korea	Other financial business	-	December 31, 2019
Hanack 1st Co., Ltd (*)	Korea	Other financial business	-	December 31, 2019
Netoneq 1st L.L.C (*)	Korea	Other financial business	-	December 31, 2019
Trust accounts guaranteeing the repayment of principal (*)	Korea	Trust account	-	December 31, 2019
KEB Hana Bank Canada	Canada	Financial business	100.00	December 31, 2019
KEB Hana Bank (Deutschland) A.G. (KEBDAG)	Germany	Financial business	100.00	December 31, 2019
PT Bank KEB Hana (KEBI)	Indonesia	Financial business	69.01	December 31, 2019
Banco KEB Hana Do Brasil S.A. (KEBB)	Brazil	Financial business	100.00	December 31, 2019
KEB Hana NY Financial Corp (NYFinCo)	USA	Financial business	100.00	December 31, 2019
KEB Hana LA Financial Corp (LAFinCo)	USA	Financial business	100.00	December 31, 2019
KEB Hana Global Finance Limited (KAF)	Hongkong	Financial business	100.00	December 31, 2019
KEB RUS LLC.	Russia	Financial business	99.99	December 31, 2019
Hana Bancorp, Inc.	USA	Financial business	90.56	December 31, 2019
KEB Hana Bank Mexico	Mexico	Financial business	99.99	December 31, 2019
Subsidiaries of Hana Bancorp, Inc.				
KEB Hana Bank USA	USA	Bank	100.00	December 31, 2019

(*) Although the entity is a structured SPC, the Group recognized the entity as a subsidiary considering its exposure to variable returns and knowledge with regards to its activities.

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1.2 Scope and overview of consolidation (cont'd)

Condensed financial statements as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					
	Assets	Liabilities	Equity	Operation income	Net income (loss)	Comprehensive income (loss)
Hana Bank (China) Co., Ltd.	₩ 8,961,911	₩ 7,989,096	₩ 972,815	₩ 387,668	₩ 7,469	₩ 26,140
Hana Micro Finance., Ltd.	88,592	67,547	21,045	14,813	3,971	4,870
KEB Hana Bank Canada	1,414,032	1,205,488	208,544	57,976	8,118	23,156
KEB Hana Bank (Deutschland) A.G.	871,149	767,155	103,994	27,513	5,077	6,221
PT Bank KEB Hana	3,827,988	3,059,557	768,431	328,610	41,989	94,651
Banco KEB Hana Do Brasil S.A.	146,322	105,728	40,594	13,534	1,432	1,390
KEB Hana NY Financial Corp.	188,765	123,865	64,900	7,600	994	3,179
KEB Hana LA Financial Corp.	354,206	285,167	69,039	13,575	2,503	4,768
KEB Hana Global Finance Limited.	202,792	126,149	76,643	14,870	6,099	8,729
KEB Hana Bank Russia	363,548	342,092	21,456	90,191	1,139	3,993
Hana Bancorp, Inc. (*)	281,445	237,401	44,044	9,674	(6,401)	(4,014)
KEB Hana Bank Mexico	127,626	30,692	96,934	4,056	(3,081)	52
Trust accounts guaranteeing the repayment of principal	1,823,700	1,779,106	44,594	57,398	1,047	1,047

(*) The amounts presented are based on consolidation.

Classification	2018					
	Assets	Liabilities	Equity	Operation income	Net income (loss)	Comprehensive income (loss)
Hana Bank (China) Co., Ltd.	₩ 8,107,138	₩ 7,160,464	₩ 946,674	₩ 393,877	₩ 54,371	₩ 52,706
Hana Micro Finance., Ltd.	31,210	15,035	16,175	6,785	2,036	488
Hana F&I Inc. (*)	890,918	768,327	122,591	47,470	11,211	10,629
KEB Hana Bank Canada	1,220,144	1,034,755	185,389	68,138	7,700	172
KEB Hana Bank (Deutschland) A.G.	717,648	619,876	97,772	34,082	5,567	5,556
PT Bank KEB Hana	3,578,994	3,082,675	496,319	267,714	43,761	15,735
Banco KEB Hana Do Brasil S.A.	184,908	145,705	39,203	12,448	1,488	(3,222)
KEB Hana NY Financial Corp.	171,462	109,740	61,722	10,814	2,248	4,767
KEB Hana LA Financial Corp.	259,805	195,534	64,271	14,858	3,870	6,453
KEB Hana Global Finance Limited.	237,855	169,941	67,914	11,781	4,695	7,413
KEB Hana Bank Russia	265,801	248,338	17,463	119,222	860	(3,048)
Hana Bancorp, Inc. (*)	253,222	205,165	48,057	9,986	(3,777)	(1,650)
KEB Hana Bank Mexico	33,919	-	33,919	2,730	(1,650)	(47)
Trust accounts guaranteeing the repayment of principal	1,807,660	1,764,113	43,547	51,424	3,055	3,055

(*) The amounts presented are based on consolidation.

1.2 Scope and overview of consolidation (cont'd)

The following entity is excluded from the Group's scope of consolidation as of December 31, 2019 and 2018 even though the Group holds a majority of voting rights.

As of December 31, 2019,

2019			
Company name	Country	Major business	Share ratio (%)
KEB Hana - KVIC Unicorn Fund of Funds	Korea	Investment	90.9

As of December 31, 2018,

2018			
Company name	Country	Major business	Share ratio (%)
KEB Hana - KVIC Unicorn Fund of Funds	Korea	Investment	90.9

Subsidiaries included in and excluded from the consolidation scope for the year ended December 31, 2019 are as follows:

Company	Reasons
Included in scope of consolidation:	
Subsidiaries of Hana Bank	
Ocean Betts The First Co., Ltd.	Newly invested
Greenline The First Ltd.	Newly invested
Speedygel 1 st LLC.	Newly invested
Hana H in the holdings 1 st LLC.	Newly invested
HANAFUTURELIFES	Newly invested
BEST ONE Q 1st	Newly invested
H-Plus 1st, L.L.C.	Newly invested
HanaGreen, 1st L.L.C.	Newly invested
YDPP 1st Co., Ltd.	Newly invested
Hanack 1st Co., Ltd.	Newly invested
Netoneq 1st L.L.C	Newly invested
Excluded from the scope of consolidation:	
Subsidiaries of Hana Bank	
Hana F&I Inc. (*)	Excluded due to the disposal
Cosmosolution Co., Ltd.	Excluded due to the liquidation
Subsidiaries of Hana F&I Inc.	
KEBW First Securitization Specialty Co., Ltd.	Excluded due to the disposal
KEBI First Securitization Co., Ltd.	Excluded due to the disposal
KEBS Third Securitization Co., Ltd.	Excluded due to the disposal
KEBT First Securitization Specialty Co., Ltd.	Excluded due to the disposal
KEB The Loft Co., Ltd.	Excluded due to the disposal
HFS First Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFT Second Securitization Specialty Co., Ltd.	Excluded due to the disposal
Hana Stone Second Co., Ltd.	Excluded due to the disposal
Hana Sinji First, Inc.	Excluded due to the disposal
Hana SH First Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS Second Securitization Specialty Co., Ltd.	Excluded due to the disposal
Hana K First Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFD First Securitization Specialty Co., Ltd.	Excluded due to the disposal

1.2 Scope and overview of consolidation (cont'd)

Company	Reasons
HFDG Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS 73A Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS 73B Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFW 73 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFK 74 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFSCN 81 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFB 81 Securitization Specialty Co., Ltd.	Excluded due to the disposal
Fine5th Securitization Specialty Co., Ltd.	Excluded due to the disposal
Fine6th Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS 82 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFF 82 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFN 82 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFI 83 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS 84 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFF 84 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFK 84 Securitization Specialty Co., Ltd.	Excluded due to the disposal
Hana F&I money in trust	Excluded due to the disposal
HFFN 91 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFI91 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS92A Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFS92B Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFB92 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFN92 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFI93 Securitization Specialty Co., Ltd.	Excluded due to the disposal
HFB93 Securitization Specialty Co., Ltd.	Excluded due to the disposal
KEB Pepper First Securitization Co., Ltd.	Excluded due to the disposal
Hana Stone First Co., Ltd.	Excluded due to the disposal
HFDD 82 Co., Ltd.	Excluded due to the disposal

(*) In December 2019, the entire stake of Hana F&I Inc was disposed to Hana Financial Group and thus excluded from the subsidiary.

1.2.1 Hana Bank (China) Co., Ltd. (Hana Bank China)

Hana Bank China was incorporated to engage in commercial banking, foreign currency exchanges and other related operations in China on December 14, 2007. The Bank contributed the assets and liabilities of the branches in Shanghai and Shenyang and its interests in the International Bank of Qingdao, which is the subsidiary of the Bank, to the Hana Bank China in the form of equity contributions on December 24, 2007. Hana Bank (China) Co., Ltd., one of subsidiaries in China, acquired and merged with KEB China, one of affiliates in the Hana Financial Group, on December 15, 2014. (Before the merger, equity interests in Hana Bank China were 59.7% for Hana Bank, 40.3% for Korea Exchange Bank). Its paid-in capital is 3.35 billion yuan as of December 31, 2019.

1.2.2 Hana Micro Finance, Ltd.

Hana Micro Finance, Ltd., a subsidiary established in Yangon, Myanmar on August 7, 2014, is doing a small-loan finance service. The objective of the service is to satisfy low incomers' demand for small-loan finance and at the same time to lay the foundation for a retail market with excellent growth potential. As of December 31, 2019, its paid-in capital is 17.5 billion kyat and it owns a head office in Yangon. In January 2020, the ownership percentage by the Group decreased from 99.99% to 45% due to capital increase allocated to third parties.

1.2.3 KEB Hana Bank Canada

KEB **Hana Bank Canada** was established in Toronto, Canada on October 6, 1981 to provide financial services to Korean companies and residents in Toronto and the surrounding area. The Bank holds 100% stake of the subsidiary as of December 31, 2019. Korea Exchange Bank of Canada has gone through numerous capital increases after the establishment. Its paid-in capital is 83,400 thousand Canadian dollars as of December 31, 2019.

1.2.4 KEB Hana Bank (Deutschland) AG

KEBDAG was established in Frankfurt, Germany on December 29, 1992 to provide financial services to Korean companies and residents in Frankfurt and the surrounding area. The Bank holds 100% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 23,008 thousand euro as of December 31, 2019.

1.2.5 PT Bank KEB Hana

PT Bank KEB Hana was established in Jakarta, Indonesia on November 5, 1990 to provide financial services to Korean companies and residents in Jakarta. In accordance with the regulations of the Bank Indonesia, 2 or more local banks with the same ultimate parent company are prohibited to operate as an independent entity in Indonesia. Accordingly, PT Bank KEB Indonesia (KEBI), a subsidiary of the Bank, and PT Bank Hana, a subsidiary of Hana Bank, have completed a merger process on February 20, 2014 and changed the name to PT Bank KEB Hana. PT. Bank KEB Hana incorporated into a subsidiary of KEB on February 28, 2014 since KEB owned the major shares of PT. Bank KEB Hana after the acquisition. During 2019, PT Bank KEB Hana conducted a capital increase allocated to third parties. The Bank holds 69.01% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 3,160,093 million Rupiah as of December 31, 2019.

1.2.6 Banco KEB Hana Do Brasil S.A. (KEBB)

KEBB was incorporated on May 21, 1999 to provide finance services for foreign clients, advisory services, finance arrangement and security investment trust services regarding overseas investment for domestic companies. The Bank holds 100% stake of the subsidiary as of December 31, 2019. By increasing capital in 2012, its paid-in capital is 69,726 thousand reais as of December 31, 2019.

1.2.7 KEB Hana NY Financial Corp. (NYFinCo)

NYFinCo was established in New York, USA on April 8, 2004 to provide financial services to Korean companies and residents in New York and the surrounding area. The Bank holds 100% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 1 dollar as of December 31, 2019.

1.2.8 KEB Hana LA Financial Corp. (LAFinCo)

LAFinCo was established in Los Angeles, USA on April 8, 2004 to provide financial services to Korean companies and residents in Los Angeles and the surrounding area. The Bank holds 100% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 2 dollars as of December 31, 2019.

1.2.9 KEB Hana Global Finance Limited (KAF)

KAF was established on July 2, 2009 in Hong Kong to provide finance services for foreign clients, advisory services, finance arrangement and security investment trust services regarding overseas investment for domestic companies. The Bank holds 100% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 50,000 thousand dollars as of December 31, 2019.

1.2.10 KEB RUS LLC

KEB launched a Moscow representative office in 2008 to provide financial information and consulting services for Korean and local companies in Russia. KEB RUS LLC was established on August 15, 2014 after obtaining permission to operate corporation from Russian supervisory authorities in order to expand the business area. The Bank holds 99.99% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 1 billion roubles as of December 31, 2019.

1.2.11 Hana Bancorp, Inc.

Hana Bancorp, Inc. (formerly, BNB Financial Service Corporation) was incorporated on April 8, 1988 to engage in the bank business. HFG acquired ownership of BNB Financial Service Corporation and incorporated Hana Bancorp, Inc. as its subsidiary on August 30, 2013 and changed the name to Hana Bancorp, Inc. The Bank purchased the securities from HFG on March 28, 2016 and issued capital. The Bank holds 90.56% stake of the subsidiary as of December 31, 2019. Its paid-in capital is 16,571 thousand dollars as of December 31, 2019.

1.2.12 KEB Hana Bank Mexico

KEB Hana Bank Mexico was established in Mexico City on November 3, 2017 to engage in provision of financial services to Korean companies and local corporations. At the end of the reporting period, the Bank holds 99.99% interest in the entity. Its paid-in capital is 1,666,828 thousand Mexican pesos as of December 31, 2019.

1.3 Structured entities

1.3.1 Consolidated structured entities

1.3.1.1 DGB Leading Solution PEF Investment Trust 143 and a set of 3 other private equity investment vehicles

In accordance with KIFRS 1110 *Consolidated Financial Statements*, 4 private equity investment vehicles were included in consolidation scope, because the Group has existing rights that give it the current ability to direct the relevant activities, and is not only exposed, or has rights, to variable returns, but also has the ability to use its power to affect the Group's returns from its involvement with the investee.

1.3.1.2 Sevenstar Co., Ltd. and 17 other special purpose entities

In accordance with KIFRS 1110 *Consolidated Financial Statements*, 17 special purpose companies and Sevenstar Co., Ltd. were included in consolidation scope, because the Group has existing rights that give it the current ability to direct the relevant activities, and is not only exposed, or has rights, to variable returns, but also has the ability to use its power to affect the Group's returns from its involvement with the investee.

1.3.1.3 Trust accounts

In accordance with KIFRS 1110 *Consolidated Financial Statements*, trust accounts are included in consolidation scope because the Group has existing rights that give it the current ability to direct the relevant activities, and is not only exposed, or has rights, to variable returns, but also has the ability to use its power to affect the Group's returns from its involvement with the investee.

1.3.1.4 Contractual commitments to consolidated structured entities

The consolidated structured company for the securitization of assets is established for the securitization of non-performing loans (NPL). The Group is involved in the acquisition of subordinated bonds issued by the consolidated structured company and is exposed to the risk of not being able to recover the acquisition amounts based on the investment performance. Characteristics and intentions of contractual commitments offered by the Group to the consolidated structured entities are as follows:

Company name	The characteristics and purposes	Intention
Development trust and other trusts	The Group offers principal conservation commitment to trust accounts. The Group is required to conserve the deficit amount in case the trust account stands below the principal as a result of the operation.	Credit risk mitigation on financial management of trust account
Antakya Co., Ltd.	The Group partially purchased ABCP (purchase commitment of ₩50,000 million) from Antakya Co., Ltd.	Operating activities
Hana Display First Co., Ltd.	The Group partially purchased ABCP (purchase commitment of ₩200,000 million) from Hana Display First Co., Ltd.	Operating activities
Ocean Betts The First Co., Ltd.	The Group partially purchased ABCP (purchase commitment of ₩50,000 million) from Ocean Betts The First Co., Ltd.	Operating activities
Greenline The First Ltd.	The Group partially purchased ABCP (purchase commitment of ₩87,500 million) from Greenline The First Ltd.	Operating activities
Speedygel 1 st LLC.	The Group partially purchased ABCP (purchase commitment of ₩10,000 million) from Speedygel 1 st LLC.	Operating activities
Hana H in the holdings 1 st LLC.	The Group partially purchased ABCP (purchase commitment of ₩150,000 million) from Hana H in the holdings 1 st LLC.	Operating activities
Hanafuturelifes	The Group partially purchased ABCP (purchase commitment of ₩50,000 million) from Hanafuturelifes	Operating activities
Best one Q 1st	The Group partially purchased ABCP (purchase commitment of ₩5,000 million) from Best one Q 1st.	Operating activities
H-Plus 1st, L.L.C.	The Group partially purchased ABCP (purchase commitment of ₩100,000 million) from H-Plus 1st, L.L.C.	Operating activities

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1.3.1.4 Contractual commitments to consolidated structured entities (cont'd)

Company name	The characteristics and purposes	Intention
HanaGreen, 1st L.L.C.	The Group partially purchased Guarantee for payment of private loan principal (purchase commitment of ₩13,500 million) from HanaGreen, 1st L.L.C.	Operating activities
YDPP 1st Co., Ltd.	The Group partially purchased ABCP (purchase commitment of ₩71,000 million) from YDPP 1st Co., Ltd	Operating activities
Hanack 1st Co., Ltd	The Group partially purchased ABCP (purchase commitment of ₩60,000 million) from Hanack 1st Co., Ltd	Operating activities
Netoneq 1st L.L.C	The Group partially purchased ABCP (purchase commitment of ₩30,000 million) from Netoneq 1st L.L.C	Operating activities

1.3.2 Unconsolidated structured entities

1.3.2.1 The nature of the Group's interests in unconsolidated structured entities

Details of the nature of the Group's interests in unconsolidated structured entities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Type	Characteristics and purposes	Major method of financing arrangement	Total assets	
			2019	2018
Special purpose company securitisation	Securitization of backed asset	Issuing ABL/ABCP and others	₩ 10,433,281	₩ 10,597,822
Real estate finance	Operation for real estate (including SOC) development	Investment and borrowing	17,312,208	15,633,077
Shipping finance and primary market finance	Building or purchasing ships and NPL purchase, M&A	Investment and borrowing	29,711,089	26,204,314
Investment fund and trust	Managing investment property	Issuing beneficiary certificates	85,992,256	78,278,432

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1.3.2.2 Maximum exposure to loss from interests in unconsolidated structured entities (Korean won in millions)

Classification	2019			
	Special purpose company	Real estate finance	Shipping finance and primary market finance	Investment fund and trust
Assets				
Loans (A)	₩ 723,316	₩ 1,348,625	₩ 843,857	₩ 883,646
Securities (B)	1	63,257	-	7,650,667
Derivatives (C)	13,976	11,670	8,868	53
Others (D)	1,517	2,885	3,838	37
Liabilities				
Derivative liabilities	390	2,133	435	-
Provision	437	1,443	325	21
Others	182	30	41	1
Carrying amount of net asset	₩ 737,801	₩ 1,422,831	₩ 855,762	₩ 8,534,381
Maximum exposure to loss	1,953,671	1,896,539	1,116,292	8,560,183
Financial assets (A+B+C+D)	738,810	1,426,437	856,563	8,534,403
Credit and other commitment	1,214,861	470,102	259,729	25,780
Classification	2018			
	Special purpose company	Real estate finance	Shipping finance and primary market finance	Investment fund and trust
Assets				
Loans (A)	₩ 802,663	₩ 1,137,787	₩ 857,421	₩ 620,053
Securities (B)	739	74,299	-	6,620,809
Derivatives (C)	7,130	12,160	1,067	8,655
Others (D)	2,898	2,288	3,893	6
Liabilities				
Derivative liabilities	1,513	4,614	4,155	7,509
Provision	958	2,939	333	38
Others	84	26	10	104
Carrying amount of net asset	₩ 810,875	₩ 1,218,955	₩ 857,883	₩ 7,241,872
Maximum exposure to loss	2,545,296	1,775,367	1,053,925	7,270,800
Financial assets (A+B+C+D)	813,430	1,226,534	862,381	7,249,523
Credit and other commitment	1,731,866	548,833	191,544	21,277

2. Scope and principles of consolidation

The Group prepares statutory consolidated financial statements in the Korean language in accordance with Korean International Financial Reporting Standards (KIFRS) enacted by the *Act on External Audit of Stock Companies*. Significant methods of accounting for consolidation when preparing consolidated financial statements are as follow.

2.1 Subsidiaries

The Bank has the ability to determine the financial and operating policies of subsidiaries. Generally, the Bank classified the entity as subsidiary in case the Bank has existing rights that give it the current ability to direct the relevant activities, and is not only exposed, or has rights, to variable returns, but also has the ability to use its power to affect the Group's returns from its involvement with the investee. Subsidiaries are fully consolidated from the date on which the control is transferred to the Group and excluded from the subsidiaries at the point when the Group loses the control.

2.2 Offset of the investment accounts of the Group and the corresponding equity accounts

The investment accounts of the Group and the corresponding equity accounts of the subsidiaries are eliminated in consolidation.

2.3 Process of difference between the costs of investment

The consolidated financial statements reflect on only the share of the consolidated subsidiaries post-application of purchase accounting method. The difference between the cost of investment and the Group's share of the fair value of identifiable net assets and liabilities of the subsidiaries at the date of purchase accounting method application is presented as goodwill or negative goodwill. A review of impairment is performed at the end of each reporting date.

If the controlling company additionally acquires the subsidiaries' share, the elimination of subsidiaries' equity account is based on the acquisition date of shares. The difference between the investment accounts of the Group and the corresponding equity accounts of the subsidiaries is amounted to the consolidated capital surplus (or capital adjustment).

2.4 Elimination of intercompany transactions and the unrealized gain or loss, etc.

All significant intercompany transactions and the account balances among the consolidated companies are eliminated on consolidation. Unrealized gains or losses included in loans and borrowings arising from transactions between consolidated companies are eliminated on consolidation. The related accounts receivable and payable are also eliminated on consolidation.

2.5 Investments in associates

Investments in entities over which the Group has control or significant influence are accounted for using the equity method. Under the equity method of accounting, the Group's initial investment in an investee is recorded at acquisition cost. Subsequently, the carrying amount of the investment is adjusted to reflect the Group's share of income or loss of the investee in the consolidated statement of comprehensive income and share of changes in equity that have been recognized directly in the equity of the investee in the related equity account of the Group on the consolidated statement of financial position. If the Group's share of losses of the investee equals or exceeds its interest in the investee, it suspends recognizing its share of further losses. However, if the Group has other long-term interests in the investee, it continues recognizing its share of further losses to the extent of the carrying amount of such long-term interests. The Group resumes the application of the equity method if the Group's share of income or change in equity of an investee exceeds the Group's share of losses accumulated during the period of suspension of the equity method of accounting.

2.5 Investments in associates (cont'd)

At the date of acquisition, the excess of the cost of the investment over the Group's share of the net fair value of the investee's identifiable assets and liabilities is accounted for as goodwill or negative goodwill. The amortization expenses are included as a part of valuation gain or loss on the equity method investments in the consolidated statement of comprehensive income. The difference related to goodwill is recorded as the carrying amount. Goodwill is reviewed for the impairment when signs of damage arise and is not amortized over its useful life. Further, the Group's share of any difference between the net fair value of the investee's identifiable assets and liabilities, and the net book value of such assets and liabilities are amortized based on the investee's accounting treatments on the related assets and liabilities and charged or credited to the valuation gain or loss on the equity method investments in the consolidated statement of comprehensive income.

The Group's share in the investee's unrealized profits and losses resulting from transactions between the Group and its investee are eliminated to the extent of the interest in the investee.

2.6 Special reserve on trust accounts

A special reserve provided for the possible future losses on certain trust accounts under the arrangement of guaranteed fixed rate of return and repayment of the principal and guaranteed repayment of the principal is included under the retained earnings in the consolidated financial statements.

2.7 Non-controlling interests

Subsidiaries' equity which is not included in the Group's share is accounted as non-controlling interests. In case subsidiaries' non-controlling interests is below "0", minus non-controlling interests is presented as deduction of equity.

3. Basis of preparation and significant accounting policies

3.1 Basis of preparation

The Group prepares statutory consolidated financial statements in Korean in accordance with KIFRS enacted by the *Act on External Audits of Stock Companies, etc.* The accompanying consolidated financial statements have been translated into English from financial statements prepared in Korean. In the event of any differences in interpreting the financial statements or the independent auditor's review report thereon, the Korean version, which is used for regulatory reporting purposes, shall prevail.

3.2 Changes in accounting policies and disclosures

The nature and the impact of each new standard or amendment are described below:

3.2.1 Amendments to KIFRS 1116 Leases

The Group has lease contracts for various items of real estates, vehicles and other assets. The Group generally enters into a lease contract with a fixed term, which may also include termination and extension options as described in the Note below. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. There are no other restrictions placed in accordance with lease contracts, but lease assets shall not be used as security for particular borrowings.

Prior to the current reporting period, all lease of property and equipment were classified as operating leases. Lease payments from operating leases (net of incentives provided by the lessor) were recognized on a straight-line basis over the lease term in profit or loss.

Beginning on or after January 1, 2019, the Group has recognized right-of-use assets and corresponding lease liabilities at the commencement date of which the underlying asset is made available for use. Each lease payment is allocated as the repayment and financial cost of lease liabilities. Interest on the lease liability in each period during the lease term is the amount that produces a constant periodic rate of interest on the remaining balance of the lease liability and is recognized in profit or loss as finance cost. Right-of-use assets are depreciated from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term.

Assets and liabilities arising from leases are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- Fixed payments (including in-substance fixed payments), less any lease incentives receivable
- Variable lease payments that depend on an index or a rate
- Amounts expected to be payable by the lessee under residual value guarantees
- The exercise price of a purchase option if the lessee is reasonably certain to exercise that option
- Payments of penalties for terminating the lease, if the lease term reflects the lessee exercising an option to terminate the lease

The lease payments shall be discounted using the interest rate implicit in the lease, if that rate can be readily determined. If the interest rate implicit in the lease cannot be readily determined, the lessee's incremental borrowing rate is used, which is the interest rate that would have to be paid if the lessee borrowed the funds needed to obtain the asset with similar collateral over a similar period of time in a similar economic environment.

The cost of the right-of-use asset comprise:

- The amount of the initial measurement of the lease liability
- Any lease payments made at or before the commencement date, less any lease incentive received
- Any initial direct costs incurred by the lessee
- An estimate of costs to be incurred by the lessee in dismantling and removing the underlying asset

3.2.1 Amendments to KIFRS 1116 Leases (cont'd)

The Group applies the recognition exemption for leases of low-value assets (e.g., office supplies and IT equipment) but does not apply recognition exemption for short-term leases (i.e., leases with a lease term of 12 months or less). Lease payments related to low-value assets are recognized in profit or loss.

(Note) Extension and termination options: The Group has various real-estate lease contracts that contain options to extend or terminate the lease. These terms and conditions are used to maximize the operational flexibility in terms of contract management. The majority of extension and termination options held are exercisable only by the Group and not by the respective lessors.

3.2.1.1 Financial impact of KIFRS 1116 Leases

The impact of the adoption of KIFRS 1116 on the Group's consolidated statement of financial position as of January 1, 2019 is as follows (Korean won in millions):

Classification	Underlying amounts	
Right-of-use assets:		
Right-of-use assets- real estate	₩	529,141
Right-of-use assets- vehicle		16,803
Leasehold improvements - prepaid expenses		31,250
Leasehold improvements - provision		19,308
Others		339
	₩	596,841
Lease liability:		
Lease liability- real estate	₩	529,141
Lease liability- vehicles		16,803
Others		339
	₩	546,283

The difference between the amount of operating lease agreements disclosed as of December 31, 2018 discounted at the Bank's incremental borrowing rate and the lease liabilities recognized at the date of initial application is as follows (Korean won in millions):

Classification	Book value	
Operating lease agreements disclosed as of December 31, 2018	₩	546,631
Amounts discounted at the Bank's incremental borrowing rate (*)		526,558
Add: Change in classification		19,725
Lease liabilities recognized as of January 1, 2019		546,283

(*) The incremental borrowing rate is 1.60%~ 2.17%.

3.2.1.1 Financial impact of KIFRS 1116 Leases (cont'd)

The amounts recognized in the Group's consolidated statement of comprehensive income for the year ended December 31, 2019 in accordance with the adoption of KIFRS 1116 are as follows (Korean won in millions):

Classification	Underlying amounts	
Interest expenses on lease liabilities:		
Real estate	₩	10,419
Vehicles		311
Others		6
		<u>10,736</u>
Depreciation of right-of-use assets:		
Real estate		211,398
Vehicles		6,995
Others		106
		<u>218,499</u>
	₩	<u>229,235</u>

The amendments to standards and interpretations in relation with application of KIFRS 1116 "Leases" that are enacted as of December 31, 2019 but the Group has not yet adopted are as follows.

- KIFRS Interpretation Committee announced 'Lease Term and Useful Life of Leasehold Improvements'

The KIFRS Interpretation Committee published its interpretation of 'Lease Term and Useful Life of Leasehold Improvements' as of December 16, 2019.

This interpretation deals with how to calculate the lease term of the cancellable lease and renewable lease and whether the useful life of the non-transferable leasehold improvement is limited by the relevant lease term. In accordance with this interpretation, the Group shall identify factors for considering a wide range of economic disadvantages, reflect them in its accounting policies, and calculate the lease term based on these factors.

However, as the number of lease contracts held by the Group varies widely and the terms of the contract vary, it was determined that sufficient time would be needed to establish procedures for setting up items to be included in the review of a wide range of economic disadvantages and collecting and analyzing necessary information. Therefore, the Group was not capable of reflecting the effect of the change in accounting policy based on this new interpretation as of December 31, 2019.

Changes in accounting policies on the lease term beginning on or after January 1, 2020 may increase the amount of related right-of-use assets and lease liabilities and may require retrospective modifications to the consolidated financial statements to reflect these effects.

3.2.2 KIFRS 2123 Interpretation Uncertainty over Income Tax Treatment

The Interpretation provides guidance on determining the accounting tax position when there is uncertainty over income tax treatments. The Interpretation requires an entity to determine whether uncertain tax positions are assessed separately or as a group and assess whether it is probable that a tax authority will accept an uncertain tax treatment used, or proposed to be used, by an entity in its income tax filings. If probable, the entity should determine its accounting tax position consistently with the tax treatment used or planned to be used in its income tax filings. If not probable, the entity should reflect the effect of uncertainty which is measured using either the most likely amount or the expected value method, depending on which method better predicts the resolution of the uncertainty. The interpretation is effective for annual reporting periods beginning on or after January 1, 2019, with early application permitted. On initial application, the Group shall apply this interpretation retrospectively or retrospectively with the cumulative effect of initially applying the interpretation recognized at the date of initial application. The amendments have no significant impact on the consolidated financial statements of the Group.

3.2.3 Amendments to KIFRS 1109: *Prepayment Features with Negative Compensation*

Under KIFRS 1109, a debt instrument can be at amortized cost or at fair value through other comprehensive income, provided that the contractual cash flows are 'solely payments of principal and interest on the principal amount outstanding' (the SPPI criterion) and the instrument is held within the appropriate business model for that classification. The amendments to KIFRS 1109 clarify that a financial asset passes the SPPI criterion regardless of the event or circumstance that causes the early termination of the contract and irrespective of which party pays or receives reasonable compensation for the early termination of the contract. The amendments are effective from January 1, 2019, with early application permitted. The amendments have no significant impact on the consolidated financial statements of the Group.

3.2.4 Amendments to KIFRS 1028: *Long-term interests in associates and joint ventures*

The amendments clarify that an entity applies KIFRS 1109 to long-term interests in an associate or joint venture to which the equity method is not applied but that, in substance, form part of the net investment in the associate or joint venture (long-term interests). The amendments also clarified that, in applying KIFRS 1109, an entity does not take account of any losses of the associate or joint venture, or any impairment losses on the net investment, recognized as adjustments to the net investment in the associate or joint venture that arise from applying KIFRS 1028 *Investments in Associates and Joint Ventures*. The amendments should be applied retrospectively and are effective from January 1, 2019, with early application permitted. The amendments have no significant impact on the consolidated financial statements of the Group.

3.2.5 Amendments to KIFRS 1019: *Plan Amendment, Curtailment or Settlement*

The amendments apply to plan amendments, curtailments, or settlements occurring on or after the beginning of the first annual reporting period that begins on or after January 1, 2019, with early application permitted. The amendments have no significant impact on the consolidated financial statements of the Group.

3.2.6 Amendments to KIFRS 1103 *Business Combinations*

The amendments clarify that if a party to a joint arrangement retains obligations to the assets and liabilities relating to the joint operation and obtains control of the joint operation (i.e. meeting the definition of a business), the transaction shall apply the requirements for a business combination achieved in stages. In this case, the acquirer shall remeasure all of its previously held interests in the joint operation. The amendments are applicable for business combinations for which the acquisition date falls after annual periods beginning on or after January 1, 2019. Early application is permitted with appropriate notes explaining the early application. The amendments have no significant impact on the consolidated financial statements of the Group as there were no transaction obtaining the control of the joint operation.

3.2.7 Amendments to KIFRS 1111 *Joint Operations*

A joint operating party that participates in a joint operation but does not have joint control of that joint operation may obtain joint control of that joint operation (in case when the business activity is defined under business under KIFRS 1103). This amendment clarifies that, in this case, previously held interests in the joint operation are not remeasured. The amendments are applicable for transactions for which the acquisition of joint operation falls after annual periods beginning on or after January 1, 2019. Early application is permitted with appropriate notes explaining the early application. The amendments have no significant impact on the consolidated financial statements of the Group as there were no transaction obtaining the joint control.

3.2.8 Amendments to KIFRS 1012 *Income Taxes*

The amendment clarifies that the tax consequences of dividends are more directly related to past transactions or events that generate distributable profits than to distributions to owners. Consequently, the entity recognizes the tax consequences of dividends in profit or loss, other comprehensive income or equity, depending on the items it originally recognized in relation to the past transaction or event. The amendments are effective for annual reporting periods beginning on or after January 1, 2019, with early application permitted. If the amendment is applied for the first time, it shall be applied to the tax consequences of dividends recognized after the earliest comparative period. The Group's current accounting treatment does not differ from the amendments, and thus there is no effect on the consolidated financial statements.

3.2.9 Amendments to KIFRS 1023 *Borrowing Costs*

The amendment clarifies that when the qualifying asset is ready to use or sell for its intended use on a subsequent basis, all borrowings, intended for acquisition of qualifying assets, are included in the funds borrowed for general purposes. The entity shall apply those amendments to borrowing costs that arise after the annual period in which it applies for that time. An entity shall apply those amendments for annual periods beginning on or after January 1, 2019. The consolidation entity's current accounting treatment does not differ from the amendments and has no effect on the consolidated financial statements. The amendment is effective for annual reporting periods beginning on or after January 1, 2019, with early application permitted. The Group's current accounting treatment does not differ from the amendments, and thus there is no effect on the consolidated financial statements.

3.2.10 Amendments to KIFRS1109 *Financial Instruments* and KIFRS1107 *Financial Instruments: Disclosures*- Impact in financial reporting due to IBOR (Interbank Offered Rate) reform.

This amendment specifies exceptions for hedge accounting even when uncertainty exists due to the reform of the interest rate index. It is the assumption that, in applying hedge accounting, when reviewing probability of expected transaction and conducting prospective assessment, the hedging item and method, and the interest rate index that the risk of hedging item underlies do not change due to the reform of interest rate index. In addition, for hedges of non-contractual interest rate risk components, it applies the requirement that the hedged risk should be separately identifiable only at the inception of the hedging relationship. This exception terminates when uncertainty resulting from the reform of interest rate index no longer valid in relation to the timing and amount of cash flows based on interest rate index, or when the hedging relationship is discontinued. The amendment is effective on January 1, 2020, but the Group made a decision for early adoption as the early adoption is allowed. A significant interest rate index for hedging relationships is LIBOR, and the note affected by the amendment is the hedge accounting in Note 17. The standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's consolidated financial statements are disclosed below.

3.2.11 Amendments to KIFRS 1103 *Business Combinations*- Definition of business

In October 2018, the International Accounting Standards Board (IASB) issued amendments to the definition of a business in KIFRS 1103 *Business Combinations* to help entities determine whether an acquired set of activities and assets is a business or not. They clarify the minimum requirements for a business, remove the assessment of whether market participants are capable of replacing any missing elements, add guidance to help entities assess whether an acquired process is substantive, narrow the definitions of a business and outputs, and introduce an optional fair value concentration test. New illustrative examples were provided along with the amendments. Since the amendments apply prospectively to transactions or other events that occur on or after the date of initial application, the Group will not be affected by these amendments on the date of transition.

3.2.12 Amendments to KIFRS 1001 and 1008 - Definition of Materiality

In October 2018, the IASB matched the definition of materiality in KIFRS 1001 '*Presentation of Financial Statements*' and KIFRS 1008 '*Accounting Policies, Changes in Accounting Estimates and Errors*', and clearly amended certain aspects of the definition. According to the new definition, the information is material if it can reasonably be expected to affect the decisions made by the major users of the general-purpose financial statements that provide financial information about a particular reporting entity by omitting, misrepresenting or clarifying the information. The Group expects that the amendments will not have a significant impact on its consolidated financial statements.

3.3 Foreign currency transaction

3.3.1 Functional currency

When preparing for the consolidated financial statements, the Group measures and recognizes all items and transactions according to the functional currency. The term, functional currency, is defined as the monetary unit of account of the principal economic environment in which the entity operates, and trades between entities using its own functional currency and other currencies which are converted to the Group's functional currency to be measured and recognized.

3.3.2 Transactions and balances at the end of the reporting period

Transactions in foreign currencies are initially recorded at the spot rate of exchange ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the spot rate of exchange at the reporting date. Non-monetary items at fair value in a foreign currency are translated at the exchange rates at the end of reporting date. When a gain or loss on a non-monetary item is recognized in other comprehensive income, any exchange component of that gain or loss is recognized in other comprehensive income. Conversely, when a gain or loss on a non-monetary item is recognized in profit or loss, any exchange component of that gain or loss is recognized in profit or loss. Non-monetary items not measured at fair value in a foreign currency are translated using the exchange rates as of the dates of the initial transactions and thus there are no exchange differences.

The Group may have a monetary item that is receivable from or payable to a foreign operation. An item for which settlement is neither planned nor likely to occur in the foreseeable future is, in substance, a part of the entity's net investment in that foreign operation. Exchange differences arising on a monetary item that forms part of a reporting entity's net investment in a foreign operation are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal of the net investment.

3.3.3 Translation of the presentation currency

As of the reporting date, the assets and liabilities of overseas branches are translated into the Group's presentation currency, Korean won (KRW), at the rate of exchange as of the reporting date, and their consolidated statements of comprehensive income and equity are translated using the exchange rates at transaction date or the average exchange rates for the period. Exchange differences arising on translation are taken directly to a separate component of equity. On disposal of a foreign entity, the deferred cumulative amount recognized in equity related to that particular foreign operation is recognized in 'Other operating expenses' or 'Other operating income' in the consolidated statements of comprehensive income.

3.4 Cash and cash equivalents

Cash and cash equivalents in the consolidated statements of financial position comprise of cash at Banks and on hand and short-term deposits with an original maturity of three months or less. The purpose of cash and cash equivalents is to make short-term investments and to meet short-term cash demands. Cash and cash equivalents are highly liquid, easily convertible and subject to changes in value.

3.5 Financial assets – classification and subsequent measurement

At initial recognition, financial assets and liabilities are classified as measured at FVTPL, FVOCI and amortized cost, in accordance with their characteristics and purposes.

All financial assets are initially recognized on the trade date, i.e., the date that the Group becomes a party to the contractual provisions of the instrument. This includes 'Regular way trades': purchases or sales of financial assets that require delivery of assets within the time frame generally established by regulation or convention in the market place.

Financial assets and liabilities are initially measured at fair value, and the transaction costs directly attributable to the acquisition of financial assets (liabilities) are added to (deducted from) the fair value at initial recognition if they are not measured at FVTPL. The fair value of the financial assets and liabilities is defined as the amount at which the instrument could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale. The fair value of financial instruments is measured at the transaction price (the fair value of the consideration received or transferred) at initial recognition.

3.5.1 Financial assets at FVTPL

Financial assets at fair value through profit or loss include financial assets held-for-trading and financial assets designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held-for-trading if they are acquired for the purpose of selling or repurchasing in the short term.

Also, financial assets can be designated at FVTPL if assets or liabilities are measured in accordance with different standards or in order to get rid of or reduce accounting mismatch.

Financial assets at FVTPL are measured at fair value and the gain or loss on valuation is recognized as profit or loss. Dividends and interest income from the financial assets are also recognized as profit or loss.

3.5.2 Financial assets at FVOCI

The Group measures financial assets measured at FVOCI if they meet the following conditions: 1) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, and 2) the financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets. Financial assets at FVOCI are measured at fair value after initial recognition. Gain or loss from changes in the fair value is recognized as other comprehensive income except for interest income in accordance with the effective interest rate method, dividends and foreign exchange differences on monetary assets directly recognized as profit or loss.

When financial assets at FVOCI are disposed of, the cumulative income recognized in other comprehensive income is transferred to the current profit or loss. However, the cumulative income recognized for equity securities designated as financial assets at FVOCI is not transferred to the current profit or loss.

The fair value of financial assets at FVOCI presented in foreign currencies is translated using the exchange rate as of the end of the reporting period. Changes in the fair value from exchange differences due to changes in amortized cost are recognized in the current profit or loss, while other changes are recognized directly in equity.

3.5.3 Financial assets at amortized cost

Financial assets that meet the following two conditions must be at amortized cost: 1) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, and 2) the objective of the entity's business model is to hold the financial asset to collect the contractual cash flows. After initial recognition, the financial assets are recognized at amortized cost using the effective interest rate, net of the allowance for doubtful accounts.

The Group defers LOF/LOCs associated with originating loans and LOCs that have future economic benefits. Loan balances are reported net of these LOF/LOCs. The deferred LOF/LOCs are amortized based on the effective interest rate method with the amortization recognized as adjustments to interest income.

3.6 Derivative financial instruments and hedge accounting

Derivative financial instruments are classified as trading derivatives or hedging derivatives depending on whether hedge accounting is applied or not and are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Any gains or losses arising from changes in fair value on derivatives are taken directly to the consolidated statement of comprehensive income, except for the effective portion of cash flow hedges or hedges of net investment in a foreign operation, which is recognized in other comprehensive income.

For the purpose of hedge accounting, hedges are classified as:

- Fair value hedges when hedging the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment (except for foreign currency risk)
- Cash flow hedges when hedging exposure to variability in cash flows that is either attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction or also the foreign currency risk in an unrecognized firm commitment

At the inception of a hedge relationship, the Group formally designates and documents the hedge relationship to which the Group wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge. The documentation includes identification of the hedging instrument, the hedged item or transaction, the nature of the risk being hedged and how the entity will assess the effectiveness of changes in the hedging instrument's fair value in offsetting the exposure to changes in the hedged item's fair value or cash flows attributable to the hedged risk. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine that they actually have been highly effective throughout the financial reporting periods for which they were designated.

Hedges which meet the strict criteria for hedge accounting are accounted for as follows:

3.6.1 Fair value hedges

When fair value hedge accounting is applied, the unrealized gain or loss on hedged items that are attributable to a hedged risk and hedging instruments is symmetrically recognized in the consolidated financial statements as current income or other comprehensive income for the same reporting period to ensure that changes in the fair value of the hedged items are offset by changes in the fair value of the hedging instruments. If an application of hedge accounting is no longer valid, the Group discontinues the hedge accounting prospectively. Any adjustment to the carrying amount of hedged items is amortized to profit or loss in the consolidated statement of comprehensive income over the remaining maturity using the effective interest rate method.

3.6.2 Cash flow hedges

When cash flow hedge accounting is applied, the effective portion of the unrealized gain or loss on the hedging instrument is directly recognized in other comprehensive income (loss) in the consolidated statement of financial position to ensure that changes in the cash flows of the hedged items are offset by changes in the cash flows of the hedging instruments while any ineffective portion is recognized immediately in the consolidated statement of comprehensive income. Amounts recognized as other comprehensive income are transferred to the consolidated statements of comprehensive income when the hedged transaction affects profit or loss. If an application of hedge accounting is no longer valid, the Group discontinues the hedge accounting prospectively and the cumulative gain or loss on the hedging instrument previously recognized in other comprehensive income are transferred to profit or loss in the consolidated statement of comprehensive income.

3.6.3 Hedge accounting of net investment in a foreign operation

When applying hedge accounting of net investment in a foreign operation, the effective portion of changes in fair value of the hedging instrument is recognized in other comprehensive income, and the ineffective portion of the hedge is recognized as current profit or loss in order to offset changes in the fair value of the hedged item caused by the hedging with changes in the fair value of the hedging instrument. The effective portion of hedge recognized in other comprehensive income will be re- classified from other comprehensive income to current profit or loss in accordance with KIFRS 1021 *The Effects of Changes in Foreign Exchange Rates* at the time of disposal of a foreign operation or disposal of a portion of its foreign operations in the future.

3.6.4 Embedded derivatives

Derivatives embedded in other financial instruments or other host contracts are accounted for as separate derivatives when their risks and characteristics are not closely related to those of the host contracts and the host contracts are not measured at FVPTL.

3.6.5 'Day 1' profit or loss

In case of derivatives in level 3, whose fair value is determined using data which is not observable from markets, the difference between the transaction price and fair value at initial recognition (a 'Day 1' profit or loss) is deferred and amortized over the life of the associated instrument using the straight-line method and the amortization is recognized in the consolidated statement of comprehensive income.

3.6.6 Credit risk valuation adjustment

When assessing derivatives at fair value, expected loss from credit risk is measured and deducted from derivative assets to reflect credit risk of counterparties.

3.7 Expected credit loss for financial assets

Loss allowance is recognized for financial assets at FVOCI and amortized cost using the expected credit loss model.

The expected credit loss (ECL) is the weighted average amount of possible outcomes within a certain range, reflecting the time value of money, estimates on the past, current and future situations, and information accessible without excessive cost of effort.

The ECL can be measured in three followings ways:

- General approach: when financial assets do not fall into below two categories and are off-balance-sheet undrawn commitments
- Simplified approach: when financial assets are trade receivables, contract assets or lease receivables
- Credit-impaired approach: when financial assets are credit-impaired at initial recognition

The general approach is applied differently depending on the significance of the increase of the credit risk. If, at the reporting date, the credit risk on a financial instrument has not increased significantly since initial recognition, an entity shall measure the loss allowance for that financial instrument at an amount equal to 12-month expected credit losses. If the credit risk on that financial instrument has increased significantly since initial recognition, an entity shall measure the loss allowance for a financial instrument at an amount equal to the lifetime expected credit losses at each reporting date.

The loss allowance is measured at an amount equal to lifetime expected credit losses for the simplified approach, and an entity shall only recognize the cumulative changes in lifetime expected credit losses since initial recognition as a loss allowance for purchased or originated credit-impaired financial assets at each reporting date for the credit-impaired approach.

The following non-exhaustive list of information may be relevant in assessing changes in credit risk:

- Significant changes in internal price indicators of credit risk as a result of a change in credit risk since inception
- Other changes in the rates or terms of an existing financial instrument that would be significantly different
- An actual or expected significant change in the financial instrument's external credit rating
- An actual or expected internal credit rating downgrade for the borrower or decrease in behavioral scoring used to assess credit risk internally
- An actual or expected significant change in the operating results of the borrower
- Past due information

3.7 Expected credit loss for financial assets (cont'd)

3.7.1 Forward-looking information

The Group measures the significance of the increase of the credit risk and the expected credit loss using forward-looking information.

The Group assumes that the risk component is correlated with changes in market conditions and calculates the expected credit loss using the forward-looking information by modelling macroeconomic variables and risk components.

The forward-looking information used to measure the expected credit loss is derived from 'stress-case' or 'worst-case' scenarios.

3.7.2 Measurement of expected credit loss for financial assets at amortized cost

Expected credit loss for financial assets at amortized cost is measured as the difference between the present value of the cash flows expected to be received and the cash flow expected to pay. For this purpose, the Group calculates expected cash flows for individually significant financial assets (Individual valuation allowance for doubtful accounts).

Financial assets insignificant in value individually are measured on a collective basis with financial assets with similar credit risks (collective valuation allowance for doubtful accounts).

3.7.2.1 Allowance for doubtful accounts on an individual assessment basis

Allowance for doubtful accounts on an individual assessment basis is based on the best estimates of management in regard to the present value of cash flows expected to be recovered from receivables. In estimating the cash flows, the Group uses all available information including the financial conditions such as the operating cash flows of counterparties and the net realizable value of collateral provided.

3.7.2.2 Allowance for doubtful accounts on a collective assessment basis

Allowance for doubtful accounts on a collective assessment basis uses the estimation model that accounts for the forward-looking information based on the past loss rate to measure the expected credit loss. The model considers the probability of default (PD) and the loss given default (LGD) reflecting the type of instruments and borrowers, credit rating, portfolio size and collection period. Also, certain assumptions are applied to model the expected credit loss measurement and to determine input variables based on past experiences and forward-looking information. Methodologies and assumptions for this model are regularly reviewed to minimize the difference between the allowance for doubtful accounts and the actual loss.

The expected credit loss for financial assets at amortized cost is recognized as the allowance for doubtful accounts, and when the financial asset is determined to be irrecoverable, the carrying amount and allowance for doubtful accounts are decreased. If financial assets previously written off are recovered, the allowance for doubtful accounts is increased, and the difference is recognized in the current profit or loss.

3.7.3 Expected credit loss measurement for financial assets at fair value through other comprehensive income

The measurement method is the same as the one for financial assets at amortized cost, but the change in the allowance for doubtful accounts is recognized as other comprehensive income. The allowance for doubtful accounts for financial assets at fair value through other comprehensive income is reclassified from other comprehensive income to current profit or loss when the assets are disposed of or repaid.

3.8 Derecognition of financial assets

A financial asset (or, where applicable a part of a financial asset or part of a group of similar financial assets) is derecognized when:

- The rights to receive cash flows from the asset have expired.
- The Group has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'Pass-through' arrangement; and either (a) the Group has transferred substantially all the risks and rewards of the asset, or (b) the Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

When the Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if and to what extent it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all the risks and rewards of the asset, nor transferred control of the asset, the asset is recognized to the extent of the Group's continuing involvement in the asset. In that case, the Group also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Group has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Group could be required to repay.

3.9 Recognition and measurement of financial liabilities

All financial liabilities are classified as financial liabilities at FVTPL, borrowings or others and measured initially at their fair value plus transaction costs, except in the case of financial liabilities recorded at FVTPL.

3.9.1 Financial liabilities at FVTPL

Financial liabilities at fair value through profit or loss include financial liabilities held-for-trading and financial liabilities designated upon initial recognition as of fair value through profit or loss. Financial liabilities are classified as held-for-trading if they are acquired for the purpose of selling in the near term. All financial liabilities including an embedded derivative separated from the host contract are reclassified as financial liabilities at fair value through profit or loss except for financial liabilities designated as effective hedging instruments or financial guarantee contracts. After initial recognition, the changes in the fair value of the financial liabilities at fair value through profit or loss and the related interest expenses are recognized as profit or loss.

The Group performs securities lending and borrowing classified to FVTPL. When the Group borrows securities from Korea Securities Depository, securities borrowed are managed as memorandum value and when selling them, they are recorded as securities sold. At closing, the difference in the price securities are sold and the market price prevailing on the closing date is taken into account as valuation gain or loss on securities sold, and at the time of selling the securities, the difference in book value and the price securities are purchased is recorded as trading gain or loss on securities sold.

3.9.2 Deposits, borrowings, and bonds

After initial recognition, interest bearing deposits, borrowings and bonds are subsequently measured at amortized cost using the EIR. Gains and losses are recognized in the consolidated statements of comprehensive income when the liabilities are derecognized as well as through the EIR amortization process.

3.10 Derecognition of financial liabilities

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as a derecognition of the original liability and the recognition of a new liability, and the difference in the respective carrying amounts is recognized in the consolidated statement of comprehensive income.

3.11 Offsetting of financial assets and liabilities

Financial assets and financial liabilities are offset, and the net amount reported in the consolidated statement of financial position if, and only if, there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the asset and settle the liability simultaneously.

3.12 Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. The provision is used only for expenditures for which the provision was originally recognized. If the effect of the time value of money is material, provisions are stated at present value.

Confirmed acceptances and guarantees, unconfirmed acceptances and guarantees and bills endorsed are not recognized on the consolidated statement of financial position but are disclosed as off-statement financial position items in the notes to the consolidated financial statements. The Group provides a provision for such off-statement financial position items, applying a Cash Conversion Factor (Cash CF) and provision rates, and records the provision as a reserve for possible losses on acceptances and guarantees. The Group provides an allowance for doubtful accounts for possible losses on a certain portion of unused credit line. The Group records the provision for such unused balances as an allowance for doubtful accounts possible losses on unused commitments which are calculated by applying a Credit Conversion Factor (CCF) and provision rates.

3.13 Financial guarantee contracts

A financial guarantee contract is a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payment when due in accordance with the original or modified terms of a debt instrument and is measured at fair value on date of initial recognition. After initial recognition, the Group, as an issuer of such a contract, measures it at the higher of (i) the amount determined in accordance with KIFRS 1109 '*financial instruments*' and (ii) the amount initially recognized less, when appropriate, cumulative amortization recognized in accordance with KIFRS 1115 '*revenue from contract with customer*'.

3.14 Bonds purchased under resale agreements and bonds sold under repurchase agreements

Bonds purchased under resale agreements and bonds sold under repurchase agreements are included in loans and borrowings, respectively, in the accompanying consolidated statement of financial position. Interest income and expenses from purchase or sale are recognized as interest income on loan receivables and interest expenses on borrowings.

3.15 Property and equipment

Property and equipment are stated at historical cost, less accumulated depreciation. Such cost includes an expenditure which has directly occurred for the acquisition of the asset.

The initial and subsequent costs are recognized as an asset when it is probable that future economic benefits associated with the asset will flow to the Group and the costs of the asset can be measured reliably. The other maintenances and repairs are expensed in the year in which they are incurred and the carrying amount of certain parts that are replaced is derecognized.

Land is not depreciated. For depreciation of other assets, amount of acquisition cost less residual value is calculated on a straight-line and declining balance basis over the following estimated useful life of the asset.

Classification	Depreciation method	Years
Buildings, building components and structures	Straight-line method	5 to 55
Leasehold improvements	Straight-line method	3 to 10
Equipment and vehicles	Declining balance method	3 to 20

If the recoverable amount of an asset is estimated to be less than its carrying amount, the carrying amount of the asset is immediately reduced to its recoverable amount. The residual value and economic useful life are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for if necessary. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is recognized in 'other operating income' in the consolidated statement of comprehensive income in the year the asset is derecognized.

3.16 Investment properties

Investment properties are measured initially at cost, including transaction costs. The carrying amount includes the cost of replacing part of an existing investment property at the time that cost is incurred if the recognition criteria are met; and excludes the costs of day-to-day servicing of an investment property. Subsequent to initial recognition, investment properties are stated using the cost model.

Investment properties are derecognized when either they have been disposed of or when the investment property is permanently withdrawn from use and no future economic benefit is expected from its disposal. The difference between the net disposal proceeds and the carrying amount of the asset is recognized in the consolidated statement of comprehensive income in the period of derecognition, and transfers are made to or from investment property only when there is a change in use. Depreciation method to measure buildings which are classified as investment properties is the straight-line method with useful lives ranging from 5 to 55 years.

3.17 Intangible assets

An intangible asset which comprises industrial property right, software, development costs and others is recognized as an asset only if it is probable that future economic benefits associated with the asset will flow to the Group and the costs of the asset can be measured reliably. Intangible assets acquired individually are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is its fair value as of the date of acquisition in accordance to KIFRS 1103 "*Business Combination*." Amortization of intangible assets with definite useful lives is calculated on the following amortization method over the estimated useful life of the assets.

Classification	Depreciation method	Years
Industrial property right, software, system development costs	Straight-line method	5
Other intangible assets	Straight-line method	1 to 27

Intangible assets with indefinite useful lives are not amortized but are annually tested for impairment or whenever there is an indication that the intangible asset may be impaired. The assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable.

3.18 Impairment of non-financial assets

The Group assesses at each reporting date whether there is an indication that an asset may be impaired. If any indication exists, or when annual impairment testing for an asset is required, the Group estimates the asset's recoverable amount. An asset's recoverable amount is the higher of an asset's or cash-generating unit's (CGU) fair value less costs to sell and its value in use. When the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

3.19 Net defined benefit liabilities

The Group calculates defined benefit liabilities and pension benefit expenses based on defined benefit plan and defined contribution plan when an employee retires in accordance to pension related regulations. For defined benefit plans, the cost of retirement benefits is measured by an actuary services company, using the projected unit credit method. The present value of defined benefit obligation is computed by discounting expected future cash outflows with market rate of return measured against the yield of high-graded corporate bond whose date of payment and maturity is similar to that of a defined benefit obligation. Actuarial gains and losses, incurred from the change in actuarial assumptions and the difference between the assumptions and the actual results, are recognized in other comprehensive income for the period. Past service cost is recognized immediately to the extent that the benefits are already vested and otherwise is amortized on a straight-line basis over the period until the benefits become vested.

The Group has entered into retirement trust fund and retirement pension plan agreements to pay retirement benefits to its employees. The retirement benefit obligation represents the present value of the defined benefit obligation as adjusted for unrecognized past service cost and as reduced by the fair value of plan assets. Any asset resulting from this calculation is limited to unrecognized actuarial losses and past service cost, plus the present value of available refunds and reductions in future contributions to the plan.

3.20 Share-based payment transactions

Employees (including senior executives) of the Group receive remuneration in the form of share-based payment transactions, whereby employees render services as consideration for equity instruments, or they are granted share appreciation rights, which can only be settled in cash. If the goods or services provided cannot be reliably measured, the endowed equity is indirectly estimated at fair value and the Group accounts for compensation costs and equity.

3.20 Share-based payment transactions (cont'd)

The cost of cash-settled transactions is measured initially at fair value at the grant date, taking into account the terms and conditions upon which the instruments were granted. This fair value is expensed over the period until vesting with recognition of a corresponding liability. The liability is remeasured to fair value at each reporting date up to and including the settlement date, which changes in fair value recognized in the consolidated statement of comprehensive income. Also, in the case of a selectable share-based payment transaction in which the employees have a choice between a cash-settled transaction and an equity-settled transaction, the Group records the amount depending on its materiality.

3.21 Employee benefits

3.21.1 Short-term employee benefits

When employees have rendered services to the Group during an accounting period, the Group recognizes the undiscounted amount of short-term employee benefits. This amount is expected to be settled in whole before twelve months after the end of the reporting period, in exchange for those services.

3.21.2 Termination benefits

The Group recognizes expenses for termination benefits when an employee accepts the offer or when a restriction on the Group's ability to withdraw the offer takes effect.

3.22 Income tax expenses and deferred tax assets and liabilities

Income taxes comprise of current and deferred taxes. All items related to taxes, other than those recognized directly in equity, are accounted for in the consolidated statement of comprehensive income. Accordingly, items recognized directly in equity and the related taxes are accounted for as other comprehensive income in the consolidated statements of comprehensive income. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted, by the reporting date, in the countries where the Group operates and generates taxable income. If the applied tax laws require an interpretation, the Group calculates income tax payable expected to be paid to the taxation authorities based on the opinion made when the taxes were reported.

Deferred tax is provided on temporary differences at the reporting date between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes. Deferred liabilities are recognized for all taxable temporary differences, except:

- When the deferred tax liability arises from the initial recognition of goodwill or of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit loss.
- In respect of taxable temporary differences associated with investments in subsidiaries and associates, where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred tax assets are recognized for all deductible temporary differences to the extent that taxable profit will be available against which the deductible temporary differences can be utilized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the years when the asset is realized, or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

Deferred tax assets and deferred tax liabilities are offset if a legally enforceable right exists to set off current tax assets against current tax liabilities and the deferred taxes relate to the same taxable entity and taxation authority.

3.22 Income tax expenses and deferred tax assets and liabilities (cont'd)

The Group offsets deferred assets and liabilities if, and only if (a) the Group has a legally enforceable right to set off current tax assets against current tax liabilities and, (b) the deferred tax assets and the deferred tax liabilities relate to income taxes levied by the same taxation authority on either on (i) the same taxable entity or (ii) different taxable entities which intend either to settle current tax liabilities and assets on a net basis, or to realize the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

3.23 Equity

3.23.1 Classification of equity

The Group classifies financial instruments at initial recognition as either financial liabilities or financial equity depending on the contractual materiality. In the case where it is possible to avoid the related contractual obligations, the financial item is classified as a financial equity. An equity is any contract that evidences a residual interest in the assets of the Group after deducting all of its liabilities.

3.23.2 Stock issuance costs

New stock issuance costs or incremental costs related to the stock issuance for business combinations are recorded as a deduction from paid-in capital net of tax effects.

3.24 Earning per share

Basic and diluted earnings per share are computed by dividing net income by the weighted average number of shares of common stock outstanding during the year.

3.25 Accounting basis for trust accounts

The Group separately maintains the books of accounts and consolidated financial statements in connection with the trust operations (the "trust accounts") from those of the Bank's accounts in accordance with the *Financial Investment Services and Capital Markets Act* ("FSCMA"). When surplus funds are generated through the management of trust assets, such funds are deposited with the Bank and are recorded as due to trust accounts of the Bank's accounts. Also, the borrowings from the Bank's accounts are recorded as due from trust accounts of the Bank's accounts. The Group receives fees for operation and management of the trust business and accounts for them as fee and commission income from trust accounts.

With respect to certain trust account products, the Group guarantees the repayment of principal and interest of these trust accounts, in certain cases, with a fixed rate of return. If income from such trust accounts is insufficient to pay the guaranteed amount, such a deficiency is satisfied by using special reserves maintained in these trust accounts, offsetting trust fee payable to the Bank's accounts and receiving compensation contributions from the Bank's accounts. If the Group pays compensating contributions to the guaranteed return trusts to cover such deficiencies, these contributions are reflected as fee and commission expenses from trust accounts in the Group's consolidated statements of comprehensive income.

3.26 Lease accounting

Under KIFRS 1116 *Lease*, the Group applies a single recognition and measurement method for all leases except for leases of low-value assets. This Standard provides guidance on specific requirements and simplified methods applied by an entity.

The Group recognized the right-to-use asset and the lease liability that were previously classified as operating lease, except for leases of low-value assets. Right-of-use assets, for most leases, were recognized as carrying amounts measured as if they had been applying these standards from the inception of the lease, except that they were discounted at the lessee's incremental borrowing rate as of the date of initial application.

The practical expedients that the Group applied are as follow:

- Application of a single discount rate to a portfolio of leases with significantly similar characteristics
- Replacement of impairment review by determining whether leases are onerous before the initial application date
- Exclusion of initial direct costs from the measurement of the right-of-use asset at the initial application date
- Using hindsight for lessee

3.27 Merchant banking account

As permitted by the *Restructuring of Financial Institutions Act*, the Bank may continue its merchant banking operations, including leasing business, until the existing contracts acquired from the Korea International Merchant Bank upon merger are terminated.

Significant accounting policies applied to the Bank's merchant banking operations are summarized as follows:

3.27.1 Revenue recognition on discounted notes

Interest income on discounted notes is accrued over the term of the notes. Income from the sale of discounted notes is recognized at the date of transaction based on the difference between the purchase prices and sales prices of the notes, adjusted for interest earned during the holding period.

3.27.2 Cash Management Accounts (CMA)

The Group recognizes interest income from CMA investments and interest expenses from CMA deposits as operating income and operating expenses, respectively.

3.28 Interest income and interest expense

Interest income and interest expenses are recognized over time using the effective interest method.

The effective interest method is a method of calculating the amortized cost of a financial asset or a financial liability and of allocating the interest income or interest expenses over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument or, when appropriate, a shorter period to the net carrying amount of the financial asset or financial liability. When calculating the effective interest rate, the Group estimates cash flows considering all contractual terms of the financial instrument but does not consider future credit losses. Cash flows at the time of the calculation include all the fees and points paid to or received from parties to the contract that are an integral part of the effective interest rate, including transaction costs, and all other premiums or discounts.

If income recognition on an accrual basis is deemed inappropriate due to low possibility of realizing interest income, the interest income is recognized when interest is actually received.

3.29 Fees and commission income

The Group's revenue recognition standard varies depending on the type of service provided to customers. Fee income, which is an integral part of the effective interest rate (EIR) of financial instruments, is adjusted using the EIR and recognized as interest income.

Fee income is recognized using the five-stage revenue recognition model (Identification of a contract with a customer → Identification of performance obligations in the contract → Determination of the transaction price → Allocation of the transaction price to the separate performance obligations in the contract → Recognition of revenue upon satisfying the performance obligations) in accordance with KIFRS 1115.

3.30 Dividend income

Dividend income is recognized when the Group's right to receive the payment is established.

4. Significant judgments and accounting estimates

In the application of the Group's accounting policies, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily observable from objective sources. The estimation and assumption are based on other factors that are related to historical experience. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period or in the period of the revision and future periods if the revision affects both current and future periods.

In the process of applying the Group's accounting policies, management has made the following judgments that have a significant effect on the amounts recognized in the consolidated financial statements:

4.1 Fair value of financial instruments

The fair value of financial instruments is determined by referencing quoted market prices in active markets in the first place. For financial instruments not traded in an active market, the fair value is determined using appropriate valuation techniques including (i) recent arm's length market transactions, (ii) reference to the current fair value of another instrument that is substantially the same, (iii) discounted cash flow analysis, and (iv) option pricing models.

4.2 Expected credit loss of financial assets

The Group recognizes impairment losses on debt instruments, lease receivables, contract assets, loan commitment, and financial guarantee contracts that were accounted for at amortized cost, or FVOCI, based on the expected credit loss (ECL) model using a three-stage model for 12-month expected credit losses, or lifetime expected credit losses based on changes in credit risk since initial recognition of financial assets.

	Classification	Loss allowance
Stage 1	Credit risk on a financial instrument has not increased significantly since initial recognition.	12-month ECL: Expected credit losses that result from default events that are possible within 12 months after the reporting date
Stage 2	Credit risk on a financial instrument has increased significantly since initial recognition.	Lifetime ECL: Expected credit losses that result from all possible default events over the expected life of the financial instrument
Stage 3	Credit-impaired	

The cumulative changes in lifetime expected credit losses since initial recognition are recognized as loss allowance for a financial asset that is considered credit-impaired at initial recognition.

4.3 Retirement benefit

The cost of providing benefits under the defined benefit plans is determined using the actuarial valuation. Actuarial assumptions were made for the discount rate, and an increase in the future pay rate. Retirement benefits include significant uncertainties in the estimates due to the long-term duration.

4.4 Impairment of non-financial assets

The Group assesses, at each reporting date, whether there is an indication that an asset may be impaired. Intangible asset with indefinite useful life is tested for impairment annually or tested whenever there is an indication that the intangible asset may be impaired. Other non-financial assets are tested for impairment whenever there is indication that the book value cannot be recovered. For the calculation of value in use, management estimates expected future cash flow incurred from the asset or cash generating unit (CGU). For the calculation of present value of the expected future cash flow, appropriate discount rate is selected.

4.5 Income taxes

Different taxation laws that the Group's foreign subsidiaries are exposed to require judgment in determining the amount of tax expenses that can be recognized. In addition, there has been various transactions and tax accounting methods which have made computing the final tax expenses for the period uncertain. The contingent liability from any future tax assessments is based on the estimates of the likelihood of additional taxes imposed and has been included in the Group's consolidated financial statements for the current period. When the finalized tax expenses assessments are different from the appropriated amounts, the differences, if any, are recognized in current deferred tax assets, liabilities, and expenses for the period.

5. Fair value measurement of financial assets and liabilities

The standards the Group applies when measuring fair values of financial assets and liabilities are described below:

- A. Quoted market prices as of the settlement date in an active market are the best evidence of fair value and should be used when available.
- B. If a market for a financial instrument is not active, the Group establishes fair value by using a valuation technique that makes maximum use of market inputs and includes (i) recent arm's length market transactions, (ii) reference to the current fair value of another instrument that is substantially the same, (iii) discounted cash flow analysis, and (iv) option pricing models. An acceptable valuation technique incorporates all factors that market participants would consider in setting a price and is consistent with accepted economic methodologies for pricing financial instruments.
- C. When determining fair value using the valuation techniques, comparison with the current market transaction of another instrument that is substantially the same as the financial instrument needed to be objectively substantiated or inclusion of variables in the marketable data must be performed. Not all of the significant market variables are observable and in relevant cases, the reasonable estimates or assumptions are required to determine the fair value. For an investment in equity instruments which quoted market price is not available in an active market or derivative linked to such instruments which fair values are not measured reliably, fair values are measured at cost.

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5.1 Fair value hierarchy of financial instruments

Fair value hierarchy of financial instruments as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Levels of the fair value hierarchy (*1)				
Classification	2019			
	Quoted market price (Level 1)	Observable input (Level 2)	Unobservable input (Level 3)	Total
Financial assets				
Financial assets at FVTPL				
Equity securities	₩ 69,006	₩ -	₩ 5,518	₩ 74,524
Debt securities	1,960,884	3,697,994	404,415	6,063,293
Derivative assets held-for-trading	-	4,233,902	7,142	4,241,044
Convertible privately-placed bonds	-	-	368,583	368,583
	2,029,890	7,931,896	785,658	10,747,444
Financial assets at FVOCI				
Equity securities	377,440	-	689,773	1,067,213
Debt securities	15,707,155	19,112,506	-	34,819,661
	16,084,595	19,112,506	689,773	35,886,874
Derivative assets used for hedging	-	65,295	1,232	66,527
Merchant banking account assets	-	3,255,106	-	3,255,106
	₩ 18,114,485	₩ 30,364,803	₩ 1,476,663	₩ 49,955,951
Financial liabilities				
Financial liabilities at FVTPL				
Derivative liabilities held-for-trading	₩ -	₩ 3,679,180	₩ 6,513	₩ 3,685,693
Securities borrowed	21,548	-	-	21,548
Financial liabilities designated as at FVTPL	-	537,253	-	537,253
	21,548	4,216,433	6,513	4,244,494
Derivative liabilities used for hedging	-	26,774	529	27,303
	₩ 21,548	₩ 4,243,207	₩ 7,042	₩ 4,271,797

(*1) The Group recognizes transfers between levels at the beginning of each reporting period when events or changes in circumstances causing the transfers between levels have occurred.

Levels of the fair value hierarchy (*1)				
Classification	2018			
	Quoted market price (Level 1)	Observable input (Level 2)	Unobservable input (Level 3)	Total
Financial assets				
Financial assets at FVTPL				
Equity securities	₩ 56,441	₩ -	₩ 6,271	₩ 62,712
Debt securities	1,445,998	2,868,924	310,503	4,625,425
Derivative assets held-for-trading	-	3,334,594	7,994	3,342,588
Convertible privately-placed bonds	-	-	389,381	389,381
	1,502,439	6,203,518	714,149	8,420,106
Financial assets at FVOCI				
Equity securities	418,206	-	649,111	1,067,317
Debt securities	19,212,155	14,560,973	4,615	33,777,743
	19,630,361	14,560,973	653,726	34,845,060
Derivative assets used for hedging	-	6,748	7	6,755
Merchant banking account assets	-	2,940,272	-	2,940,272
	₩ 21,132,800	₩ 23,711,511	₩ 1,367,882	₩ 46,212,193
Financial liabilities				
Financial liabilities at FVTPL				
Derivative liabilities held-for-trading	₩ -	₩ 3,082,443	₩ 7,441	₩ 3,089,884
Financial liabilities designated as at FVTPL	-	500,692	-	500,692
	-	3,583,135	7,441	3,590,576
Derivative liabilities used for hedging	-	82,575	16,222	98,797
	₩ -	₩ 3,665,710	₩ 23,663	₩ 3,689,373

(*1) The Group recognizes transfers between levels at the beginning of each reporting period when events or changes in circumstances causing the transfers between levels have occurred.

5.1 Fair value hierarchy of financial instruments (cont'd)

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation techniques:

- Level 1: Quoted (unadjusted) prices in active markets for identical assets or liabilities
- Level 2: Other techniques in which all significant inputs and significant value drivers are observable in active markets
- Level 3: Techniques, such as pricing models, discounted cash flow methodologies, or similar techniques based on significant unobservable inputs, as well as management judgments or estimates that are significant to valuation

Details of fair value, valuation technique, and inputs used to develop those measurements classified into level 2 assets and liabilities that are measured at fair value as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Fair value		Description of the valuation technique	Inputs used in the fair value measurement
		2019		
Financial assets				
Financial assets at FVTPL				
Debt securities	₩	3,697,994	Net asset value model	Underlying asset prices such as bond, stock, etc.
Derivative assets held-for-trading		4,233,902	Black-Scholes model, Black model, DCF model and Hull-White 1 factor model	Exchange rate, stock Index, volatility, swap yield curve, swaption volatility, yield curve of each currency
		7,931,896		
Financial assets at FVOCI				
Debt securities		19,112,506	DCF model	Discount rate
Derivative assets used for hedging		65,295	Hull-White 1 factor model	Exchange rate, swap yield curve, swaption volatility, yield curve of each currency
Merchant banking account assets		3,255,106	Net asset value model	Underlying asset prices such as bond, stock, etc.
	₩	30,364,803		
Financial liabilities				
Financial liabilities at FVTPL				
Derivative liabilities held-for-trading		3,679,180	Black-Scholes model, Black model, DCF model and Hull-White 1 factor model	Exchange rate, stock Index, volatility, swap yield curve, swaption volatility, yield curve of each currency
Financial liabilities designated as at FVTPL		537,253	Hull-white 1 factor model	Swap yield curve, swaption volatility
		4,216,433		
Derivative liabilities used for hedging		26,774	Hull-white 1 factor model	Exchange rate, swap yield curve, swaption volatility, yield curve of each currency
	₩	4,243,207		

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5.1 Fair value hierarchy of financial instruments (cont'd)

	Fair value		Description of the valuation technique	Inputs used in the fair value measurement
Classification	2018			
Financial assets				
Financial assets at FVTPL				
Debt securities	₩	2,868,924	Net asset value model	Underlying asset prices such as bond, stock, etc.
Derivative assets held-for-trading		3,334,594	Black-Scholes model, Black model, DCF model and Hull-White 1 factor model	Exchange rate, stock index, volatility, swap yield curve, swaption volatility, yield curve of each currency
		6,203,518		
Financial assets at FVOCI				
Debt securities		14,560,973	DCF model	Discount rate
Derivative assets used for hedging		6,748	Hull-White 1 factor model	Exchange rate, swap yield curve, swaption volatility, yield curve of each currency
Merchant banking account assets		2,940,272	Net asset value model	Underlying asset prices such as bond, stock, etc.
	₩	23,711,511		
Financial liabilities				
Financial liabilities at FVTPL				
Derivative liabilities held-for-trading		3,082,443	Black-Scholes model, Black model, DCF model and Hull-White 1 factor model	Exchange rate, stock index, volatility, swap yield curve, swaption volatility, yield curve of each currency
Financial liabilities designated as at FVTPL		500,692	Hull-white 1 factor model	Swap yield curve, swaption volatility
		3,583,135		
Derivative liabilities used for hedging		82,575	Hull-white 1 factor model	Exchange rate, swap yield curve, swaption volatility, yield curve of each currency
	₩	3,665,710		

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5.1 Fair value hierarchy of financial instruments (cont'd)

Details of fair value, valuation technique, input to valuation, and significant unobservable inputs used to develop those measurements classified into level 3 assets and liabilities that are measured at fair value as of December 31, 2019 and 2018 are as follows (Korean won in millions):

		Fair value	Description of the valuation technique	Inputs used in the fair value measurement	Significant unobservable inputs used in the fair value measurement	Range (%)	The effect of changes in unobservable Inputs on fair value
Classification		2019					
Financial assets							
Financial assets at FVTPL							
Equity securities	₩	5,518	DCF model, Comparison with similar business, Dividend discount model, Binomial model	Growth rate,	Growth rate	0.00	Positive
				Discount rate,	Discount rate	3.82~	Negative
				Liquidating value	Liquidating value	13.40	
				Underlying asset price, Volatility of underlying assets		0.00	Positive
Debt securities		404,415	Dividend discount model, Binomial model		Volatility of underlying assets	21.81	Positive
				Discount rate,	Discount rate	6.23	Negative
				Liquidating value	Liquidating value	0.00	Positive
				Underlying asset price, Volatility of underlying assets	Volatility of underlying assets	19.99	Positive
Derivative assets held-for-trading		7,142	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation between KRW IRS rates, Correlation between USD IRS rates	80.00~92.00	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
Convertible privately-placed bonds		368,583	Binomial model	Underlying asset price, Volatility of underlying assets, Discount rate	Volatility of underlying assets	13.14~46.36	Positive
		785,658					
Financial assets at FVOCI							
Equity securities		689,773	DCF model, Comparison with similar business, Net asset value model, Binomial model	Growth rate,	Growth rate	0.00	Positive
				Liquidating value	Liquidating value	0.00	Positive
				Discount rate,	Discount rate	6.79~19.21	Negative
				Underlying asset price, Volatility of underlying assets, Discount rate	Volatility of underlying assets	20.14~20.97	Positive
Derivative assets used for hedging		1,232	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	80.00	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
₩		1,476,663					

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5.1 Fair value hierarchy of financial instruments (cont'd)

Classification	Fair value 2019	Description of the valuation technique	Inputs used in the fair value measurement	Significant unobservable inputs used in the fair value measurement	Range (%)	The effect of changes in unobservable Inputs on fair value
Financial liabilities						
Financial liabilities at FVTPL						
Derivative liabilities held-for-trading	6,513	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	80.00 ~ 92.00	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
Derivative liabilities designated as hedging instruments	529	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	92.00 ~ 99.00	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
	<u>₩ 7,042</u>					

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5.1 Fair value hierarchy of financial instruments (cont'd)

Classification		Fair value 2018	Description of the valuation technique	Inputs used in the fair value measurement	Significant unobservable inputs used in the fair value measurement	Range (%)	The effect of changes in unobservable Inputs on fair value
Financial assets							
Financial assets at FVTPL							
Equity securities	₩	6,271	DCF model, Comparison with similar business	Growth rate, Discount rate	Growth rate	0.00	Positive
					Discount rate	11.13 ~12.36	Negative
Debt securities		310,503	Binomial model	Underlying asset price, Volatility of underlying assets	Volatility of underlying assets	23.96	Positive
Derivative assets held-for-trading		7,994	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	-94.39 ~ -86.01	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
Convertible privately-placed bonds		389,381	Binomial model	Underlying asset price, Volatility of underlying assets, Discount rate	Volatility of underlying assets	17.13 ~41.37	Positive
		<u>714,149</u>					
Financial assets at FVOCI							
Equity securities		649,111	DCF model, Comparison with similar business, Net asset value model, Binomial model	Growth rate, Liquidating value, Discount rate	Growth rate	0.00	Positive
					Liquidating value	0.00	Positive
					Discount rate	7.15 ~17.40	Negative
				Underlying asset price, Volatility of underlying assets, Discount rate	Volatility of underlying assets	24.11 ~25.62	Positive
Debt securities		<u>4,615</u>	DCF model	Discount rate	Discount rate	7.80	Negative
		<u>653,726</u>					
Derivative assets designated as hedging instruments		7	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	-98.17	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
	₩	<u>1,367,882</u>					

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5.1 Fair value hierarchy of financial instruments (cont'd)

Classification	Fair value 2018	Description of the valuation technique	Inputs used in the fair value measurement	Significant unobservable inputs used in the fair value measurement	Range (%)	The effect of changes in unobservable Inputs on fair value
Financial liabilities						
Financial liabilities at FVTPL						
Derivative liabilities held-for-trading	7,441	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	-94.39 ~ -86.01	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
Derivative liabilities designated as hedging instruments	16,222	Hull-White 2 factor model	Exchange rate, Swap yield curve, Swaption volatility, Yield curve of each currency, Correlation within evaluation model	Correlation within evaluation model	-95.07 ~ -80.15	Fair value increase or decrease based on the changes in correlation by the effect of trading instruments and market status
	<u>₩ 23,663</u>					

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5.2 Changes in the fair value of financial instruments categorized as Level 3

Changes in the fair value of financial instruments categorized as Level 3 of the fair value hierarchy of financial instruments that are measured at fair value in the consolidated statements of financial position for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019						
	Financial assets at FVTPL			Financial assets at FVOCI		Net derivative instruments	
	Equity securities	Debt securities	Convertible privately-placed bonds	Equity securities	Debt securities	Held-for-trading	Used for hedging
Beginning balance	₩ 6,271	₩ 310,503	₩ 389,381	₩ 649,111	₩ 4,615	₩ 553	₩ (16,215)
Total profit or loss							
Profit or loss	789	(14,118)	(5,621)	-	1,206	76	16,918
Other comprehensive income	-	-	-	(50,394)	(821)	-	-
Buy / issue	1,879	167,081	301,333	97,251	-	-	-
Sell / settlement	-	(35,097)	(316,510)	(3,630)	(5,000)	-	-
Others	(3,421)	(23,954)	-	(2,565)	-	-	-
Ending balance	₩ 5,518	₩ 404,415	₩ 368,583	₩ 689,773	₩ -	₩ 629	₩ 703

Classification	2018						
	Financial assets at FVTPL			Financial assets at FVOCI		Net derivative instruments	
	Equity securities	Debt securities	Convertible privately-placed bonds	Equity securities	Debt securities	Held-for-trading	Used for hedging
Beginning balance	₩ 5,439	₩ 256,807	₩ 164,718	₩ 573,670	₩ 7,738	₩ 170	₩ (10,453)
Total profit or loss							
Profit or loss	1,149	25,337	(8,817)	-	1,239	(150)	4,412
Other comprehensive income	-	-	-	56,659	746	-	-
Buy / issue	300	57,544	363,003	18,791	-	533	(10,174)
Sell / settlement	(617)	(29,185)	(129,523)	(9)	(5,108)	-	-
Ending balance	₩ 6,271	₩ 310,503	₩ 389,381	₩ 649,111	₩ 4,615	₩ 553	₩ (16,215)

5.3 Current gains or losses recognized from changes in Level 3 financial instruments at fair value.

Current gains or losses recognized from changes in Level 3 financial instruments at fair value for the years ended December 31, 2019 and 2018 are recorded in the consolidated statements of comprehensive income as follows (Korean won in millions):

Classification	2019	
	Total gains or losses recognized in profit or loss	The line item in profit or loss in which those gains or losses are recognized
Loss on financial instruments at FVTPL	₩ (18,874)	₩ (29,094)
Gain related to derivative assets used for hedging	16,918	9,984
Gain related to financial instruments at FVOCI	1,206	-
	₩ (750)	₩ (19,110)

Classification	2018	
	Total gains or losses recognized in profit or loss	The line item in profit or loss in which those gains or losses are recognized
Gain on financial instruments at FVTPL	₩ 17,519	₩ 6,543
Gain related to derivative instruments used for hedging	4,412	3,788
Gain related to financial instruments	1,239	-
	₩ 23,170	₩ 10,331

5.4 Transfers between fair value hierarchy

There is no transfer into or out of Level 3 of the fair value hierarchy for the years ended December 31, 2019 and 2018.

5.5 Sensitivity analysis

Sensitivity of the fair value measurement for the each Level 3 financial instrument upon the changes in significant unobservable input, whose results are favorable and unfavorable changes in profit or loss or other comprehensive income as of December 31, 2019 and 2018 are as follows (Korean won in millions): The sensitivity analysis of financial instruments classified as level 3 amounting to ₩818,187 million and ₩663,744 million as of December 31, 2019 and December, 2018, respectively, is impossible in practice and thus are excluded.

Classification	2019	
	Favorable changes	Unfavorable changes
Financial assets		
Financial assets at FVTPL		
Equity securities (*2)	₩ 103	₩ (84)
Debt securities (*3)	806	(731)
Convertible privately-placed bonds (*4)	1,348	(985)
Derivative assets held-for-trading (*1)	497	(570)
	2,754	(2,370)
Financial assets at FVOCI		
Equity securities (*2)	118,013	(43,905)
Debt securities (*3)	-	-
	118,013	(43,905)
Derivative assets used for hedging (*1)	78	(133)
	₩ 120,845	₩ (46,408)
Financial liabilities		
Derivative liabilities held-for-trading (*1)	566	(489)
Derivative liabilities used for hedging (*1)	464	(1,656)
	₩ 1,030	₩ (2,145)

(*1) Unfavorable and favorable changes in fair value are calculated by increasing/decreasing by 10% of 1) correlation between rates of interest rate swap of KRW, 2) correlation between rates of interest rate swap of KRW and USD, 3) correlation between rates of interest rate swap of USD and exchange rates of KRW/USD, 4) correlation between stock index and individual stock, and 5) correlation within evaluation model.

(*2) Changes in fair value of equity securities are calculated by increasing/decreasing growth rate (0.0~1.0%) and discount rate (-1.0%~1.0%), which are main unobservable inputs.

(*3) Changes in fair value of debt securities are calculated by increasing/decreasing discount rate (-1.0~1.0%), which is the main unobservable input. Favorable changes and unfavorable changes in fair value of beneficiary securities are calculated by increasing/decreasing discount rate of lease cash flow (-1.0~1.0%) and rate of increase in selling price of real estate (-1.0~1.0%), under limited circumstances when they are consisted of real estate. However, it is impossible in practice to calculate sensitivity of beneficiary securities based on changes in inputs.

(*4) For convertible privately-placed bonds, favorable and unfavorable changes in fair value are calculated by increasing or decreasing the price (-10.0~10.0%) and variability (-10.0~10.0%) of underlying assets, which are the main unobservable inputs.

5.5 Sensitivity analysis (cont'd)

Classification	2018	
	Favorable changes	Unfavorable changes
Financial assets		
Financial assets at FVTPL		
Equity securities (*2)	₩ 241	₩ (122)
Debt securities (*3)	145	(121)
Convertible privately-placed bonds (*4)	1,849	(1,286)
Derivative assets held-for-trading (*1)	409	(454)
	<u>2,644</u>	<u>(1,983)</u>
Financial assets at FVOCI		
Equity securities (*2)	106,157	(40,639)
Debt securities (*3)	96	(94)
	<u>106,253</u>	<u>(40,733)</u>
Derivative assets used for hedging (*1)	7	(51)
	<u>₩ 108,904</u>	<u>₩ (42,767)</u>
Financial liabilities		
Derivative liabilities held-for-trading (*1)	454	(409)
Derivative liabilities used for hedging (*1)	1,170	(1,068)
	<u>₩ 1,624</u>	<u>₩ (1,477)</u>

(*1) Unfavorable and favorable changes in fair value are calculated by increasing/decreasing by 10% of 1) correlation between rates of interest rate swap of KRW, 2) correlation between rates of interest rate swap of KRW and USD, 3) correlation between rates of interest rate swap of USD and exchange rates of KRW/USD, 4) correlation between stock index and individual stock, and 5) correlation within evaluation model.

(*2) Changes in fair value of equity securities are calculated by increasing/decreasing growth rate (0.0~1.0%) and discount rate (-1.0%~1.0%), which are main unobservable inputs.

(*3) Changes in fair value of debt securities are calculated by increasing/decreasing discount rate (-1.0~1.0%), which is the main unobservable input. Favorable changes and unfavorable changes in fair value of beneficiary securities are calculated by increasing/decreasing discount rate of lease cash flow (-1.0~1.0%) and rate of increase in selling price of real estate (-1.0~1.0%), under limited circumstances when they are consisted of real estate. However, it is impossible in practice to calculate sensitivity of beneficiary securities based on changes in inputs.

(*4) For convertible privately-placed bonds, favorable and unfavorable changes in fair value are calculated by increasing or decreasing the price (-10.0~10.0%) and variability (-10.0~10.0%) of underlying assets, which are the main unobservable inputs.

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5.6 Financial instruments not measured at fair value in the consolidated statement of financial position but for which the fair value is disclosed

Fair value hierarchy of financial instruments at amortized cost as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	Levels of the fair value hierarchy			Total
	Level 1	Level 2	Level 3	
Financial assets:				
Cash and due from banks	₩ 2,280,574	₩ 17,721,853	₩ -	₩ 20,002,427
Securities at amortized cost	1,465,577	14,343,950	-	15,809,527
Loans	-	-	264,492,756	264,492,756
Others	-	-	14,508,467	14,508,467
	<u>₩ 3,746,151</u>	<u>₩ 32,065,803</u>	<u>₩ 279,001,223</u>	<u>₩ 314,813,177</u>
Financial liabilities:				
Deposits	₩ -	₩ 32,644,484	₩ 239,512,454	₩ 272,156,938
Borrowings	-	768,282	14,010,384	14,778,666
Bonds	-	23,820,398	-	23,820,398
Others	-	-	26,253,549	26,253,549
Merchant banking account liabilities	-	-	2,088,517	2,088,517
	<u>₩ -</u>	<u>₩ 57,233,164</u>	<u>₩ 281,864,904</u>	<u>₩ 339,098,068</u>
Classification	2018			
	Levels of the fair value hierarchy			Total
	Level 1	Level 2	Level 3	
Financial assets:				
Cash and due from banks	₩ 2,120,840	₩ 18,331,283	₩ -	₩ 20,452,123
Securities at amortized cost	1,545,278	12,163,077	-	13,708,355
Loans	-	-	244,644,502	244,644,502
Others	-	-	11,160,464	11,160,464
	<u>₩ 3,666,118</u>	<u>₩ 30,494,360</u>	<u>₩ 255,804,966</u>	<u>₩ 289,965,444</u>
Financial liabilities:				
Deposits	₩ -	₩ 29,628,826	₩ 218,051,939	₩ 247,680,765
Borrowings	-	629,350	14,652,749	15,282,099
Bonds	-	24,921,174	-	24,921,174
Others	-	-	21,636,135	21,636,135
Merchant banking account liabilities	-	-	2,339,383	2,339,383
	<u>₩ -</u>	<u>₩ 55,179,350</u>	<u>₩ 256,680,206</u>	<u>₩ 311,859,556</u>

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5.6 Financial instruments not measured at fair value in the statement of consolidated financial position but for which the fair value is disclosed (cont'd)

Details of fair value, valuation technique, and inputs used to develop those measurements classified into level 2 assets and liabilities that are not measured at fair value as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019		
	Fair value	Valuation technique	Inputs
Financial assets			
Cash and due from banks	₩ 17,721,853	DCF model	Discount rate
Securities at amortized cost	14,343,950	DCF model	Discount rate
	<u>32,065,803</u>		
Financial liabilities			
Deposits	32,644,484	DCF model	Discount rate
Borrowings	768,282	DCF model	Discount rate
Bonds	23,820,398	DCF model	Discount rate
	<u>₩ 57,233,164</u>		
Classification	2018		
	Fair value	Valuation technique	Inputs
Financial assets			
Cash and due from banks	₩ 18,331,283	DCF model	Discount rate
Securities at amortized cost	12,163,077	DCF model	Discount rate
	<u>30,494,360</u>		
Financial liabilities			
Deposits	29,628,826	DCF model	Discount rate
Borrowings	629,350	DCF model	Discount rate
Bonds	24,921,174	DCF model	Discount rate
	<u>₩ 55,179,350</u>		

5.6 Financial instruments not measured at fair value in the consolidated statement of financial position but for which the fair value is disclosed (cont'd)

Details of fair value, valuation technique, and inputs used to develop those measurements classified into level 3 assets and liabilities disclosed but not measured at fair value as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Fair value	2019	
		Valuation technique	Inputs
Financial assets			
Loans	₩ 264,492,756	DCF model	Credit and other spread, rate of advanced redemption, etc.
Other financial assets	14,508,467	DCF model	Discount rate
	₩ 279,001,223		
Financial liabilities			
Deposits	₩ 239,512,454	DCF model	Other spread, rate of advanced redemption
Borrowings	14,010,384	DCF model	Other spread
Other financial liabilities	26,253,549	DCF model	Discount rate
Merchant banking account liabilities	2,088,517	(*)	
	₩ 281,864,904		

(*) Other financial assets and liabilities are temporary accounts derived from various transactions. The book value of these assets and liabilities are regarded as their fair value without applying DCF method because their maturities are not fixed or short.

Classification	Fair value	2018	
		Valuation technique	Inputs
Financial assets			
Loans	₩ 244,644,502	DCF model	Credit and other spread, rate of advanced redemption, etc.
Other financial assets	11,160,464	DCF model	Discount rate
	₩ 255,804,966		
Financial liabilities			
Deposits	₩ 218,051,939	DCF model	Other spread, rate of advanced redemption
Borrowings	14,652,749	DCF model	Other spread
Other financial liabilities	21,636,135	DCF model	Discount rate
Merchant banking account liabilities	2,339,383	(*)	
	₩ 256,680,206		

(*) Other financial assets and liabilities are temporary accounts derived from various transactions. The book value of these assets and liabilities are regarded as their fair value without applying DCF method because their maturities are not fixed or short.

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5.7 Gain and loss on deferred Day 1

Changes in gain (loss) on deferred Day 1 for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019		2018	
Beginning balance	₩	(175)	₩	(188)
Amounts recognized as current profit or loss		13		13
Ending balance	₩	(162)	₩	(175)

5.8 Transferred financial assets and related liabilities not eliminated as a whole as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	Book value		Fair value	
Transferred assets				
Financial assets at FVOCI (*)	₩	806,634	₩	806,634
Financial assets at amortized cost (*)		183,742		187,917
Related liabilities				
Bonds sold under repurchase agreements	₩	522,556	₩	521,235

(*) The financial assets at FVOCI-lent and the Securities measured at amortized cost-lent, of which related liabilities are not appropriated, amounting to ₩423,964 million and ₩9,534 million, respectively, as of December 31, 2019, are included.

Classification	2018			
	Book value		Fair value	
Transferred assets				
Financial assets at FVOCI (*)	₩	2,000,001	₩	2,000,001
Financial assets at amortized cost (*)		442,526		436,312
Related liabilities				
Bonds sold under repurchase agreements		449,928		449,692

(*) The financial assets at FVOCI-lent and the Securities at amortized cost-lent, of which related liabilities are not appropriated, amounting to ₩1,876,199 million and ₩47,574 million, respectively, as of December 31, 2018, are included.

6. Fair value of financial instruments

Fair values of financial instruments as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019		2018	
	Book value	Fair value	Book value	Fair value
Financial assets				
Cash and due from banks	₩ 20,002,427	₩ 20,002,427	₩ 20,452,123	₩ 20,452,123
Financial assets at FVTPL	10,747,444	10,747,444	8,420,106	8,420,106
Financial assets at FVOCI	35,886,874	35,886,874	34,845,060	34,845,060
Securities at amortized cost	15,624,150	15,809,527	13,582,381	13,708,355
Loans	263,960,658	264,492,756	244,468,590	244,644,502
Derivative assets used for hedging	66,527	66,527	6,755	6,755
Other financial assets	14,508,659	14,508,467	11,160,654	11,160,464
Merchant banking account assets	3,255,106	3,255,106	2,940,272	2,940,272
	₩ 364,051,845	₩ 364,769,128	₩ 335,875,941	₩ 336,177,637
Financial liabilities				
Financial liabilities at FVTPL	4,244,494	4,244,494	3,590,576	3,590,576
Deposits	270,978,957	272,156,938	246,754,859	247,680,765
Borrowings	14,778,527	14,778,666	15,280,970	15,282,099
Bonds	23,530,120	23,820,398	24,668,613	24,921,174
Derivative liabilities used for hedging	27,303	27,303	98,797	98,797
Other financial liabilities	26,253,550	26,253,549	21,636,135	21,636,135
Merchant banking account liabilities	2,088,517	2,088,517	2,339,383	2,339,383
	₩ 341,901,468	₩ 343,369,865	₩ 314,369,333	₩ 315,548,929

The following standards are applied in measuring the fair value of financial instruments.

- A. Loans and receivable: Expected cash flows, current market interest rates and discount rates including borrowers' credit risks are factors to calculate the fair value of loans and receivables. For lines of credit and loans that have a short-term maturity (less than three months), it is assumed that the carrying amounts approximate to their fair value.
- B. Financial investment assets: The fair value of financial assets held-to-maturity are as stated by the market, broker, or by credible sources. If none of the information from these entities is usable, published market price of financial instruments with similar credit rating, maturity, and ROI is used to estimate the fair value.
- C. Depository liabilities: For deposits without an explicit maturity period including deposits with no interests, deposits that have a short-term maturity (less than three months), and deposits with a floating rate readjustment period of less than three months, it is assumed that the carrying amounts approximate to their fair value. The estimated fair value of fixed interest-bearing deposits is based on discounted cash flows using prevailing money-market interest rates for debts with similar credit risk and maturity.
- D. Borrowings: For borrowings that have a short-term maturity (less than three months) and borrowings with floating rate readjustment period of less than three months, it is assumed that the carrying amounts approximate to their fair value. The estimated fair value of fixed interest-bearing borrowings is based on and discounted cash flows using prevailing money-market interest rates for debts with similar credit risk and maturity.
- E. Bonds: For quoted debt issued, the fair values are determined based on quoted market prices. For those notes issued where quoted market prices are not available, a discounted cash flow model is used based on a current interest rate yield curve appropriate for the remaining term to maturity and credit spreads.

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7. Categories of financial assets and financial liabilities

7.1 The Group categorizes its financial assets as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					Total
	Financial assets at FVTPL	Financial assets at FVOCI	Financial assets at amortized cost	Derivatives for hedging		
Cash and due from banks	₩ -	₩ -	₩ 20,002,427	₩ -	₩	20,002,427
Financial assets at FVTPL	10,747,444	-	-	-		10,747,444
Financial assets at FVOCI	-	35,886,874	-	-		35,886,874
Securities at amortized cost	-	-	15,624,150	-		15,624,150
Loans	-	-	263,960,658	-		263,960,658
Derivative assets used for hedging	-	-	-	66,527		66,527
Other financial assets	-	-	14,508,659	-		14,508,659
Merchant banking account assets	3,255,106	-	-	-		3,255,106
	₩ 14,002,550	₩ 35,886,874	₩ 314,095,894	₩ 66,527	₩	364,051,845

Classification	2018					Total
	Financial assets at FVTPL	Financial assets at FVOCI	Financial assets at amortized cost	Derivatives for hedging		
Cash and due from banks	₩ -	₩ -	₩ 20,452,123	₩ -	₩	20,452,123
Financial assets at FVTPL	8,420,106	-	-	-		8,420,106
Financial assets at FVOCI	-	34,845,060	-	-		34,845,060
Securities at amortized cost	-	-	13,582,381	-		13,582,381
Loans	-	-	244,468,590	-		244,468,590
Derivative assets used for hedging	-	-	-	6,755		6,755
Other financial assets	-	-	11,160,654	-		11,160,654
Merchant banking account assets	2,940,272	-	-	-		2,940,272
	₩ 11,360,378	₩ 34,845,060	₩ 289,663,748	₩ 6,755	₩	335,875,941

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7.2 The Group categorizes its financial liabilities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019									
	Financial liabilities at FVTPL		Financial liabilities designated as at FVTPL		Financial liabilities at amortized cost		Derivatives for hedging	Total		
Financial liabilities at FVPL	₩	3,707,241	₩	537,253	₩	-	₩	-	₩	4,244,494
Deposits		-		-		270,978,957		-		270,978,957
Borrowings		-		-		14,778,527		-		14,778,527
Bonds		-		-		23,530,120		-		23,530,120
Derivative liabilities used for hedging		-		-		-		27,303		27,303
Other financial liabilities		-		-		26,253,550		-		26,253,550
Merchant banking account liabilities		-		-		2,088,517		-		2,088,517
	₩	3,707,241	₩	537,253	₩	337,629,671	₩	27,303	₩	341,901,468

Classification	2018									
	Financial liabilities at FVTPL		Financial liabilities designated as at FVTPL		Financial liabilities at amortized cost	Derivatives for hedging	Total			
Financial liabilities at FVPL	₩	3,089,884	₩	500,692	₩	-	₩	3,590,576		
Deposits		-		-		246,754,859		-	246,754,859	
Borrowings		-		-		15,280,970		-	15,280,970	
Bonds		-		-		24,668,613		-	24,668,613	
Derivative liabilities used for hedging		-		-		-		98,797	98,797	
Other financial liabilities		-		-		21,636,135		-	21,636,135	
Merchant banking account liabilities		-		-		2,339,383		-	2,339,383	
	₩	3,089,884	₩	500,692	₩	310,679,960	₩	98,797	₩	314,369,333

8. Offsetting of financial assets and liabilities

8.1 Financial assets offset, the executable master netting arrangements and financial assets subject to a similar agreement as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					
	Gross amounts of recognized financial assets	Gross amounts of financial liabilities offset	Net amounts of financial assets presented in the consolidated financial statements	Related amounts not offset	Financial instruments recognized in the consolidated financial statements (*)	Financial collateral, etc.
						Net amount
Derivatives	₩ 4,307,571	₩ -	₩ 4,307,571	₩ (3,053,209)	₩ (344,147)	₩ 910,215
Securities lent	433,498	-	433,498	-	(433,498)	-
Bonds purchased under resale agreement	11,837,603	-	11,837,603	-	(11,837,603)	-
Spot exchange that has not been received or settled	9,656,526	-	9,656,526	(9,647,044)	-	9,482
Domestic exchange settlement debit	23,037,691	21,407,571	1,630,120	-	-	1,630,120
Other accounts receivable	15,983	13,011	2,972	-	-	2,972
	₩ 49,288,872	₩ 21,420,582	₩ 27,868,290	₩ (12,700,253)	₩ (12,615,248)	₩ 2,552,789

(*) The rights to offset exist only in case of default, insolvency or bankruptcy. Accordingly, the amounts are not offset in the consolidated statement of financial position as they do not meet the criteria for offsetting.

Classification	2018					
	Gross amounts of recognized financial assets	Gross amounts of financial liabilities offset	Net amounts of financial assets presented in the consolidated financial statements	Related amounts not offset	Financial instruments recognized in the consolidated financial statements (*)	Financial collateral, etc.
						Net amount
Derivatives	₩ 3,349,343	₩ -	₩ 3,349,343	₩ (2,439,315)	₩ (420,992)	₩ 489,036
Securities lent	1,923,773	-	1,923,773	-	(1,923,773)	-
Bonds purchased under resale agreement	8,021,732	-	8,021,732	-	(8,021,732)	-
Spot exchange that has not been received or settled	4,822,022	-	4,822,022	(4,818,379)	-	3,643
Domestic exchange settlement debit	24,390,516	21,168,932	3,221,584	-	-	3,221,584
Other accounts receivable	945	778	167	-	-	167
	₩ 42,508,331	₩ 21,169,710	₩ 21,338,621	₩ (7,257,694)	₩ (10,366,497)	₩ 3,714,430

(*) The rights to offset exist only in case of default, insolvency or bankruptcy. Accordingly, the amounts are not offset in the consolidated statement of financial position as they do not meet the criteria for offsetting.

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8.2 Financial liabilities offset, the executable master netting arrangements and financial liabilities subject to a similar agreement as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					
	Gross amounts of recognized financial liabilities	Gross amounts of financial assets offset	Net amounts of financial liabilities presented in the consolidated financial statements	Related amounts not offset		Net amount
				Financial instruments recognized in the consolidated financial statements (*)	Financial collateral, etc.	
Derivatives	₩ 3,712,996	₩ -	₩ 3,712,996	₩ (3,032,109)	₩ (8,362)	₩ 672,525
Securities borrowed	21,548	-	21,548	(21,548)	-	-
Bonds sold under repurchase agreements	522,556	-	522,556	(522,556)	-	-
Spot exchange that has not been received or settled	9,651,691	-	9,651,691	(9,647,085)	-	4,606
Domestic exchange settlement credit	25,032,000	21,407,570	3,624,430	(3,624,430)	-	-
Other accounts payable	13,396	13,011	385	-	-	385
	<u>₩ 38,954,187</u>	<u>₩ 21,420,581</u>	<u>₩ 17,533,606</u>	<u>₩ (16,847,728)</u>	<u>₩ (8,362)</u>	<u>₩ 677,516</u>

(*) The rights to offset exist only in case of default, insolvency or bankruptcy. Accordingly, the amounts are not offset in the consolidated statement of financial position as they do not meet the criteria for offsetting.

Classification	2018					
	Gross amounts of recognized financial liabilities	Gross amounts of financial assets offset	Net amounts of financial liabilities presented in the consolidated financial statements	Related amounts not offset		Net amount
				Financial instruments recognized in the consolidated financial statements (*)	Financial collateral, etc.	
Derivatives	₩ 3,188,681	₩ -	₩ 3,188,681	₩ (2,733,584)	₩ (111,818)	₩ 343,279
Bonds sold under repurchase agreements	449,928	-	449,928	(449,928)	-	-
Spot exchange that has not been received or settled	4,821,771	-	4,821,771	(4,818,379)	-	3,392
Domestic exchange settlement credit	24,888,173	21,168,932	3,719,241	(3,719,241)	-	-
Other accounts payable	778	778	-	-	-	-
	<u>₩ 33,349,331</u>	<u>₩ 21,169,710</u>	<u>₩ 12,179,621</u>	<u>₩ (11,721,132)</u>	<u>₩ (111,818)</u>	<u>₩ 346,671</u>

(*) The rights to offset exist only in case of default, insolvency or bankruptcy. Accordingly, the amounts are not offset in the consolidated statement of financial position as they do not meet the criteria for offsetting.

9. Risk management

The Group is exposed to credit risk, liquidity risk, market risk and various operating risks. The objectives of risk management are to pursue economic benefits by managing the associated risk in the changing financial environment and to utilize capital efficiently.

The basic principles of risk management are as follows:

- Minimize the rapid fluctuation in profit by balancing the risks and the income.
- Maximize long-term shareholder value.
- Comply with procedures to ensure operating activities are confined to allowable risk limits.
- Examine the type and size of risk in accordance with the changes in potential economic value of portfolios for the efficient use and distribution of assets and to establish risk management strategy.

The basic policies in order to realize the basic principles of risk management are as follows:

- Set and comply with allowable limits for each risk type.
- Establish an appropriate balance between income and associated risk.
- When a conflict between income and associated risk exists, the Group pursues income while complying with the allowable risk limits.
- Prioritize the distribution of risk in order to avoid risk concentration in certain areas.
- Analyse the effect of various market fluctuations on parts or the entire portfolio on a regular basis.
- Separate risk management segments, operational segments, and other segments which deal with trade confirmations and payments in order to maintain independence.

9.1. Strategy and procedure of risk management

9.1.1 Operation of and setting risk limits: The Group established and operates a limit management system to maintain the appropriate level of risk relative to the equity capital held. The Risk Management Committee approves total risk limits and limits by types of risks, taking into account of capital, business plans, risk management regulations, and institutional changes within the risk level that the Bank can manage. The Risk Management Operation Committee sets up and allocates other operational limits (e.g., by organization, product, investment, and loss) to comply with allowable limits for each type of risk, approved by the Risk Management Committee and periodically checks the status of limit management.

9.1.2 Risk measurement and management: The Group prepares the appropriate risk measurement methods considering the nature of risks and measures them by the types of risks. Risk measurement and evaluation results are regularly reviewed, and reported to the Risk Management Committee, Risk Management Operation Committee, and management. Risk measurement and evaluation results are also used for daily business management activities such as establishment of business plan and management strategy.

9.1.3 Operation of risk management information system: In order to provide advanced risk management in a rapidly changing financial environment, the Group has established a company-wide risk management system that meets the new BIS standards. The Group operates credit risk internal grading (changes are approved in November 2008 and June 2016), advanced operational risk measurement method (changes are approved in November 2008 and June 2016) and market risk internal model (changes are approved in April 2008 and August 2016 [retrospective application in June 2016]).

9.1.4 Operation of crisis management system: The Group operates a crisis management system that can respond effectively to the crisis caused by drastic changes in the internal and external management environment. The Group operates an early warning system in order to respond to the drastic changes in the financial market in a consistent and systematic manner. In the event of an anomaly, the holding company declares the level of crisis at the group level, and the Bank analyzes the impact on the portfolio in accordance with the step-by-step plan and carries out the countermeasures.

9.2. Organization and structure of risk management

The risk management organization consists of the Risk Management Committee, Risk Management Operation Committee under the Risk Management Committee, the risk management officer, and the organization in charge of risk management, which are the top decision-making bodies for the risk management. The organization in charge of risk management, independent from operating segment, manages risk limits and risk management policies.

9.2.1 Risk Management Committee: The Risk Management Committee regularly holds meeting once every quarter and resolves the establishment and management of allowable limits for risks, establishment and changes in risk management policies, and reviews the results of the management of allowable risk limits and suitability tests of risk management system.

9.2.2 Risk Management Operation Committee: The Risk Management Operation Committee is responsible for setting and allocating specific operational limits for compliance with the allowable limits for each type of risk as resolved by the Risk Management Committee, adjusting the internal capital limit between business units within the same risk type, and carrying out risk management policies and strategies set by the Risk Management Committee, including preliminary deliberations on the agenda items.

9.2.3 Organization in charge of risk management: The Risk Management Group is comprised of Comprehensive Risk Management Team, Credit Risk Management Team, and Credit Supervision Team. The Risk Management Group is independent of sales and investment sector and manages the execution of risk management policies. The Comprehensive Risk Management Team oversees the market, interest rate, liquidity, operational risk, and middle office, and supports the Risk Management Committee and Risk Management Operation Committee. The Credit Risk Management Team oversees credit risk and credit concentration risk. The Credit Supervision Team oversees the loans and early warning system.

9.3. Credit risk

Credit risk is a risk incurred when the Group faces a loss because its customers or counterparties fail to discharge their contractual obligations. Credit risk arises from on-balance and off-balance accounts including loans, derivatives, securities, financial guarantees, and acceptances and guarantees.

9.3.1 Management of credit risk

9.3.1.1 Loans

9.3.1.1.1 Measurement of credit risk

To determine the possibility of bankruptcy for its customers or counterparties, the Group uses various methods comprehensively. Risks pertaining to the retail sector compared to those pertaining to the corporate sector are relatively easy to predict but cyclical and seasonal factors may influence the outcomes. The frequency of impairment loss in the overall retail sector is relatively high but in terms of individual cases, the loss rate is lower than in the corporate sector. Based on these differences, the Group manages each segment differently in terms of credit rating, pricing and subsequent management.

As for the business customers, the branch managers and credit rating team carry out the credit risk assessment by using a detailed valuation model depending on the size and the nature of the industry. The corporate financial valuation model is further subdivided based on the characteristics of the loans and is a combination of statistical and expert valuation models. Also, the Loan Review team of the Credit Risk Management regularly performs the subsequent reviews in order to establish adequacy of the credit grading. As for the retail sector, a Credit Scoring System is used to compute the credit scores of the borrower. The system includes an Application Scoring Model which is used for the application of loans and a Behavioral Scoring Model which has been used after handling of the loans.

Expected loss is calculated using the expected default rate based upon the historical default rate and the estimated loss rate gives a rise to the default rate from a collection of historical information. A measured expected loss is reflected on the client's interest rate and allowances when applying or renewing a loan.

Unexpected loss takes into account the allowance for potential volatility in the actual loss. Unexpected loss is calculated using the inner Credit Metrics model with 99.9% of the confidence level and the measured figure is used as a credit risk reference value and is used as part of the unexpected loss when calculating interest rates.

9.3.1.1.2 Management of credit risk

9.3.1.1.2.1 Management process

Both retail and corporate sectors are developing and operating a credit risk management system appropriately designed for each sector. The Credit Risk Management Committee and Credit Rating Team measure and manage credit risks for the corporate sector; Credit Risk Management Committee and Personal Loans Committee measure and manage credit risks for the retail sector. The Group manages as well as controls the credit risk by setting the limits on the amount of risk willing to accept for individual counterparties and for geographical and industry concentration, and by monitoring exposures relating to such limits. The Group reviews on a monthly basis in accordance with the economic conditions and industry characteristics and examines the adequacy of the limits on a semi-annual basis. The Group continuously manages credit rating models for retail and corporate sectors and examines the adequacy of LGD (loss given default) and EAD (exposure at default), and any related information.

9.3.1.1.2.2 Credit limits management and capital allocation

The Group annually performs a comprehensive analysis on economic conditions and changes in the economic environment in order to appropriately assess the credit quality of financial assets by setting credit limits on same entities, industries, countries, and financial instruments. In addition, for the unexpected loss management, the Group regularly sets, distributes and checks for the compliance maintenance of internal capital limits according to the corporate and household sectors and the size of clients through the risk management system.

9.3.1.1.2.3 Risk monitoring and early warning system

The Group measures and manages the risk indicators such as delinquency rate, roll-rate, and vintage rate of each operating segment. Also, in order to assess the credit quality of the assets, the Group operates an early warning system and regularly examines companies whose credit rating is likely to degrade.

9.3.1.1.2.4 Credit rating system

In order to separately evaluate the characteristics of clients in the corporate sector, the Group operates a detailed valuation model based on the external and non-external audit and is in the process of continuing the stability of the corporate credit rating system through the subsequent examinations and performance improvements. The Group operates a detailed valuation model based on the credit rating model and the activity rating model for the household sector in accordance with the client's characteristics. The Group improves the efficiency of the model through the subsequent examinations and performance improvements. Credit rating on new clients as well as an automatic renewal and adjustments to the credit limits are managed by the household and SOHO credit extension system.

9.3.1.1.2.5 Examination of credit

For a large amount of credit line, after the approval of credit extension, the Group regularly examines the borrower's credit status and the adequacy of the borrower's credit rating as in part of the subsequent management process. In addition, the Group significantly focuses on industries by increasing credit risks based on the analysis of the risk indicators and examines the sample for smaller credit extensions.

9.3.1.1.2.6 Risk mitigation policy

The Group obtains the collateral for the granted loans in order to reduce risks. The amount and type of the collateral required depends on an assessment of the credit risk of the counterparty. Guidelines are implemented regarding the acceptability of types of collateral and valuation parameters. The main types of the collateral obtained are as follows:

- For retail lending, mortgages over residential properties
- For commercial lending, charges over real estate properties, inventory and trade receivables
- For securities lending and reverse repurchase transactions, cash, or securities

9.3.1.2 Debt securities

The Group trades the debt securities above the Investment-Grade Status level in order to manage the credit risks and manage the exposure of credit ratings to maintain credit quality of the assets.

9.3.1.3 Derivative financial instruments

The credit risk arising from the derivative financial instruments is, at any time, limited to those with the positive fair values, as recorded on the consolidated statement of financial position. The Group manages the exposure as a part of the unused commitment of loans.

9.3.2 Significant increase in credit risk

The Group measures the expected credit loss for debt instruments at amortized cost or fair value through other comprehensive income in three stages as described below:

9.3.2.1 Stage 1: 12-month expected credit loss

For financial assets of which the credit risk has not increased significantly since initial recognition, expected credit losses that result from default events that are possible within 12 months after the reporting date are recognized.

9.3.2.2 Stage 2: Lifetime expected credit loss

For financial assets of which the credit risk has increased significantly since initial recognition, expected credit losses that result from all possible default events over the expected life of the financial instrument are recognized.

9.3.2.3 Stage 3: Lifetime expected credit loss

A financial asset is credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred. Lifetime ECL is recognized for credit-impaired financial assets, and interest income is recognized using the EIR on amortized cost.

The Group assesses at each reporting date whether the significant of the increase of the credit risk compared to that of initial recognition, using internal and external credit rating information, early warning system and number of days past due.

9.3.2.4 Default

The Group considers that a default has occurred for financial assets on following situations:

- A) When receivables are sold despite of an economic loss
- B) When receivables have decreased due to adjustments resulting in an exemption of principal, interest or related fees or delayed payments
- C) When the borrower has been declared bankruptcy, or has declared bankruptcy or has taken other similar measures to delay or avoid repayments

9.3.2.5 Methodology for determining whether a financial asset is credit-impaired

A financial item is deemed impaired if, and only if, there is objective evidence of impairment as a result of one or more events which have occurred after the initial recognition of the item (an incurred 'loss event') and that loss event (or events) has an impact on the estimated future cash flows, such as changes in arrears or economic conditions which correlate with defaults, delinquency in interest for more than 90 days, credit deterioration resulting in misleading information, and damages incurred due to poor exposure.

9.3.3 Measurement of ECL

Expected credit losses are a probability-weighted estimate of credit losses (i.e. the present value of all cash shortfalls) over the expected life of the financial instrument. A cash shortfall is the difference between the cash flows that are due to an entity in accordance with the contract and the cash flows that the entity expects to receive.

Historical information is an important anchor or base from which to measure expected credit losses. However, the Group adjusts historical data, such as credit loss experience, on the basis of current observable data to reflect the effects of the current conditions and its forecasts of future conditions that did not affect the period on which the historical data is based, and to remove the effects of the conditions in the historical period that are not relevant to the future contractual cash flows. Also, the Group measures ECL using the macroeconomic factors such as the growth rate, interest rate and stock indices. The methodology for future economic forecasts is regularly reviewed.

If the credit risk on financial instruments, for which lifetime expected credit losses have been recognized, subsequently improves so that the requirement for recognizing lifetime expected credit losses is no longer met, the loss allowance should be measured at an amount equal to 12-month expected credit losses.

9.3.4 Write-off

Financial assets are written off when an entity has no reasonable expectations of recovering the contractual cash flows on a financial asset in its entirety or a portion thereof. Generally, financial assets are written off when it is determined that the Group is not able to generate sufficient cash flows to make repayments. However, financial assets written off can be recovered by the Group.

9.3.5 The maximum exposure to credit risk

The maximum exposure to credit risk as of December 31, 2019 and 2018 are as follows. The following table shows the maximum exposure to credit risk for the components of the consolidated statement of financial position, including derivatives, by geography of counterparty and by industry before the effect of mitigation through the use of master netting and collateral agreements. Equity securities in financial assets at FVTPL, financial assets available-for-sale and financial assets at FVOCI are excluded. (Korean won in millions):

Classification	2019	2018
On-balance-sheet items		
Due from banks	₩ 17,721,853	₩ 18,331,283
Financial assets at FVTPL		
Debt securities	2,801,613	2,484,378
Derivative assets held for trading	4,241,044	3,342,588
Convertible privately-placed bonds	368,583	389,381
	7,411,240	6,216,347
Financial assets at FVOCI	34,819,661	33,777,743
Securities at amortized cost	15,624,150	13,582,381
Derivative assets used for hedging	66,527	6,755
Loans	263,960,658	244,468,590
Other financial assets	14,508,659	11,160,654
Merchant banking account assets	3,255,106	2,940,272
	₩ 357,367,854	₩ 330,484,025
Off-balance-sheet items		
Financial guarantee contracts	₩ 408,013	₩ 501,694
Payment guarantees	16,819,996	15,879,982
Commitments	87,863,715	80,951,728
Merchant banking account-commitment	955,000	1,199,000
	₩ 106,046,724	₩ 98,532,404

9.3.6 Details of collateral management and credit risk mitigation

Details of collateral management and credit risk mitigation as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	Impaired loan			
	Individual assessment		Collective assessment	
Guarantees	₩	17,375	₩	88,813
Deposits		2,465		5,126
Real estates		320,855		195,367
Securities		-		8
Others		8,526		11,338
	₩	349,221	₩	300,652

Classification	2018			
	Impaired loan			
	Individual assessment		Collective assessment	
Guarantees	₩	28,992	₩	86,630
Deposits		7,524		7,118
Real estates		303,229		193,469
Securities		6,885		7,601
Others		62		14,318
	₩	346,692	₩	309,136

9.3.6.1 Financial assets with collaterals that do not recognize the allowance for losses amounted to ₩ 1,022,413 million as of December 31, 2019. (₩ 1,708,606 million as of December 31, 2018)

9.3.6.2 There is no change in the collateral policy of the Group.

9.3.7 Credit risk exposure

9.3.7.1 Loans

As of December 31, 2019 and 2018, carrying amounts of loans by internal credit rating in accordance with the loss allowance measurement method are as follows (Korean won in millions):

2019						
Classification	12-month expected credit loss	Life time expected credit loss		Subject to the application of credit-impaired approach	Total	
		Non-credit- impaired loans	Credit-impaired loans			
Household loans						
Grade 1	₩ 90,249,862	₩ 19,197,093	₩ -	₩ -	₩ 109,446,955	
Grade 2	4,152,345	2,057,813	-	-	6,210,158	
Grade 3	78,230	160,298	237,536	-	476,064	
	₩ 94,480,437	₩ 21,415,204	₩ 237,536	₩ -	₩ 116,133,177	
Corporate loans						
Grade 1	87,209,517	3,091,789	-	-	90,301,306	
Grade 2	49,678,163	5,865,656	-	-	55,543,819	
Grade 3	23,889	1,768,104	1,030,135	-	2,822,128	
	₩ 136,911,569	₩ 10,725,549	₩ 1,030,135	₩ -	₩ 148,667,253	
	₩ 231,392,006	₩ 32,140,753	₩ 1,267,671	₩ -	₩ 264,800,430	

2018						
Classification	12-month expected credit loss	Life time expected credit loss		Subject to the application of credit-impaired approach	Total	
		Non-credit- impaired loans	Credit-impaired loans			
Household loans						
Grade 1	₩ 76,968,888	₩ 24,433,123	₩ -	₩ -	₩ 101,402,011	
Grade 2	3,456,645	2,095,280	-	-	5,551,925	
Grade 3	95,271	180,275	232,606	-	508,152	
	₩ 80,520,804	₩ 26,708,678	₩ 232,606	₩ -	₩ 107,462,088	
Corporate loans						
Grade 1	81,612,317	6,751,034	-	-	88,363,351	
Grade 2	39,133,196	6,535,096	-	-	45,668,292	
Grade 3	266,807	1,652,367	1,282,120	777,180	3,978,474	
	₩ 121,012,320	₩ 14,938,497	₩ 1,282,120	₩ 777,180	₩ 138,010,117	
	₩ 201,533,124	₩ 41,647,175	₩ 1,514,726	₩ 777,180	₩ 245,472,205	

Deferred loan fees, net of expenses is not reflected in the carrying amounts above.

As of December 31, 2019 and 2018, the Group classifies the grade of loan in accordance with the credit rating chart below, based on the credit worthiness of borrowers.

Classification	2019		
	Household loans	Corporate loans	SOHO
Grade 1	Less than or equal to 0.88% of PD	Less than or equal to 0.57% of PD	Less than or equal to 1.56% of PD
Grade 2	From 0.88% to 20.34% of PD	From 0.57% to 12.88% of PD	From 1.56% to 19.62% of PD
Grade 3	From 20.34% to 100% of PD	From 12.88% to 100% of PD	From 19.62% to 100% of PD

Classification	2018		
	Household loans	Corporate loans	SOHO
Grade 1	Less than or equal to 0.93% of PD	Less than or equal to 0.58% of PD	Less than or equal to 1.78% of PD
Grade 2	From 0.93% to 19.65% of PD	From 0.58% to 12.43% of PD	From 1.78% to 21.02% of PD
Grade 3	From 19.65% to 100% of PD	From 12.43% to 100% of PD	From 21.02% to 100% of PD

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9.3.7.2 Off-balance-sheet items

As of December 31, 2019 and 2018, exposures of off-balance-sheet items by internal credit rating in accordance with the loss allowance measurement method are as follows (Korean won in millions):

Classification	2019				
	12 month expected credit loss	Lifetime expected credit losses		Total	
		Non-credit-impaired Off-balance-sheet items	Credit-impaired Off-balance-sheet items		
Financial guarantee contracts					
Grade 1	₩ 185,573	₩ 112,082	₩ -	₩ 297,655	
Grade 2	73,598	36,580	-	110,178	
Grade 3	-	180	-	180	
	259,171	148,842	-	408,013	
Payment guarantees					
Grade 1	12,165,964	702,454	-	12,868,418	
Grade 2	2,792,550	811,468	-	3,604,018	
Grade 3	5,683	283,938	57,939	347,560	
	14,964,197	1,797,860	57,939	16,819,996	
Commitments					
Grade 1	68,506,468	6,265,084	-	74,771,552	
Grade 2	9,636,070	3,058,305	-	12,694,375	
Grade 3	987	316,979	79,822	397,788	
	78,143,525	9,640,368	79,822	87,863,715	
	₩ 93,366,893	₩ 11,587,070	₩ 137,761	₩ 105,091,724	
Classification	2018				
	12 month expected credit loss	Lifetime expected credit losses		Total	
		Non-credit-impaired Off-balance-sheet items	Credit-impaired Off-balance-sheet items		
Financial guarantee contracts					
Grade 1	₩ 281,036	₩ 119,812	₩ -	₩ 400,848	
Grade 2	63,998	36,731	-	100,729	
Grade 3	-	117	-	117	
	345,034	156,660	-	501,694	
Payment guarantees					
Grade 1	12,123,842	1,520,589	-	13,644,431	
Grade 2	1,398,832	450,750	-	1,849,582	
Grade 3	7,955	304,435	73,579	385,969	
	13,530,629	2,275,774	73,579	15,879,982	
Commitments					
Grade 1	62,514,054	8,108,442	-	70,622,496	
Grade 2	6,977,496	2,981,041	-	9,958,537	
Grade 3	10,674	255,846	104,175	370,695	
	69,502,224	11,345,329	104,175	80,951,728	
	₩ 83,377,887	₩ 13,777,763	₩ 177,754	₩ 97,333,404	

9.3.7.2 Off-balance-sheet items

As of December 31, 2019 and 2018, the credit rating classification of off-balance-sheet items of the Group based on internal rating used by the Bank and credit rating by external rating agencies is as follows:

2019			
Classification	Household loans	Corporate loans	SOHO
Grade 1	Less than or equal to 0.88% of PD	Less than or equal to 0.57% of PD	Less than or equal to 1.56% of PD
Grade 2	From 0.88% to 20.34% of PD	From 0.57% to 12.88% of PD	From 1.56% to 19.62% of PD
Grade 3	From 20.34% to 100% of PD	From 12.88% to 100% of PD	From 19.62% to 100% of PD

2018			
Classification	Household loans	Corporate loans	SOHO
Grade 1	Less than or equal to 0.93% of PD	Less than or equal to 0.58% of PD	Less than or equal to 1.78% of PD
Grade 2	From 0.93% to 19.65% of PD	From 0.58% to 12.43% of PD	From 1.78% to 21.02% of PD
Grade 3	From 19.65% to 100% of PD	From 12.43% to 100% of PD	From 21.02% to 100% of PD

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9.3.7.3 Debt securities

As of December 31, 2019 and 2018, carrying amounts of debt securities by internal credit rating in accordance with the loss allowance measurement method are as follows (Korean won in millions):

		2019			
Classification		12 month expected credit loss	Lifetime expected credit losses		Total
			Non-credit-impaired debt	Credit-impaired debt	
Securities at amortized cost					
Grade 1	₩	15,627,889	₩ -	₩ -	₩ 15,627,889
Grade 2		-	-	-	-
Grade 3		-	-	-	-
		15,627,889	-	-	15,627,889
Financial assets at FVOCI					
Grade 1		34,819,661	-	-	34,819,661
Grade 2		-	-	-	-
Grade 3		-	-	-	-
		34,819,661	-	-	34,819,661
	₩	50,447,550	₩ -	₩ -	₩ 50,447,550
		2018			
Classification		12 month expected credit loss	Lifetime expected credit losses		Total
			Non-credit-impaired debt	Credit-impaired debt	
Securities at amortized cost					
Grade 1	₩	13,585,330	₩ -	₩ -	₩ 13,585,330
Grade 2		-	-	-	-
Grade 3		-	-	-	-
		13,585,330	-	-	13,585,330
Financial assets at FVOCI					
Grade 1		33,777,743	-	-	33,777,743
Grade 2		-	-	-	-
Grade 3		-	-	-	-
		33,777,743	-	-	33,777,743
	₩	47,363,073	₩ -	₩ -	₩ 47,363,073

The credit ratings of debt securities based on the internal rating used by the Group and credit ratings by external credit rating agencies are as follows:

Classification	Internal credit rating	Domestic rating agencies	Overseas rating agencies	
			Moody's	Fitch
Grade 1	A1 ~ A7	AAA ~ A-	Aaa ~ Baa2	AAA ~ BBB
Grade 2	B1 ~ B6	BBB+ ~ BB	Baa3 ~ B3	BBB- ~ B-
Grade 3	C1 ~ C3	BB- ~ B-	Caa1 ~ Caa3	CCC+ ~ CCC-

9.3.8 Credit risk concentration

9.3.8.1 Credit risk concentration in each major industry as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Industry	2019	
		Amounts	Ratio (%)
On balance sheet items			
Due from banks	Financial services	₩ 17,721,853	100.0
Financial assets at FVTPL	Financial services	919,704	29.0
	Manufacturing	498,679	15.7
	Public administration	1,721,668	54.3
	Wholesale & retail	20,144	0.6
	Others	10,001	0.4
		3,170,196	100.0
Financial assets at FVOCI	Financial services	14,702,001	42.2
	Manufacturing	196,681	0.6
	Public administration	17,705,519	50.8
	Construction	163,569	0.5
	Wholesale & retail	26,463	0.1
	Others	2,025,428	5.8
		34,819,661	100.0
Securities at amortized cost	Financial services	9,143,824	58.5
	Manufacturing	33,142	0.2
	Public administration	3,090,071	19.8
	Construction	279,994	1.8
	Others	3,080,858	19.7
		15,627,889	100.0
Loans	Household loans	116,133,177	43.8
	Corporate loans		
	Financial services	23,245,385	8.8
	Manufacturing	38,431,165	14.5
	Construction	3,233,768	1.2
	Wholesale & retail	16,686,736	6.3
	Real estate rental	36,200,437	13.7
	Others	30,869,762	11.6
	Deferred loan fees and expenses	338,662	0.1
		265,139,092	100.0
Merchant banking account assets	Financial services	1,259,136	38.7
	Manufacturing	262,365	8.1
	Wholesale & retail	19,928	0.6
	Real estate rental	489,496	15.0
	Others	1,224,181	37.6
		3,255,106	100.0
		₩ 339,733,797	

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9.3.8.1 Credit risk concentration in each major industry as of December 31, 2019 and 2018 are as follows
(Korean won in millions) (cont'd)

Classification	Industry	2019	
		Amounts	Ratio (%)
Off balance sheet items			
Financial guarantee contracts	Financial services	₩ 112,115	27.5
	Manufacturing	130,871	32.1
	Construction	7,351	1.8
	Wholesale & retail	84,663	20.8
	Real estate rental	57,906	14.2
	Others	15,107	3.6
		408,013	100.0
Payment guarantees	Household	57,504	0.3
	Financial services	1,383,375	8.2
	Manufacturing	8,621,432	51.3
	Construction	1,495,536	8.9
	Wholesale & retail	2,657,283	15.8
	Real estate rental	142,156	0.8
	Others	2,462,710	14.7
		16,819,996	100.0
Commitment	Household Commitment	24,152,874	27.5
	Corporate Commitment		
	Financial services	9,359,842	10.7
	Manufacturing	28,534,507	32.5
	Construction	2,481,902	2.8
	Wholesale & retail	8,262,546	9.4
	Real estate rental	2,348,913	2.7
	Others	12,723,131	14.4
		87,863,715	100.0
Merchant banking account -Commitment	Financial services	510,000	53.4
	Manufacturing	45,000	4.7
	Wholesale & retail	250,000	26.2
	Real estate rental	100,000	10.5
	Others	50,000	5.2
		955,000	100.0
		₩ 106,046,724	

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9.3.8.1 Credit risk concentration in each major industry as of December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Classification	Industry	2018	
		Amounts	Ratio (%)
On balance sheet items			
Due from banks	Financial services	₩ 18,331,283	100.0
Financial assets at FVTPL	Financial services	998,430	34.7
	Manufacturing	549,696	19.1
	Public administration	1,291,567	44.9
	Wholesale & retail	20,007	0.7
	Others	14,059	0.6
		2,873,759	100.0
Financial assets at FVOCI	Financial services	16,575,951	49.1
	Manufacturing	160,420	0.5
	Public administration	15,450,982	45.7
	Construction	81,305	0.2
	Wholesale & retail	16,444	0.1
	Others	1,492,641	4.4
		33,777,743	100.0
Securities at amortized cost	Financial services	8,474,741	62.4
	Public administration	3,041,114	22.4
	Construction	593,661	4.4
	Others	1,475,814	10.8
		13,585,330	100.0
Loans	Household loans	107,462,088	43.7
	Corporate loans		
	Financial services	19,996,420	8.1
	Manufacturing	36,587,992	14.9
	Construction	3,314,603	1.3
	Wholesale & retail	15,726,317	6.4
	Real estate rental	31,641,752	12.9
	Others	30,743,033	12.6
	Deferred loan fees and expenses	304,547	0.1
		245,776,752	100.0
Merchant banking account -Commitment	Financial services	1,064,386	36.2
	Manufacturing	53,871	1.8
	Wholesale & retail	39,906	1.4
	Real estate rental	639,289	21.7
	Others	1,142,820	38.9
		2,940,272	100.0
		₩ 317,285,139	

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9.3.8.1 Credit risk concentration in each major industry as of December 31, 2019 and 2018 are as follows
(Korean won in millions) (cont'd)

Classification	Industry	2018	
		Amounts	Ratio (%)
Off balance sheet items			
Financial guarantee contracts	Financial services	₩ 97,895	19.5
	Manufacturing	145,539	29.0
	Construction	10,054	2.0
	Wholesale & retail	93,610	18.7
	Real estate rental	59,163	11.8
	Others	95,433	19.0
		501,694	100.0
Payment guarantees	Household	58,332	0.4
	Financial services	1,214,159	7.6
	Manufacturing	8,253,245	52.0
	Construction	1,973,896	12.4
	Wholesale & retail	2,082,637	13.1
	Real estate rental	114,653	0.7
	Others	2,183,060	13.8
		15,879,982	100.0
Commitments	Household Commitment	22,427,598	27.7
	Corporate Commitment		
	Financial services	8,280,782	10.2
	Manufacturing	26,044,400	32.2
	Construction	2,754,415	3.4
	Wholesale & retail	6,880,637	8.5
	Real estate rental	2,297,511	2.8
	Others	12,266,385	15.2
		80,951,728	100.0
Merchant banking account -Commitment	Financial services	640,000	53.4
	Manufacturing	209,000	17.4
	Wholesale & retail	210,000	17.5
	Real estate rental	100,000	8.3
	Others	40,000	3.4
		1,199,000	100.0
		₩ 98,532,404	

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9.3.8.2 Credit risk concentration in each major country as of December 31, 2019 and 2018 are as follows
(Korean won in millions, ratio in %):

Classification	Country	2019	
		Amounts	Ratio (%)
On balance sheet items			
Due from banks	Korea	₩ 12,217,641	68.9
	China	1,390,787	7.8
	U.S	1,739,562	9.8
	Japan	304,469	1.7
	Singapore	57,111	0.3
	Hong Kong	37,725	0.2
	Others	1,974,558	11.3
		17,721,853	100.0
Financial assets at FVTPL	Korea	3,170,196	100.0
Financial assets at FVOCI	Korea	30,273,122	86.9
	China	1,834,454	5.3
	U.S	580,084	1.7
	Japan	165,596	0.5
	Hong Kong	59,039	0.2
	Others	1,907,366	5.4
		34,819,661	100.0
Securities at amortized cost	Korea	14,787,839	94.6
	China	356,247	2.3
	U.S	49,326	0.3
	Others	434,477	2.8
		15,627,889	100.0
Loans	Korea	241,056,713	90.9
	China	3,702,376	1.4
	U.S	3,029,165	1.1
	Japan	1,554,909	0.6
	Hong Kong	2,688,247	1.0
	Others	12,769,020	4.9
	Deferred loan fees and expenses	338,662	0.1
		265,139,092	100.0
Merchant banking account asset	Korea	3,255,106	100.0
		₩ 339,733,797	

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9.3.8.2 Credit risk concentration in each major country as of December 31, 2019 and 2018 are as follows
(Korean won in millions, ratio in %): (cont'd)

Classification	Country	2019	
		Amounts	Ratio (%)
Off balance sheet items			
Financial guarantee contracts	Korea	408,013	100.0
Payment guarantees	Korea	12,721,542	75.6
	China	2,487,191	14.8
	U.S	76,017	0.5
	Japan	29,750	0.2
	Others	1,505,496	8.9
		16,819,996	100.0
Commitments	Korea	83,028,597	94.5
	China	1,760,448	2.0
	U.S	569,043	0.6
	Japan	157,182	0.2
	Others	2,348,445	2.7
		87,863,715	100.0
Merchant banking account - Commitment	Korea	955,000	100.0
		₩ 106,046,724	

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9.3.8.2 Credit risk concentration in each major country as of December 31, 2019 and 2018 are as follows
(Korean won in millions, ratio in %): (cont'd)

Classification	Country	2018	
		Amounts	Ratio (%)
On balance sheet items			
Due from banks	Korea	₩ 14,224,458	77.6
	China	1,649,719	9.0
	U.S	332,156	1.8
	Japan	130,885	0.7
	Hong Kong	131,129	0.7
	Others	1,862,936	10.2
		18,331,283	100.0
Financial assets at FVTPL	Korea	2,869,700	99.9
	Others	4,059	0.1
		2,873,759	100.0
Financial assets at FVOCI	Korea	30,667,572	90.8
	China	941,634	2.8
	U.S	484,303	1.4
	Japan	97,228	0.3
	Others	1,587,006	4.7
		33,777,743	100.0
Securities at amortized cost	Korea	12,648,401	93.1
	China	434,733	3.2
	U.S	39,569	0.3
	Others	462,627	3.4
		13,585,330	100.0
Loans	Korea	225,865,678	91.9
	China	3,748,338	1.5
	U.S	2,155,550	0.9
	Japan	943,580	0.4
	Hong Kong	2,381,680	1.0
	Others	10,377,379	4.2
	Deferred loan fees and expenses	304,547	0.1
		245,776,752	100.0
Merchant banking account asset	Korea	2,940,272	100.0
		₩ 317,285,139	

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9.3.8.2 Credit risk concentration in each major country as of December 31, 2019 and 2018 are as follows
(Korean won in millions, ratio in %): (cont'd)

Classification	Country	2018	
		Amounts	Ratio (%)
Off balance sheet items			
Financial guarantee contracts	Korea	501,694	100.0
Payment guarantees	Korea	12,517,756	78.8
	China	1,678,983	10.6
	U.S	60,712	0.4
	Japan	35,883	0.2
	Others	1,586,648	10.0
		15,879,982	100.0
Commitments	Korea	77,420,624	95.6
	China	1,114,217	1.4
	U.S	1,061,045	1.3
	Japan	42,891	0.1
	Others	1,312,951	1.6
		80,951,728	100.0
Merchant banking account			
-Commitment	Korea	1,199,000	100.0
		<u>₩ 98,532,404</u>	

9.4 Liquidity risk

Liquidity risk is defined as the risk that the Group will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset. Liquidity risk arises because of the possibility that the Group might be unable to meet its payment obligations when they fall due under both normal and stress circumstances.

9.4.1 Measurement of liquidity risk

The Group maintains a limit management indicator to measure the liquidity coverage ratio, loan to deposit ratio in Korean won, the liquidity coverage ratio in foreign currency, net stable funding ratio and long-term access to financing ratio in foreign currency in accordance with the guidelines and standards of the Financial Supervisory Service. In addition, the Group maintains a monitoring indicator to measure unbalance of funding, etc. to manage the liquidity risk, and manages early warning indicators in order to identify worsening trends in early stage to respond in a timely manner.

9.4.2 Management of liquidity risk

At an early stage, the Group identifies factors affecting liquidity in order to manage liquidity risks and has achieved an adequate level of liquidity via performing a systematic management.

The Group has the following basic principles for liquidity risk management:

- Comply with limits and early warning indicators set for its liquidity risk
- Regularly execute an analysis of stress tests and prepare an emergency procurement plan in case of liquidity
- Focus on maintaining a diversified portfolio in order to avoid excessive concentrations of risks
- Evaluate and manage the effect of a large amount of money which is loaned out, invested, or procured on liquidity risks

In order to manage the liquidity risks, the Group is building the internal control systems for each department. In order to comply with Liquidity ratios and the maturity mismatch ratio set by the Financial Supervisory Service, the Comprehensive Risk Management monitors the ratios based on the calculated univariate liquidity ratio and maturity mismatch ratios. Liquidity risk status is reported to the Risk Management Operation Committee on a monthly basis and to the Risk Management Committee on a quarterly basis.

In order to maintain the liquidity risk management indicators to stay within the acceptable limits, the Treasury Department and the International Finance Department recommends the necessary measures in relation to the procurement and operation of the assets and liabilities traded in the capital market. In addition, the emergency planning in stages has been established in order to respond to liquidity emergencies. Financial planning department has established a portfolio management strategy based on the internal and external liquidity risk management requirements, procurement, and an outlook on the operating markets.

9.4.3 Contractual maturities analysis of financial liabilities

9.4.3.1 Analysis criteria

The details of the remaining contractual maturities of financial liabilities are analyzed by the earliest maturity date when the Group would be required to pay, based on the undiscounted cash outflows of the Group's financial liabilities. In addition, financial liabilities at fair value through profit or loss and depository liabilities (payment on demand) are shown at fair value in the immediate payment column. All derivatives used for hedging purposes are interest rate swaps, and those are shown in net cash flows as all interest rate swaps are paid by the net amount.

9.4.3.2 The remaining contractual maturities of financial liabilities

The remaining contractual maturities of financial liabilities as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019						Total
	On demand	Less than 1 month	1–3 months	3 months – 1 year	1 year – 5 years	More than 5 years	
On-balance sheet items							
Financial liabilities at FVTPL	₩ 3,707,241	₩ -	₩ -	₩ -	₩ -	₩ 719,755	₩ 4,426,996
Deposits	115,582,258	23,422,618	29,171,141	89,715,698	13,574,821	2,296,482	273,763,018
Borrowings	2,710,139	2,901,609	1,843,292	4,234,581	2,704,067	461,667	14,855,355
Bonds	349	700,000	1,523,192	4,583,654	15,202,218	2,162,093	24,171,506
Derivative liabilities used for hedging purposes	-	787	1,988	6,088	32,523	(188,530)	(147,144)
Other financial liabilities	6,353,974	17,821,407	2,707	24,437	28,786	-	24,231,311
Merchant banking account liabilities	893,191	1,195,050	-	-	-	-	2,088,241
	129,247,152	46,041,471	32,542,320	98,564,458	31,542,415	5,451,467	343,389,283
Off-balance sheet items							
Finance guarantee contracts	408,013	-	-	-	-	-	408,013
Loan commitment	87,863,715	-	-	-	-	-	87,863,715
Merchant banking account-commitment	955,000	-	-	-	-	-	955,000
	₩ 89,226,728	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 89,226,728

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9.4.3.2 The remaining contractual maturities of financial liabilities (cont'd)

Classification	2018						Total
	On demand	Less than 1 month	1–3 months	3 months – 1 year	1 year – 5 years	More than 5 years	
On-balance sheet items							
Financial liabilities at FVTPL	₩ 3,089,884	₩ -	₩ -	₩ -	₩ -	₩ 720,675	₩ 3,810,559
Deposits	101,632,255	22,307,060	29,137,822	84,914,686	9,580,029	1,943,045	249,514,897
Borrowings	2,758,515	2,992,641	1,877,148	5,140,794	2,155,092	468,608	15,392,798
Bonds	623	750,000	1,546,715	7,935,979	12,723,870	2,501,441	25,458,628
Derivative liabilities used for hedging purposes	-	(154)	(2,305)	6,660	28,891	(165,575)	(132,483)
Other financial liabilities	6,233,528	13,132,943	3,001	53,427	11,488	-	19,434,387
Merchant banking account liabilities	1,038,392	1,300,532	-	-	-	-	2,338,924
Off-balance sheet items	114,753,197	40,483,022	32,562,381	98,051,546	24,499,370	5,468,194	315,817,710
Finance guarantee contracts	501,694	-	-	-	-	-	501,694
Loan commitment	80,951,728	-	-	-	-	-	80,951,728
Merchant banking account-commitment	1,199,000	-	-	-	-	-	1,199,000
	₩ 82,652,422	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 82,652,422

Assets available for use in carrying out unused loan commitments after redeeming all financial liabilities are cash and bank deposits, debt securities, equity securities, and loans. In addition, the Group is able to cope with unexpected cash flows through the sale of securities and the additional sources of funding, similar to the asset backed securitization.

9.5 Market risk

Market risk is risk incurred in assets and liabilities subject to management based on the changes in market prices such as interest rate, stocks and foreign exchange, etc.

9.5.1 Market risk management

The purpose of market risk management is to manage the loss of assets and liabilities incurred due to changes in market variables such as interest rates, foreign exchanges and equity prices to remain within the allowable limits in order to ensure the profitability and stability.

9.5.2 Market risk management targets

Market risk management targets include marketable securities, foreign currency net positions, derivatives and other assets and liabilities with embedded market risks. The Group classifies exposures to market risk into either trading or non-trading positions and manages each of those portfolios separately.

9.5.3 Management of market risk related to trading position

9.5.3.1 Trading position classification

The trading position includes interest rate positions, equity price positions, commodity positions, and all foreign exchange positions:

- Financial instruments for the purpose of acquiring the differences incurred due to short-term trading or price fluctuations
- Financial instruments for the purpose of hedging risks
- Financial instruments for the purpose of acquiring arbitrages
- Financial instruments for the purpose of acquisition, mediation and market creation
- Derivatives which are not applied to fair value hedge accounting under KIFRS
- All foreign exchange and gold positions in accordance with Regulations on Supervision of Banking Business Appendix 3-2

9.5.3.2 Management of the trading position limits

The Risk Management Committee divides capital, annual loss, exposure and VaR limit in relation to market risks of the trading position by business unit (division) annually. Within the given limit, the Risk Management Operation Committee further subdivides the limits by business units (divisions) and desks. The Risk Management Group provides information necessary for deliberation and review by the Committee, reports trading limits, and measures risks. The Middle Office performs the mark-to-market measures, monitors trade violations and compliance with the limits. The Middle Office has established regulations and policies of trading and comply with them. It measures market risks in relation to trading position and daily inspects for compliance of limits by risks. Moreover, its daily monitors changes in exposure subject to management, verifies for compliance of limits, performs expost facto verification and analyses urgent situations and reports to the management.

The Group regularly measures the degree of market risks and complies with the allowable limits set for the various areas of the trading position. In addition, the Group reviews the adequacy of the risk-reward ratio by evaluating risks and related profits and losses on a regular basis and complies with the established trading policy regulations. The Group separately examines and analyses the change in exposures with checking its compliance of the limits and emergency situations, and reports to the management on a daily basis.

9.5.3.3 Value at Risk

Value at Risk (VaR) is a method that manages and measures the degree of market risks of the trading position subject to exposure. The Group calculates the VaR by applying Historical Simulation Method for 10 days in the 99% confidence level. Furthermore, the stress test is performed to measure the size of the loss in order to account for the method's limited use in extreme cases.

9.5.3.4 Back test

Back-testing is performed daily on trading units to verify the predictive power of the value-at risk calculations. When back-testing is performed, the Group compares the daily profits and losses with VaR of the previous day and reports the result of subsequent examinations separately to the director of the Risk Management Group. The Group analyses the result of subsequent examination and reports to the Financial Supervisory Service and management.

9.5.3.5 Details of market risk VaR

Details of market risk 10 Day VaR (including 10 Day Stressed VaR) by risk type as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

	2019	Average	Min	Max	2018
Interest rates risk	₩ 30,192	₩ 24,251	₩ 15,670	₩ 35,495	₩ 21,884
Foreign exchange rates risk	230,074	145,296	120,430	254,324	129,672
Stock price risk	21,557	17,320	3,704	40,383	21,098
Option risk	2,042	2,424	1,559	7,584	4,500
Total risk (*)	₩ 231,120	₩ 141,845	₩ 111,782	₩ 255,584	₩ 121,657

(*) The calculation of the total risk VaR takes into consideration the correlation and diversification effects between each risk factor and therefore, it is not the same as the total VaRs.

9.5.4 Management of market risk related to non-trading position

9.5.4.1 Interest rate risk

Interest rate risk of non-trading position is a risk of losses in financial assets and liabilities with interest rates due to adverse changes in interest rates and is incurred when maturity structure does not match interest rate setting cycle of the related assets and liabilities. The Group manages the interest rate risks of non-trading position in order to maintain the stability of net interest income and net asset value based on changes in interest rates. The following is subject to the Group's management of interest rate risk.

- Financial assets with interest rates such as bank deposits, debt securities, and loans
- Financial liabilities with interest rates such as depository liabilities, borrowings, and bonds
- Interest-related financial derivatives such as interest rate swaps

Interest rate risk is calculated using the gap between interest-sensitive assets and liabilities. The interest rate risks measure the interest rate gap ratio as a primary indicator, Δ EVE, Δ NII ratio and duration are used as secondary indicators. The Risk Committee establishes the interest risk limits on an annual basis; the Risk Committee as well as the Risk Management Committee measures the interest rate risk indicators on a year basis and reports the compliance with the limits to management.

Δ EVE (Economic Value of Equity) refers to changes in the economic value of equity capital, indicating the effect of adverse changes in interest rates on the present value of assets, liabilities, and others. As of December 31, 2019 and 2018, the Bank's Δ EVE is as follows (Korean won in millions):

	2019	Average	Min	Max	2018
Δ EVE	₩ 652,150	₩ 736,174	₩ 345,005	₩ 1,024,105	₩ 323,880

EVE calculates the maximum value compared to the basic scenario by applying six interest rates (flat, parallel, short-term, long-term, short-term, long-term, short-term, short-term, and short-term falls) after generating cash flows for the interest-sensitive assets and liabilities under *the Banking Supervision Execution Schedule 9-1*.

The amounts of average, lowest, highest, and as of December 31, 2018, not excluding December 31, 2019, are the values of the interest rate VaR calculated by the current BIS standard method as the revision of *the Banking Supervision Execution Schedule 9-1* has been applied since December 2019.

9.5.4.2 Equity price risk

Equity price risk is a risk incurred when the fair value of equities results in changes in the level of related revenue and capital. Fluctuation in equity reflects the sensitivity of each equity. Effects on capital due to the fluctuation in equity price risk as of December 31, 2019 are as follows (Korean won in millions):

Classification	2019			
	20% decline	10% decline	10% rise	20% rise
Equity price risk	₩ (87,487)	₩ (43,743)	₩ 43,743	₩ 87,487

9.5.5 Currency risk concentration

Currency risk is a risk incurred when the value of a financial instrument or future cash flows fluctuates due to the changes in foreign exchange rates. Currency risk arises from the financial instruments expressed in currencies other than the functional currency. Currency risk does not arise from the financial instruments expressed in the functional currency or in non-monetary items measured by using the historical foreign exchange rates. In order to establish the stop loss and limits, the Group manages the foreign exchange net exposure amount of the trading and non-trading positions by each currency.

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9.5.5 Currency risk concentration (cont'd)

Significant foreign currency assets and liabilities denominated in Korean won as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019													
	USD		JPY		EUR		CNY		IDR		Others		Total	
Assets														
Cash and due from bank	₩	3,813,047	₩	562,449	₩	519,941	₩	1,555,726	₩	138,632	₩	1,271,382	₩	7,861,177
Financial assets at FVTPL		81,024		2,749		8,314		418,732		1,796		13,838		526,453
Financial assets at FVOCI		4,638,043		-		-		1,781,899		340,813		777,666		7,538,421
Securities at amortized cost		999,236		-		46,151		355,483		134,222		190,384		1,725,476
Loans		20,543,440		1,524,469		3,794,577		4,117,614		1,796,749		2,773,152		34,550,001
Derivative assets used for hedging		57,729		-		-		-		-		-		57,729
Others		4,270,677		1,335,377		173,666		487,839		28,327		541,145		6,837,031
	₩	34,403,196	₩	3,425,044	₩	4,542,649	₩	8,717,293	₩	2,440,539	₩	5,567,567	₩	59,096,288
Liabilities														
Financial liabilities at FVTPL	₩	74,813	₩	48	₩	4,125	₩	1,212	₩	365	₩	-	₩	80,563
Deposits		21,582,004		1,982,609		4,092,277		7,067,741		1,573,944		3,586,802		39,885,377
Borrowings		7,365,660		116,212		903,115		37,244		139,662		511,456		9,073,349
Bonds		5,402,864		-		152,346		215,281		84,286		472,563		6,327,340
Derivative liabilities used for hedging		7,277		-		-		-		-		-		7,277
Others		6,994,720		239,614		251,896		675,467		18,408		398,187		8,578,292
	₩	41,427,338	₩	2,338,483	₩	5,403,759	₩	7,996,945	₩	1,816,665	₩	4,969,008	₩	63,952,198

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9.5.5 Currency risk concentration (cont'd)

Classification	2018						
	USD	JPY	EUR	CNY	IDR	Others	Total
Assets							
Cash and due from bank	₩ 4,393,996	₩ 366,034	₩ 439,873	₩ 1,610,995	₩ 180,140	₩ 906,390	₩ 7,897,428
Financial assets at FVTPL	79,443	1,729	2,920	67,252	-	5,882	157,226
Financial assets at FVOCI	4,613,081	-	-	925,377	132,079	879,661	6,550,198
Securities at amortized cost	966,250	-	46,447	434,260	132,895	215,269	1,795,121
Loans	20,841,546	1,112,142	3,390,940	4,607,085	1,687,296	2,256,150	33,895,159
Derivative assets used for hedging	1,575	-	-	-	-	-	1,575
Others	2,813,675	187,989	101,402	528,893	40,261	597,651	4,269,871
	<u>₩ 33,709,566</u>	<u>₩ 1,667,894</u>	<u>₩ 3,981,582</u>	<u>₩ 8,173,862</u>	<u>₩ 2,172,671</u>	<u>₩ 4,861,003</u>	<u>₩ 54,566,578</u>
Liabilities							
Financial liabilities at FVTPL	₩ 66,203	₩ 42	₩ 1,082	₩ 3,363	₩ 335	₩ -	₩ 71,025
Deposits	18,951,824	1,826,124	2,495,062	5,956,135	1,331,435	3,415,089	33,975,669
Borrowings	8,940,443	54,243	475,139	128,949	201,954	360,545	10,161,273
Bonds	4,626,845	-	56,681	212,376	77,795	528,230	5,501,927
Derivative liabilities used for hedging	82,068	-	-	-	-	-	82,068
Others	3,662,947	235,282	285,030	730,544	29,561	254,244	5,197,608
	<u>₩ 36,330,330</u>	<u>₩ 2,115,691</u>	<u>₩ 3,312,994</u>	<u>₩ 7,031,367</u>	<u>₩ 1,641,080</u>	<u>₩ 4,558,108</u>	<u>₩ 54,989,570</u>

9.6 Operating risk

Operational risk is the risk of loss arising from system failure, human error, fraud or other external events. Risks related to legal or regulatory implications are identified as operational risks, but risks related to the strategy of damaging reputation are excluded from operational risks. Operational risk includes losses from internal operational problems and externalities, such as natural disasters, etc., and legal lawsuit, but excludes losses from policy decision errors or unmeasurable reputation damage, etc. Operational risk does not have a direct correlation with income and the Group needs to mitigate such risk through internal controls and insurance.

The Group calculates the operational risk capital on a consolidation basis. The Group uses the Advanced Measurement Approach (AMA) and the subsidiary uses the basic indicator to manage total capital. Length of the period in which the AMA is in use is one year with a 99.9% confidence level. The Group uses the loss distribution approach to measure 9 different business units and 7 operational risk event types. In addition, the Group combines the loss distribution of the internal and external data on losses with results of the scenario analysis to calculate the amount of capital and takes into account business environment and changes in the controls in order to adjust the amount of capital. The Group uses the basic indicator by applying specific coefficient to the average profit of 3 years.

The Risk Management Committee determines the operational risk limits. In case the excess limit is expected, the management plan for the excess of internal capital limits should be reported to the Risk Management Operation Committee, and if additional limits are given, an approval from the Risk Management Committee is needed beforehand. If under exceptional case where the limit is exceeded, an ex post facto approval from the Risk Management Committee is needed for the information on exceeded amount, post hoc results, as well as the subsequent plans.

9.7 Capital management

The Group implements the BIS capital requirement system in order to secure the capital adequacy and comply with the supervisory regulations. By BIS (Bank for International Settlements) regulation, the Group keeps its BIS capital adequacy ratio (hereinafter BIS ratio) above the minimum BIS for risk-weighted assets. In addition, the Group performs a capital adequacy assessment in order to cope with an unexpected loss.

Risk-weighted assets which are calculated per each risk type when calculating BIS ratio are as follows:

- Risk-weighted assets of credit risk are calculated using the Basic Internal Ratings-Based Approach (IRB). The Group uses the Standardized Approach (SA) for governments, banks, public institutes, overseas exposure, other assets, and etc.
- Risk-weighted assets of market risk are calculated by adding higher of (1) the VaR measured on the previous business day and the average VaR measured in the last 60 business days times (3+multiplier) and (2) the sVaR measured on the previous business day under emergency and the averages VaR measured in the last 60 business days times (3+multiplier) under emergency, to the separate risk calculated by using a standardized model. The FSS provides multiplier to each bank based on the results of verification and the level of meeting the requirements.
- Risk-weighted assets of the operational risk are calculated by multiplying 12.5 to the amount of operational risk capital calculated by Advanced Measurement Approach (AMA) for the Bank and Basic Indicator Approach (BIA) for its subsidiaries.

Regulatory capital in accordance with the Regulations on the Supervision of Banking Business for calculating BIS ratio is as follows:

- Common equity: Capital incurred in connection with common stock issued to meet the eligible requirement, capital surplus and capital adjustments, retained earnings, accumulated other comprehensive income and other capital surplus, capital adjustments, non-controlling interest on common shares issued by banks, affiliated subsidiaries, etc.
- Other basic capital: The capital securities to meet accreditation requirements of other basic capital, capital surplus associated with the issuance of the other basic capital, non-qualifying capital securities and the accredited amount as other basic capital of a non-controlling interest on equity securities issued by a subsidiary, etc.
- Supplementary capital: The capital securities to meet supplementary capital accreditation requirements, capital surplus associated with the issuance of supplementary capital, the accredited amount of supplementary capital of non-qualifying capital securities, the accredited amount as supplementary capital of a non-controlling interest on equity securities issued by a subsidiary, eligible allowance for possible loan losses on "normal" or "precautionary" category assets, allowance for possible loan losses in excess of the total amount of expected losses, etc.

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9.7 Capital management (cont'd)

Regulatory capital and BIS ratios as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Common stockcapital		
Capital stock, capital surplus and capital adjustments incurred in connection with common stock issued that meets eligible requirements	₩ 5,359,470	₩ 5,359,453
Retained earnings	10,913,867	10,122,654
Accumulated other comprehensive income and other capital surplus, capital adjustments	8,770,597	8,757,776
Non-controlling interest on common shares issued by a bank, a consolidated subsidiary	82,894	27,022
Deduction	(1,335,204)	(1,623,576)
	<u>23,791,624</u>	<u>22,643,329</u>
Other basic capital		
Amount accredited as supplementary capital of non-qualifying capital securities	128,250	171,000
Amount accredited as other basic capital of a non-controlling interest on capital securities issued by a subsidiary	17,763	5,790
	<u>146,013</u>	<u>176,790</u>
Supplementary capital		
Equity securities satisfying the criteria of supplementary capital	2,455,744	1,970,860
Amount accredited as supplementary capital of non-qualifying capital securities	1,238,418	1,648,048
Amount accredited as supplementary capital of a non-controlling interest on equity securities issued by a subsidiary	25,328	19,727
Allowance for possible loan losses on assets categorized as "normal" or "critical"	151,385	225,275
	<u>3,870,875</u>	<u>3,863,910</u>
	<u>₩ 27,808,512</u>	<u>₩ 26,684,029</u>
Risk-weighted assets		
Credit risk-weighted assets (*)	₩ 149,968,891	₩ 148,524,473
Operational risk-weighted assets	15,202,055	10,298,132
Market risk-weighted assets	7,395,454	5,369,232
	<u>₩ 172,566,400</u>	<u>₩ 164,191,837</u>
BIS capital ratio		
Total capital ratio	16.11%	16.25%
Common equity ratio	13.79%	13.79%
Basic capital ratio	13.87%	13.90%
Supplementary capital ratio	2.24%	2.35%

(*) The equity below the lowest limit is presented in credit risk weighted assets.

9.7.1 Internal capital adequacy assessment and management

Internal capital is the amount which allows for continuous operation of business while accounting for all risks. Internal capital is defined as the size of capital needed to cope with unexpected loss under a certain rate. The purpose of managing the internal capital is to compare the size of internal capital and available capital (Tier 1) and to serve as a measure of financial strength. Managing the internal capital also provides the amount of risk-adjusted capital and basic measurement. The indicators are composed of the risk appetite ratio as well as exhaustion ratio of foreign holding limits. The risk appetite ratio is an internal capital ratio established after taking into consideration a capital buffer in Tier 1 capital. The exhaustion ratio of foreign holding limits is a ratio used to measure the amount of internal capital used against the internal capital limits.

Internal capital limits are established after accounting for the size of current and subsequent Tier 1 capital as well as the components, quality, risk appetite, target credit rating, operational strategy and business plans. The Risk Committee determines risk types and the internal capital limits for the Group more than once a year. In the case where new operations or the expansion of operations result in the amount exceeding the internal capital limits, an approval from the Risk Committee is needed beforehand. If such a situation occurs in cases outlined as exceptions, an approval from the Risk Committee is needed for the information on exceeded amount, post hoc results, as well as the subsequent plans.

10. Operating segment information

10.1 General information

In order to set strategies to achieve goal and efficiently conduct performance assessment, the business sectors of the Bank are divided by the operations as follows:

- A. Operating group segment: It consists of 4 groups (Center1, Center2, Chungcheong, Yeong-nam, and Honam). It offers household loans and deposit, retirement pension benefit, company loans and deposit, etc.,
- B. Capital market segment: This segmentation offers investment and operation of securities, purchasing and selling of public bonds, development and operation of derivatives.
- C. Others segment: It consists of overseas business segment, headquarter supporting segment, trust segment, risk segment, audit segment and after-management segment.

In December 2018, the Group reorganized its central sales group 1 and central sales group 2 and reorganized its existing sales support group to reinforce on-site sales.

10.2 Profit or loss by operating segment

10.2.1 Details of net income by operating segments for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Class ification	2019										Finance sector and other sector	Subtotal	Adjustments	Total
	Operating group segments													
	Center1	Center2	Chungcheong	Yeongnam	Honam									
Operating income														
Net interest income	₩ 1,581,325	₩ 1,483,270	₩ 411,428	₩ 552,093	₩ 187,497	₩ 1,195,888	₩ 5,411,501	₩ 2,512	₩ 5,414,013					
Interest income	4,477,629	3,982,094	1,142,776	1,626,245	518,760	(1,652,243)	10,095,261	(41,289)	10,053,972					
Interest expense	(2,896,304)	(2,498,824)	(731,348)	(1,074,152)	(331,263)	2,848,131	(4,683,760)	43,801	(4,639,959)					
Net fees and commissions income(loss)	293,967	298,162	61,022	102,438	33,850	211,739	1,001,178	(325,857)	675,321					
Net other operating income (loss)	(866,255)	(802,368)	(247,996)	(339,711)	(106,014)	(1,849,104)	(4,211,448)	1,053,410	(3,158,038)					
Net segment profit (loss)	1,009,037	979,064	224,454	314,820	115,333	(441,477)	2,201,231	730,065	2,931,296					
Income tax expense (income)	277,485	269,243	61,725	86,575	31,717	(123,902)	602,843	177,956	780,799					
Net segment income (loss)	₩ 731,552	₩ 709,821	₩ 162,729	₩ 228,245	₩ 83,616	₩ (317,575)	₩ 1,598,388	₩ 552,109	₩ 2,150,497					

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10.2.1 Profit or loss by operating segment (cont'd)

	2018									
	Regional Sector									
Classification	Center	Chungcheong	Yeongnam	Honam	Finance sector and other sector	Subtotal	Adjustments	Total		
Operating income										
Net interest income	₩ 3,186,794	₩ 422,109	₩ 572,944	₩ 187,752	₩ 936,496	₩ 5,306,095	₩ (8,894)	₩ 5,297,201		
Interest income	8,042,908	1,094,158	1,540,149	460,705	(1,728,061)	9,409,859	(31,157)	9,378,702		
Interest expenses	(4,856,113)	(672,049)	(967,206)	(272,953)	2,664,557	(4,103,764)	22,264	(4,081,500)		
Net fees and commission income (loss)	554,014	59,007	92,941	31,218	210,813	947,993	(307,600)	640,393		
Net other operating income (loss)	(1,707,863)	(247,222)	(338,491)	(107,222)	(1,881,345)	(4,282,143)	1,215,249	(3,066,894)		
Net segment profit (loss)	2,032,945	233,894	327,394	111,748	(734,036)	1,971,945	898,755	2,870,700		
Income tax expenses (income)	559,060	64,321	90,033	30,731	(206,331)	537,814	240,454	778,268		
Net segment income (loss)	₩ 1,473,885	₩ 169,573	₩ 237,361	₩ 81,017	₩ (527,705)	₩ 1,434,131	₩ 658,301	₩ 2,092,432		

10.2.2 Revenue from external customers in each operating sector for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

	2019									
	Operating group segments									
Classification	Center1	Center2	Chungcheong	Yeongnam	Honam	Finance sector and other sector	Subtotal	Adjustments	Total	
Revenue from external customers	₩ 1,688,592	₩ 1,688,203	₩ 422,655	₩ 590,918	₩ 206,148	₩ 1,970,416	₩ 6,566,932	₩ (311,590)	₩ 6,255,342	
	2018									
	Operating group segments									
Classification	Center	Chungcheong	Yeongnam	Honam	Finance sector and other sector	Subtotal	Adjustments	Total		
Revenue from external customers	₩ 3,498,854	₩ 433,615	₩ 610,213	₩ 204,965	₩ 1,355,836	₩ 6,103,483	₩ (25,938)	₩ 6,077,545		

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10.2.3 Significant non-cash transactions included in income of operating segments for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

2019									
Classification	Operating group segments					Finance sector and other sector	Subtotal	Adjustment	Total
	Center1	Center2	Chungcheo		Honam				
			ng	Yeongnam					
Earnings from equity method investments	₩ -	₩ -	₩ -	₩ -	₩ -	₩ (27,590)	₩ (27,590)	₩ 176	₩ (27,414)
Depreciation and amortization	(51,178)	(92,375)	(19,058)	(14,124)	(5,791)	(246,606)	(429,132)	(1,619)	(430,751)
	₩ (51,178)	₩ (92,375)	₩ (19,058)	₩ (14,124)	₩ (5,791)	₩ (274,196)	₩ (456,722)	₩ (1,443)	₩ (458,165)

2018									
Classification	Operating group segments				Finance sector and other sector	Subtotal	Adjustment	Total	
	Center	Chungcheong	Yeongnam	Honam					
Earnings from equity method investments	₩ -	₩ -	₩ -	₩ -	₩ 21,728	₩ 21,728	₩ (41)	₩ 21,687	
Depreciation and amortization	(27,629)	(12,223)	(3,651)	(1,958)	(158,481)	(203,942)	288	(203,654)	
	₩ (27,629)	₩ (12,223)	₩ (3,651)	₩ (1,958)	₩ (136,753)	₩ (182,214)	₩ 247	₩ (181,967)	

10.3 Information about revenue by geographic region

Revenue by geographic region from the external customers for the years ended December 31, 2019 and 2018 and non-current assets by region as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Revenue from external customers (*1)		Non-current assets (*2)	
	2019	2018	2019	2018
Domestic	₩ 5,857,693	₩ 5,467,415	₩ 2,914,227	₩ 2,610,472
Foreign				
Hong Kong	78,130	64,421	9,779	484
Singapore	29,144	32,456	2,143	762
U.S	41,889	38,337	6,422	5,849
Japan	29,511	18,346	6,966	2,788
China	175,587	177,967	59,846	26,427
Indonesia	143,024	129,399	97,613	11,100
U.K	5,095	18,281	5,152	1,838
Canada	35,663	32,355	12,949	6,219
Myanmar	11,196	-	1,113	-
Others	159,999	124,505	10,612	3,082
	709,238	636,067	212,595	58,549
Adjustments	(311,589)	(25,937)	6,789	6,131
	₩ 6,255,342	₩ 6,077,545	₩ 3,133,611	₩ 2,675,152

(*1) Income from external customers is divided into categories of domestic and overseas based on the locations of operating branches.

(*2) Non-current assets consist of property and equipment, investment property, and intangible asset and right-of-use assets are divided into categories of domestic and overseas based on the location of assets.

11. Cash and due from banks

11.1 Cash and due from banks as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Counterparty	2019	2018
Cash		₩ 2,280,574	₩ 2,120,840
Due from banks in Korean won			
Reserve with central bank and others	Bank of Korea ("BOK")	10,278,833	10,308,514
Monetary stabilization account	BOK	-	430,000
Time deposits and others	Other Banks	100,000	100,000
Other deposits	Other financial institutions	186,610	219,508
		10,565,443	11,058,022
Due from banks in foreign currencies			
Due from foreign banks	BOK and others	4,403,034	4,890,744
Time deposits	ICICI Bank and others	1,017,847	1,043,465
Other due from banks	Other financial institutions	1,735,529	1,339,052
		7,156,410	7,273,261
		₩ 20,002,427	₩ 20,452,123

11.2 Restricted balances in due from banks as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019	2018	Restriction
Due from banks in Korean won			
Reserve deposits, etc.	₩ 10,278,833	₩ 10,308,514	Required under the <i>Banking Act</i> and other related regulations.
Monetary stabilization account	-	430,000	Required by the <i>Bank of Korea</i> for the purpose of liquidity management.
Investor's deposits	155,647	157,478	Required under the <i>Financial Investment Services and Capital Markets Act</i> .
Collective fund for Korea Stock Exchange	500	500	Pledge creation etc.
	10,434,980	10,896,492	
Due from banks in foreign currencies			
Due from banks on demand	2,266,281	3,334,662	Reserve deposits required under the <i>Banking Act</i> and other related regulations.
Due from others on demand	875,405	1,035,058	Deposits received for guarantees as margin for derivatives.
	3,141,686	4,369,720	
	₩ 13,576,666	₩ 15,266,212	

12. Financial assets at fair value through profit or loss

12.1 Financial assets mandatorily measured at fair value through profit or loss as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Stocks	₩ 122,088	₩ 121,514
Government and public bonds	1,681,570	1,221,452
Financial bonds	431,288	451,431
Corporate bonds	688,756	807,436
Beneficiary certificates	1,824,527	1,342,349
Securities denominated in foreign currencies	1,197,676	572,238
Derivative assets held for trading	4,241,044	3,342,588
Other securities (investment, etc.)	191,912	171,717
Convertible privately-placed bonds	368,583	389,381
	₩ 10,747,444	₩ 8,420,106

12.2 As of December 31, 2019 and 2018, the Group does not hold any financial assets designated as measured at fair value through profit or loss.

13. Financial assets at fair value through other comprehensive income

13.1 As of December 31, 2019 and 2018, measured at fair value through other comprehensive income are as follows (Korean won in millions):

Classification	Counterparty	Fair value (book value)	
		2019	2018
Stocks	Daewoo Shipbuilding & Marine Engineering Co., Ltd., etc.	₩ 795,175	₩ 813,951
Investments in partnership	Impact Finance Korea	150	173
Government and public bonds	Treasury bonds	10,077,006	11,399,359
	Housing bonds	4,635,894	3,246,004
	Other local bonds	169,139	19,873
		14,882,039	14,665,236
Finance bonds	Monetary stabilization securities	5,630,150	7,812,796
	Deposit bank bonds	679,712	338,850
	Small and medium-sized business banking bonds	772,153	388,808
	Industrial financial bonds	864,252	615,789
	Export-import credit bonds	20,527	16,674
		7,966,794	9,172,917
Corporate bonds and others	State owned entity bonds	4,062,777	2,950,617
	Corporate bonds	369,631	438,775
		4,432,408	3,389,392
Other securities	Convertible bond (permanent)	96,590	18,601
Securities denominated in foreign currencies	Equity securities in foreign currencies	173,298	234,592
	Bonds in foreign currencies	7,538,420	6,550,198
		7,711,718	6,784,790
		₩ 35,886,874	₩ 34,845,060

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13.2 As of December 31, 2019 and 2018, details of equity instruments included in financial assets at FVOCI are as follows (Korean won in millions):

Counterparty	2019	
	Book value	Fair value
Daewoo Shipbuilding & Marine Engineering Co., Ltd.	₩ 251,083	₩ 251,083
CM International Financing Leasing Co., Ltd.	167,649	167,649
Consumer Credit Assistant Fund Co., Ltd.	129,364	129,364
UAMCO., Ltd.	122,850	122,850
Kookmin Cable Investment Inc (permanent convertible bond)	80,295	80,295
The Korea Securities Finance Corporation	73,681	73,681
Hanjin Heavy Industries & Construction Co., Ltd.	36,952	36,952
Taihan Electric Wire Co., Ltd.	26,107	26,107
STX Engine Co., Ltd (permanent convertible bond)	16,295	16,295
Korea Asset Management Corporation	15,737	15,737
Dongbu Steel Co., Ltd.	15,385	15,385
ChinHung International, Inc.	14,182	14,182
Hyundai Merchant Marine Co., Ltd.	14,174	14,174
Korea Enterprise Data Co., Ltd.	11,227	11,227
BC Card Co., Ltd.	11,051	11,051
Koramco REITs Management and Trust Co., Ltd.	10,665	10,655
Kumho Tire Co., Ltd.	10,183	10,183
Korea Money Brokerage Corp.	8,993	8,993
HJC Inc.	8,535	8,535
CLS Group Holdings AG	4,387	4,387
Mirae Credit Information Co., Ltd.	4,153	4,153
DB Asset Management Co., Ltd., etc.	34,275	34,275
	₩ 1,067,213	₩ 1,067,213

Equity instruments that are held for strategic alliances, converted from debt instruments and acquired for access rights of systems and facilities are designated as measured at FVOCI.

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13.2 As of December 31, 2019 and 2018, details of equity instruments included in financial assets at FVOCI are as follows (Korean won in millions) (cont'd)

Counterparty	2018	
	Book value	Fair value
Daewoo Shipbuilding & Marine Engineering Co., Ltd.	₩ 307,881	₩ 307,881
CM International Financing Leasing Co., Ltd.	228,540	228,540
Consumer Credit Assistant Fund Co., Ltd.	121,313	121,313
UAMCO., Ltd.	118,130	118,130
The Korea Securities Finance Corporation	60,614	60,614
Taihan Electric Wire Co., Ltd.	43,131	43,131
STX Engine Co., Ltd.	18,601	18,601
Korea Asset Management Corporation	15,737	15,737
Dongbu Steel Co., Ltd.	15,028	15,028
Hyundai Merchant Marine Co., Ltd.	14,753	14,753
Kumho Tire Co., Ltd.	12,890	12,890
ChinHung International, Inc.	12,678	12,678
BC Card Co., Ltd.	11,430	11,430
Koramco REITs Management and Trust Co., Ltd.	10,481	10,481
Korea Enterprise Data Co., Ltd.	10,461	10,461
HJC Inc.	8,521	8,521
Korea Money Brokerage Corp.	7,237	7,237
Daiyang Metal Co., Ltd.	5,476	5,476
KHE Co., Ltd.	4,178	4,178
Mirae Credit Information Co., Ltd.	4,030	4,030
CLS Group Holdings AG	4,018	4,018
Korea Development Corporation	3,538	3,538
DB Asset Management Co., Ltd., etc.	28,651	28,651
	₩ 1,067,317	₩ 1,067,317

Equity instruments that are held for strategic alliances, converted from debt instruments and acquired for access rights of systems and facilities are designated as measured at FVOCI.

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13.3 Details of equity instruments included in the financial assets at FVOCI derecognized for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Counterparty	2019		Reason for disposal
	Book value	Cumulative valuation gain (loss)	
Taihan Electric Wire Co., Ltd.	₩ 128	₩ (265)	Resolution of the Board of Directors
AJIN P&P Co., Ltd.	618	57	Exercising right to sell stock by the Board of Directors
Zyle Motor Sales Co., Ltd.	1,392	107	Sale based on purchase proposal by existing shareholders
Hana Financial Group Inc.	16	-	Sales of stocks exchanged from merger
Daehan i.m.	105	105	Sale of securities convertible to equity securities
KSP	255	215	Sale of securities convertible to equity securities
Poonglim Industrial Co., Ltd	7	7	Exercising right to sell stock by the controlling shareholder
Samwhaflex Co., Ltd	5	5	Sales of securities convertible to equity securities
Daiyang Metal Co., Ltd.	6,237	(381)	Resolution of the Board of Directors
Microfinance & Badbank Harmony Co., Ltd	62	62	Decrease in capital
	₩ 8,825	₩ (88)	

13.3 Details of equity instruments included in the financial assets at FVOCI derecognized for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Counterparty	2018		Reason for disposal
	Book value	Cumulative valuation gain (loss)	
STX Engine Co., Ltd.	₩ 15,349	₩ (22,925)	Resolution of the council of shareholders
Taihan Electric Wire Co., Ltd.	2,479	(3,690)	Resolution of the Board of Directors
Shinwon Co., Ltd.	11	4	Receipt of dividends upon bankruptcy of business
Oriental Precision & Engineering Co., Ltd.	864	(8,571)	Resolution of the Board of Directors
JY Solutech Co., Ltd.	755	593	Sale of shares after the end of workout
Placidwave Korea Inc.	16	16	Capital reduction on stocks resulting from debt-equity swap based on the approval of changes in corporate rehabilitation plan
Microfinance & Badbank Harmony Co., Ltd.	871	871	Resolution of shareholders' meeting
Hanol Global Textile Co., Ltd.	9	9	Exercising right to sell stock by the controlling shareholder
Hanil Hyundai Cement Co., Ltd.	12,062	8,995	Resolution of the Board of Directors
	₩ 32,416	₩ (24,698)	

13.4 There are no dividends recognized due to the equity instruments at FVOCI derecognized for the year ended December 31, 2019. Dividends recognized in relation to the equity instruments at FVOCI held as of December 31, 2019 amount to ₩5,981 million.

13.5 Changes in the loss allowance in relation to financial assets at FVOCI for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	12 month expected credit loss	Lifetime expected credit losses		Total
		Non-credit-impaired debt securities	Credit-impaired debt securities	
Beginning balance	₩ 6,582	₩ -	₩ -	₩ 6,582
Transfer to 12 months expected credit loss	-	-	-	-
Transfer to non-credit-impaired debt securities	-	-	-	-
Transfer to credit-impaired debt securities	-	-	-	-
Provision for allowance for doubtful accounts	3,201	-	-	3,201
New debt securities executed or purchased	-	-	-	-
Removed debt securities	(2,793)	-	-	(2,793)
Exchange rate fluctuation and others	67	-	-	67
Ending balance	₩ 7,057	₩ -	₩ -	₩ 7,057

Classification	2018			
	12 month expected credit loss	Lifetime expected credit losses		Total
		Non-credit-impaired debt securities	Credit-impaired debt securities	
Beginning balance	₩ 7,524	₩ 723	₩ -	₩ 8,247
Transfer to 12 months expected credit loss	361	(361)	-	-
Transfer to non-credit-impaired debt securities	-	-	-	-
Transfer to credit-impaired debt securities	-	-	-	-
Provision for allowance for accounts	352	-	-	352
New debt securities executed or purchased	-	-	-	-
Removed debt securities	(1,946)	(362)	-	(2,308)
Exchange rate fluctuation and others	291	-	-	291
Ending balance	₩ 6,582	₩ -	₩ -	₩ 6,582

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13.6. Changes in the total book value in relation to financial assets at FVOCI for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	12 month expected credit loss	Lifetime expected credit losses		Total
		Non-credit-impaired debt securities	Credit-impaired debt securities	
Beginning balance	₩ 33,777,743	₩ -	₩ -	₩ 33,777,743
Transfer to 12 months expected credit loss	-	-	-	-
Transfer to non-credit-impaired debt securities	-	-	-	-
Transfer to credit-impaired debt securities	-	-	-	-
New financial assets executed or purchased	20,193,110	-	-	20,193,110
Removed debt securities	(19,243,452)	-	-	(19,243,452)
Exchange rate fluctuation and others	92,260	-	-	92,260
Ending balance	₩ 34,819,661	₩ -	₩ -	₩ 34,819,661

Classification	2018			
	12 month expected credit loss	Lifetime expected credit losses		Total
		Non-credit-impaired debt securities	Credit-impaired debt securities	
Beginning balance	₩ 40,246,086	₩ 7,738	₩ -	₩ 40,253,824
Transfer to 12 months expected credit loss	3,869	(3,869)	-	-
Transfer to non-credit-impaired debt securities	-	-	-	-
Transfer to credit-impaired debt securities	-	-	-	-
New financial assets executed or purchased	5,978,524	-	-	5,978,524
Removed debt securities	(12,741,534)	(3,869)	-	(12,745,403)
Exchange rate fluctuation and others	290,798	-	-	290,798
Ending balance	₩ 33,777,743	₩ -	₩ -	₩ 33,777,743

14. Securities at amortized cost

14.1 Details of securities at amortized cost as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Category	Book value	
		2019	2018
Government and public bonds	Treasury bonds	₩ 413,682	₩ 400,847
	Housing bonds	1,172,980	1,328,502
	Other local government bonds	267,163	-
		1,853,825	1,729,349
Finance bonds	Deposit bank bonds	310,504	230,711
	Small and medium-sized business banking bonds	650,001	649,858
	Industrial financial bonds	1,883,899	1,861,640
	Export-import credit bond	240,491	210,623
		3,084,895	2,952,832
Corporate bonds and others	State owned entity bonds	8,882,549	7,037,213
	Corporate bonds	80,088	70,040
		8,962,637	7,107,253
Securities denominated in foreign currencies	Bonds in foreign currencies	1,726,532	1,795,896
Allowance for doubtful accounts		(3,739)	(2,949)
		₩ 15,624,150	₩ 13,582,381

14.2 There is no profit or loss from disposal of securities at amortized cost for the year ended December 31, 2019.

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14.3 Changes in the loss allowance in relation to securities at amortized cost for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019				
	12 months expected credit loss	Lifetime expected credit losses		Total	
		Non-credit-impaired debt securities	Credit-impaired debt securities		
Beginning balance	₩ 2,949	₩ -	₩ -	₩ 2,949	
Transfer to 12 months expected credit loss	-	-	-	-	
Transfer to non-credit-impaired debt securities	-	-	-	-	
Transfer to credit-impaired debt securities	-	-	-	-	
Provision for possible loan losses	1,929	-	-	1,929	
Removed debt securities	(189)	-	-	(189)	
Exchange rate fluctuation and others	(950)	-	-	(950)	
Ending balance	₩ 3,739	₩ -	₩ -	₩ 3,739	

Classification	2018				
	12 months expected credit loss	Lifetime expected credit losses		Total	
		Non-credit-impaired debt securities	Credit-impaired debt securities		
Beginning balance	₩ 1,523	₩ -	₩ -	₩ 1,523	
Transfer to 12 months expected credit loss	-	-	-	-	
Transfer to non-credit-impaired debt securities	-	-	-	-	
Transfer to credit-impaired debt securities	-	-	-	-	
Provision for possible loan losses	2,537	-	-	2,537	
Removed debt securities	(119)	-	-	(119)	
Exchange rate fluctuation and others	(992)	-	-	(992)	
Ending balance	₩ 2,949	₩ -	₩ -	₩ 2,949	

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14.4 Changes in the carrying amounts of securities at amortized cost for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

	2019				
		Lifetime expected credit losses			
Classification	12 months expected credit loss	Non-credit-impaired debt securities	Credit-impaired debt securities		Total
Beginning balance	₩ 13,585,330	₩ -	₩ -	₩	13,585,330
Transfer to 12 month expected credit loss	-	-	-	₩	-
Transfer to non-credit-impaired debt securities	-	-	-		-
Transfer to credit-impaired debt securities	-	-	-		-
New debt securities executed or purchased	3,062,657	-	-		3,062,657
Removed debt securities	(1,083,876)	-	-		(1,083,876)
Effective interest rate amortization	(16,733)	-	-		(16,733)
Exchange rate fluctuation and others	80,511	-	-		80,511
Ending balance	₩ 15,627,889	₩ -	₩ -	₩	15,627,889
	2018				
		Lifetime expected credit losses			
Classification	12 months expected credit loss	Non-credit-impaired debt securities	Credit-impaired debt securities		Total
Beginning balance	₩ 6,174,861	₩ -	₩ -	₩	6,174,861
Transfer to 12 month expected credit loss	-	-	-		-
Transfer to non-credit-impaired debt securities	-	-	-		-
Transfer to credit-impaired debt securities	-	-	-		-
New debt securities executed or purchased	8,220,010	-	-		8,220,010
Removed debt securities	(777,724)	-	-		(777,724)
Effective interest rate amortization	4,823	-	-		4,823
Exchange rate fluctuation and others	(38,640)	-	-		(38,640)
Ending balance	₩ 13,585,330	₩ -	₩ -	₩	13,585,330

15. Pledged assets

15.1 Assets pledged as collateral as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Category	Book value	
		2019	2018
Financial assets at FVOCI	Intraday overdraft	₩ 617,090	₩ 600,064
	Securities lent	422,258	1,859,927
	Borrowings	991,175	1,017,965
	Foreign currency borrowing	347,854	118,219
	BOK payment	3,208,211	1,688,711
	Futures	79,552	186,219
	Others	236,554	468,066
		5,902,694	5,939,171
Securities at amortized cost	Futures	290,393	180,346
	BOK payment	1,020,615	1,058,662
	Intraday overdraft	55,617	55,690
	Borrowings	981,225	408,460
	Foreign currency borrowing	173,914	385,243
	Others	74,132	74,919
		2,595,896	2,163,320
		₩ 8,498,590	₩ 8,102,491

15.2 The fair value of collateral that is available for sale and re-pledge, irrespective of default as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	
	Fair value of collateral	Fair value of collateral sold or re-pledged
Securities	₩ 12,124,245	₩ -
Classification	2018	
	Fair value of collateral	Fair value of collateral sold or re-pledged
Securities	₩ 8,041,844	₩ -

16. Loans and receivables

16.1 Loans and receivables as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Loans		
Loans in Korean won	₩ 218,173,262	₩ 202,127,586
Loans denominated in foreign currencies	23,154,482	20,427,575
Domestic import usance	3,411,632	3,616,403
Call loans	1,246,055	3,153,690
Bills purchased in Korean won	318,479	88,303
Bills purchased denominated in foreign currencies	5,005,813	5,662,188
Advanced payments on payment guarantees	35,345	23,869
Bonds purchased under resale agreement	11,837,603	8,021,732
Privately-placed corporate bonds	1,036,003	1,605,466
Others	581,756	745,393
	264,800,430	245,472,205
Addition (less)		
Deferred loan fees and expenses	338,662	304,547
Allowance for doubtful accounts	(1,178,434)	(1,308,162)
	(839,772)	(1,003,615)
	₩ 263,960,658	₩ 244,468,590

16.2 Loans and receivables by customer as of December 31, 2019 and 2018 are listed as follows (Korean won in millions):

Classification	2019	2018
Corporate loans		
Large-sized businesses	₩ 34,244,755	₩ 33,844,730
Small and medium-sized businesses	94,085,098	85,499,115
Public sector and others	20,337,400	18,666,272
Household loans	116,133,177	107,462,088
	264,800,430	245,472,205
Additional (less)		
Deferred loan fees, net of expenses	338,662	304,547
Allowance for doubtful accounts	(1,178,434)	(1,308,162)
	(839,772)	(1,003,615)
	₩ 263,960,658	₩ 244,468,590

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16.3 Changes in allowance for possible loan losses for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019					
	12 month expected credit loss	Lifetime expected credit losses		Credit impairment model	Total	
		Non-credit-impaired loan	Credit-impaired loan			
Beginning balance	₩ 288,193	₩ 402,242	₩ 607,865	₩ 9,862	₩ 1,308,162	
Transfer to 12 months expected credit loss	22,125	(19,455)	(2,670)	-	-	
Transfer to non-credit-impaired loan	(16,929)	58,432	(41,503)	-	-	
Transfer to credit-impaired loan	(7,066)	(29,516)	36,582	-	-	
Provisions (reversal) of allowance for doubtful accounts	70,321	(69,217)	216,999	6,962	225,065	
Write-offs	-	-	(350,607)	-	(350,607)	
Disposal of non-performing loans	-	-	(21,312)	(4,125)	(25,437)	
Recovering of loans written-off	-	-	143,105	-	143,105	
Exchange rate fluctuation and others	(20,685)	589	(89,059)	(12,699)	(121,854)	
Ending balance	₩ 335,959	₩ 343,075	₩ 499,400	₩ -	₩ 1,178,434	

	2018					
Classification	12 month expected credit loss	Lifetime expected credit losses		Credit impairment model	Total	
		Non-credit-impaired loan	Credit-impaired loan			
Beginning balance	₩ 234,188	₩ 383,537	₩ 818,302	₩ 12,081	₩ 1,448,108	
Transfer to 12 months expected credit loss	28,534	(26,748)	(1,786)	-	-	
Transfer to non-credit-impaired loan	(14,159)	80,794	(66,635)	-	-	
Transfer to credit-impaired loan	(11,440)	(26,917)	38,357	-	-	
Provisions (reversal) of allowance for doubtful accounts	33,412	10,023	133,385	3,609	180,429	
Write-offs	-	-	(364,822)	(5,789)	(370,611)	
Disposal of non-performing loans	-	-	(31,080)	-	(31,080)	
Recovering of loans written-off	-	-	129,745	-	129,745	
Exchange rate fluctuation and others	17,658	(18,447)	(47,601)	(39)	(48,429)	
Ending balance	₩ 288,193	₩ 402,242	₩ 607,865	₩ 9,862	₩ 1,308,162	

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16.4 Changes in the carrying amounts of loans for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					
	12 month expected credit loss	Lifetime expected credit losses		Subject to the application of credit impairment model	Total	
		Non-credit-impaired loan	Credit-impaired loan			
Beginning balance	₩ 201,533,124	₩ 41,647,175	₩ 1,514,726	₩ 777,180	₩ 245,472,205	
Transfer to 12 month expected credit loss	4,611,740	(4,602,098)	(9,642)	-	-	
Transfer to non-credit-impaired loan	(5,884,621)	6,021,113	(136,492)	-	-	
Transfer to credit-impaired loan	(558,817)	(524,020)	1,082,837	-	-	
Net increase and decrease	31,690,580	(10,401,417)	(506,090)	(773,055)	20,010,018	
Write-offs	-	-	(350,607)	-	(350,607)	
Disposal of non-performing loans	-	-	(327,061)	(4,125)	(331,186)	
Ending balance	₩ 231,392,006	₩ 32,140,753	₩ 1,267,671	₩ -	₩ 264,800,430	

Classification	2018					
	12 month expected credit loss	Lifetime expected credit losses		Subject to the application of credit impairment model	Total	
		Non-credit-impaired loan	Credit-impaired loan			
Beginning balance	₩ 158,426,745	₩ 64,255,136	₩ 1,844,699	₩ 498,900	₩ 225,025,480	
Transfer to 12 month expected credit loss	8,984,140	(8,978,859)	(5,281)	-	-	
Transfer to non-credit-impaired loan	(4,765,987)	4,946,501	(180,514)	-	-	
Transfer to credit-impaired loan	(451,439)	(427,393)	878,832	-	-	
Net increase and decrease	39,339,665	(18,148,210)	(555,158)	284,069	20,920,366	
Write-offs	-	-	(364,822)	(5,789)	(370,611)	
Disposal of non-performing loans	-	-	(103,030)	-	(103,030)	
Ending balance	₩ 201,533,124	₩ 41,647,175	₩ 1,514,726	₩ 777,180	₩ 245,472,205	

16.5 Amortized costs before changes in contractual cash flows of loans (contractual cash flows changed for the year ended December 31, 2019) for which allowance for doubtful accounts have been measured at the lifetime ECL and net loss recognized based on the changes in contractual cash flows are as follows (Korean won in millions):

Classification	2019	2018
Amortized cost before change	₩ 208,027	₩ 358,335
Net loss due to change	526	26,685

16.6 Loans whose contractual cash flows changed for which the measurement of allowance for doubtful accounts changed from the lifetime ECL to 12-month ECL on initial recognition during the reporting period are no loans and ₩185 million as of December 31, 2019 and 2018, respectively.

16.7 The uncollected contractual amounts of loans written off for the years ended December 31, 2019 and 2018 but the Group continues to recover, are ₩322,415 million and ₩355,484 million, respectively.

17. Derivative instruments

17.1 Details of amounts of the unsettled derivative contract and fair value of derivatives held by the Group as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Amounts of unsettled contract		Accumulated valuation gain (loss)			
			2019		2018	
	2019	2018	Assets	Liabilities	Assets	Liabilities
Currency						
Forward	₩ 231,148,110	₩ 219,058,713	₩ 2,653,777	₩ 2,208,960	₩ 1,950,839	₩ 1,881,382
Swap	73,544,525	67,117,113	1,003,837	987,040	952,394	772,364
Options purchased	625,814	234,609	4,330	-	4,710	-
Options sold	628,551	215,109	-	5,278	-	3,684
Futures	1,518,605	1,364,831	-	-	-	-
	<u>307,465,605</u>	<u>287,990,375</u>	<u>3,661,944</u>	<u>3,201,278</u>	<u>2,907,943</u>	<u>2,657,430</u>
Interest						
Swap	100,175,748	83,210,036	581,553	440,018	433,164	389,423
Options purchased	516,957	470,000	6,585	-	9,276	-
Options sold	1,497,730	2,249,479	-	44,027	-	42,721
Futures	906,725	389,405	-	-	-	-
	<u>103,097,160</u>	<u>86,318,920</u>	<u>588,138</u>	<u>484,045</u>	<u>442,440</u>	<u>432,144</u>
Stock						
Options purchased	26,767	25,949	1,137	-	1,043	-
Options sold	149,682	26,488	-	370	-	310
Futures	5,979	193	-	-	-	-
	<u>182,428</u>	<u>52,630</u>	<u>1,137</u>	<u>370</u>	<u>1,043</u>	<u>310</u>
Others						
Credit spread adjustment, etc.	-	-	(10,175)	-	(8,838)	-
	<u>₩ 410,745,193</u>	<u>₩ 374,361,925</u>	<u>₩ 4,241,044</u>	<u>₩ 3,685,693</u>	<u>₩ 3,342,588</u>	<u>₩ 3,089,884</u>

17.2 Details of valuation gain (loss) of the derivatives for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019		2018	
	Net valuation gain	Net valuation loss	Net valuation gain	Net valuation loss
Currency				
Forward	₩ 2,608,397	₩ 2,136,645	₩ 1,992,178	₩ 1,854,395
Swap	889,326	1,022,806	1,059,332	1,043,626
Options purchased	2,085	-	3,654	-
Options sold	-	1,726	-	2,100
	3,499,808	3,161,177	3,055,164	2,900,121
Interest				
Swap	279,416	190,313	230,471	145,275
Options purchased	1,230	-	2,415	-
Options sold	-	11,752	-	9,020
	280,646	202,065	232,886	154,295
Stock				
Options purchased	119	-	894	-
Options sold	-	66	-	301
	119	66	894	301
Others				
Credit spread adjustment, etc.	-	1,337	2,053	-
	₩ 3,780,573	₩ 3,364,645	₩ 3,290,997	₩ 3,054,717

17.3 Fair value hedge

17.3.1 Details of items subject to fair value hedge as of December 31, 2019 and 2018 are as follows (Korean won in millions):

		2019					
Classification	Hedged item	Book Value		Accumulated fair value adjustments		Change in fair value	
		Assets	Liabilities	Assets	Liabilities		
Application of hedge accounting							
Interest rate	Depository liabilities in Korean won	₩ -	₩ 792,732	₩ -	₩ (7,268)	₩	483
	Depository liabilities denominated in foreign currencies	-	533,659	-	1,071		(33,974)
	Finance bonds in Korean won	-	76,644	-	(3,356)		3,356
	Finance bonds denominated in foreign currencies	-	2,399,169	-	48,835		(77,572)
		-	3,802,204	-	39,282		(107,707)
Currency	Equity securities at FVOCI	167,649	-	12,560	-		7,940
Currency and interest	Finance bonds denominated in foreign currencies	-	620,269	-	8,633		(725)
		₩ 167,649	₩ 4,422,473	₩ 12,560	₩ 47,915	₩	(100,492)

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17.3.1 Details of items subject to fair value hedge as of December 31, 2019 and 2018 are as follows
(Korean won in millions) (cont'd)

		2018					
Classification	Hedged item	Book Value		Accumulated fair value adjustments		Change in fair value	
		Assets	Liabilities	Assets	Liabilities		
Application of hedge accounting							
Interest rate	Depository liabilities in Korean won	₩ -	₩ 511,658	₩ -	₩ (8,342)	₩ (5,486)	
	Depository liabilities denominated in foreign currencies	-	532,658	-	(37,573)	25,314	
	Finance bonds in Korean won	-	100,102	-	102	(102)	
	Finance bonds denominated in foreign currencies	-	2,584,266	-	(43,269)	22,506	
		-	3,728,684	-	(89,082)	42,232	
Currency	Equity securities at FVOCI	228,540	-	4,620	-	9,340	
Currency and interest	Finance bonds denominated in foreign currencies	-	675,673	-	14,696	(7,930)	
		₩ 228,540	₩ 4,404,357	₩ 4,620	₩ (74,386)	₩ 43,642	

As of December 31, 2019, interest rate swap or currency swap is designated as hedging instrument and the fair value hedge accounting is applied in order to hedge fair value fluctuation risk incurred due to interest rate fluctuations and foreign exchange rate fluctuations in finance bonds issued and depository liabilities. Foreign currency bonds are used as hedging instruments for exchange risk of equity instruments at fair value through other comprehensive income.

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17.3.2 Derivative instruments used for hedging purposes edging and related assets and liabilities as of December 31, 2019 and 2018 are as follows. And valuation of fair value and gain and loss on valuation for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	Unsettled contract amounts	Valuation gain(loss) - OCI	Assets	Liabilities
Currency				
Currency swaps	₩ 611,636	₩ (1,152)	₩ 7,600	₩ 8,200
Interest				
Interest rate swaps	3,762,922	107,955	58,927	19,103
	₩ 4,374,558	₩ 106,803	₩ 66,527	₩ 27,303
Classification	2018			
	Unsettled contract amounts	Valuation gain(loss) - OCI	Assets	Liabilities
Currency				
Currency swaps	₩ 660,977	₩ 696	₩ 3,766	₩ 7,075
Interest				
Interest rate swaps	3,817,766	(43,014)	2,989	91,722
	₩ 4,478,743	₩ (42,318)	₩ 6,755	₩ 98,797

Derivative transactions of which purchase, and sale incur simultaneously like foreign exchange forward transaction, currency futures and currency swap, do not distinguish purchase contract amount from sale contract amount. For a derivative transaction involving both Korean won and foreign currencies, the contract amount based on foreign currencies is denominated using a fair exchange rate prevailing at the end of reporting period. For a derivative transaction involving only foreign currencies, the contract amount based on foreign currencies purchased are denominated using a fair exchange rate prevailing at the end of reporting period.

17.3.3 Fair values of non-derivative financial instruments designated as hedging instrument as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Fair value	
	2019	2018
Bonds denominated in foreign currencies	₩ 231,560	₩ 223,621

17.3.4 Ineffective portion of gain or loss on derivatives designated as hedging instrument for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Ineffective portion of the hedge recognized as current profit or loss	
	2019	2018
Currency	₩ (1,877)	₩ (7,234)
Interest	248	(782)
	₩ (1,629)	₩ (8,016)

17.4 Hedges of net investment in foreign operations

17.4.1 Details of hedges of net investment in foreign operations as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	
	Fair value fluctuation	Comprehensive income of hedges of net investment in foreign operations
Currency (exchange rate risk)	₩ 25,953	₩ (15,052)

Classification	2018	
	Fair value fluctuation	Comprehensive income of hedges of net investment in foreign operations
Currency (exchange rate risk)	₩ 12,343	₩ 3,764

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17.4.2 Details of fair values of financial instruments designated as hedging instrument of net investment of foreign operations as of December 31, 2019 and 2018 are as follows (Korean won in millions):

2019						
Classification	Book value		Fair value fluctuation	The effective portion of changes in fair value recognized in other comprehensive income	Ineffective portion of the hedge recognized as current profit or loss	
	Assets	Liabilities				
Bonds denominated in foreign currencies	₩ -	₩ 657,192	₩ (25,953)	₩ (18,816)	₩ -	
2018						
Classification	Book value		Fair value fluctuation	The effective portion of changes in fair value recognized in other comprehensive income	Ineffective portion of the hedge recognized as current profit or loss	
	Assets	Liabilities				
Bonds denominated in foreign currencies	₩ -	₩ 631,239	₩ (12,343)	₩ (12,343)	₩ -	

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17.5 Average hedging ratios of future nominal cash flows by the type of risk hedge as of December 31, 2019 and 2018 are as follows (Korean won in millions):

	2019							
							More than 5	
Classification	1 year	2 years	3 years	4 years	5 years	years	Total	
Fair value hedge								
Nominal amounts of items subject to hedge	₩ 114,399	₩ 987,925	₩ 347,340	₩ 445,552	₩ 1,042,020	₩ 1,668,882	₩ 4,606,118	
Nominal amounts of hedging instrument	114,399	987,925	347,340	445,552	1,042,020	1,668,882	4,606,118	
Average hedging ratio	100.04%	99.70%	100.00%	99.65%	99.16%	99.99%	99.88%	
Hedge of net investment in foreign operations								
Nominal amounts of items subject to hedge	-	-	-	-	-	657,192	657,192	
Nominal amounts of hedging instrument	-	-	-	-	-	657,192	657,192	
Average hedging ratio	-	-	-	-	-	100.00%	100.00%	
	2018							
							More than 5	
Classification	1 year	2 years	3 years	4 years	5 years	years	Total	
Fair value hedge								
Nominal amounts of items subject to hedge	₩ 1,019,085	₩ 101,714	₩ 956,314	₩ 20,000	₩ 428,730	₩ 2,176,521	₩ 4,702,364	
Nominal amounts of hedging instrument	1,019,085	101,714	956,314	20,000	428,730	2,176,521	4,702,364	
Average hedging ratio	100.50%	99.92%	100.30%	100.00%	98.13%	100.50%	100.00%	
Hedge of net investment in foreign operations								
Nominal amounts of items subject to hedge	-	-	-	-	-	631,239	631,239	
Nominal amounts of hedging instrument	-	-	-	-	-	631,239	631,239	
Average hedging ratio	-	-	-	-	-	100.00%	100.00%	

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18. Investments in associates

18.1 Details of investments in associates as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Country	Reporting date	Industry	Ownership (%)		Book value	
				2019	2018	2019	2018
Bank of Jilin (*1)(*6)	China	December 31, 2019	Bank	14.01	16.98	731,457	694,609
Hana Equity Partners I, L. P	Korea	December 31, 2019	Other financial services	29.97	29.97	671	5,281
Korea Credit Bureau (*1)	Korea	December 31, 2019	Credit investigation and Collection agency	9.00	9.00	6,535	6,485
Darby Hana Infrastructure Fund Management (*1)	Korea	December 31, 2019	Asset Management Company	9.90	9.90	1,782	1,482
CM International financing leases	China	December 31, 2019	Other financial services	25.00	25.00	6,429	202,173
Beijing Langzi Asset Management Co., Ltd. (*1) (*3) (*6)	China	September 30, 2019	Credit financial business	13.57	17.70	45,306	46,258
Somesevit Corporation (*1) (*2)	Korea	December 31, 2019	Construction	1.92	1.92	-	-
Midan City Development Co., Ltd. (*1) (*2) (*3)	Korea	March 31, 2018	Construction	2.17	2.17	-	-
Masan Marine New Town Co., Ltd. (*1) (*5)	Korea	December 31, 2019	Construction	-	10.00	-	101
Company KStartup winwin fund	Korea	December 31, 2019	Investment	23.81	23.80	5,620	6,931
BSK-6 Patent Technology Investment Association	Korea	December 31, 2019	Investment	20.00	20.00	1,993	813
Fidelis Private Equity Fund No.2	Korea	December 31, 2019	Investment	29.63	29.70	3,008	3,005
Koramco Professional Investment Type Real Estate No.73	Korea	December 31, 2019	Investment	25.76	25.76	1,694	1,683
Koramco Professional Investment Type Real Estate No.87	Korea	December 31, 2019	Investment	21.13	21.13	1,415	1,500
KEB Hana – KVIC Unicorn Fund of Funds (*4)	Korea	December 31, 2019	Investment	90.90	90.90	5,669	857
Ourcrowd international invest (*3)	Virgin Islands	September 30, 2019	Investment	22.19	22.19	14,971	14,049
Hana Alternative Energy Infra No.3-1	Korea	December 31, 2019	Investment	50.00	-	35	-
Hana Alternative Energy Infra No.3-2	Korea	December 31, 2019	Investment	50.00	-	712	-
Harvest Private Equity Fund Specializing in Start-Up and Venture Business I	Korea	December 31, 2019	Investment	27.30	-	3,000	-
Bank for investment and Development of Vietnam (BIDV) (*1)	Vietnam	December 31, 2019	Bank	15.00	-	1,272,969	-
PT Sinarmas Hana Finance	Indonesia	December 31, 2019	Financial services	30.00	30.00	3,197	3,118
						<u>₩ 2,106,463</u>	<u>₩ 988,345</u>

(*1) These entities are presented as investments in associates as the Group exercises a significant influence on the investee's Board of Directors.

(*2) The equity method is no longer appropriate because the current balances for the investments are below "0"

(*3) As the financial statements as of December 31, 2019 could not be obtained, the most recent financial statements available from the closing date were used. The effect of significant transactions or events incurred between the end of the reporting period of the associate and that of the Bank was reviewed and reflected.

(*4) As of December 31, 2019, the Group classified the investee as investment in associates as it is a limited partner and thus, cannot exercise control over the investee.

(*5) As of December 31, 2019, Masan Marine New Town Co., Ltd was excluded from the investment in the associate because of disposal of entire stakes.

(*6) As of December 31, 2019, the Group conducted a capital increase allocated to third parties.

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18.2 Condensed consolidated financial statements as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019						
	Assets	Liabilities	Equity (deficit)	Revenue(lose)	Net income (loss)	Comprehensive income (loss)	Dividends received
Bank of Jilin	₩ 60,301,995	₩ 55,164,821	₩ 5,137,174	₩ 6,416,462	₩ 207,496	₩ 204,968	₩ -
Hana First Private Equity Fund	2,253	14	2,239	314	1,903	1,903	-
Korea Credit Bureau Co., Ltd.	96,855	30,289	66,566	91,200	1,480	1,480	135
Darby Hana Infrastructure Fund Management	20,488	2,495	17,993	7,238	3,190	3,190	99
CM International financing leases	3,148,490	2,577,430	571,060	168,690	(101,214)	(102,231)	-
Beijing Langzi Asset Management	379,934	45,318	334,616	34,779	14,257	13,821	1,674
Somesevit Corporation	71,172	119,484	(48,312)	8,992	(1,808)	(1,808)	-
Midan City Development Co., Ltd.	662,631	686,733	(24,102)	-	-	-	-
Company K startup winwin fund	24,126	518	23,608	1,236	672	(1,262)	-
BSK-6 Patent Technology Investment Association	9,965	2	9,963	283	(102)	(102)	-
Fidelis Private Equity Fund No.2	10,155	-	10,155	3,000	2,844	2,844	246
Koramco Professional Investment Type Real Estate No.73	6,389	2	6,387	1	(2)	(2)	-
Koramco Professional Investment Type Real Estate No.87	6,898	80	6,818	1	(2)	(2)	60
KEB Hana-KVIC Unicorn Fund of Funds	6,457	222	6,235	12	(429)	(429)	-
Ourcrowd international invest	68,603	1,136	67,467	(2,803)	(3,420)	1,721	-
Hana Alternative Energy Infra No.3-1	71	-	71	-	-	-	-
Hana Alternative Energy Infra No.3-2	1,398	1	1,397	56	-	-	12
Harvest Private Equity Fund Specializing in Start-Up and Venture Business I	10,877	-	10,877	5	(123)	(123)	-
Bank for investment and Development of Vietnam (BIDV) (*1)	74,505,238	70,616,924	3,888,314	6,059,114	434,111	434,111	-
PT Sinarmas Hana Finance	75,554	65,049	10,505	12,318	(434)	(244)	-

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18.2 Condensed consolidated financial statements as of December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

	2018													
Classification	Assets		Liabilities		Equity (deficit)	Revenue (loss)	Net income (loss)	Comprehensive income (loss)	Dividends received					
Bank of Jilin	₩	56,868,945	₩	52,861,480	₩	4,007,465	₩	1,348,642	₩	186,925	₩	409,668	₩	-
Hana First Private Equity Fund		22,322		4,702		17,620		809		(15,545)		(15,545)		-
Korea Credit Bureau Co., Ltd.		88,797		22,788		66,009		78,018		9,901		9,901		113
Darby Hana Infrastructure Fund Management		17,063		2,099		14,964		5,990		2,531		2,531		79
CM International financing leases		4,493,521		3,684,828		808,693		316,370		8,541		8,541		-
Beijing Langzi Asset Management		509,420		248,063		261,357		39,553		15,847		15,847		1,690
Somesevit Corporation		81,464		127,963		(46,499)		10,765		(649)		(649)		-
Midan City Development Co., Ltd.		662,631		686,733		(24,102)		-		(321)		(321)		-
Masan Marine New Town Co., Ltd.		135,026		134,018		1,008		280		2		2		-
Company K startup winwin fund		29,696		586		29,110		2,467		(131)		854		-
BSK-6 Patent Technology Investment Association		4,067		2		4,065		20		(360)		(360)		-
Fidelis Private Equity Fund No.2		10,123		4		10,119		1,343		1,170		1,170		342
Koramco Professional Investment Type Real Estate No.73		6,437		4		6,433		(167)		(167)		(167)		-
Koramco Professional Investment Type Real Estate No.87		7,100		-		7,100		-		-		-		-
KEB Hana-KVIC Unicorn Fund of Funds		1,104		161		943		4		(158)		(158)		-
Ourcrowd international invest		52,091		1,391		50,700		42		(429)		1,236		-
PT Sinarmas Hana Finance		53,820		43,534		10,286		5,552		657		657		-

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18.3 Changes in the investment in an associate for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Owner Ship (%)	2019									
		Equity method valuation									
		Beginning balance	Acquisition, and others	Dividend	Book value before valuation	Earnings (loss)	Impairment of equity method	Changes in equity	Others	Disposal	Ending balance
Bank of Jilin	14.01	₩ 694,609	₩ -	₩ -	₩ 694,609	₩ 31,859	₩ -	₩ 12,519	₩ -	₩ (7,530)	₩ 731,457
Hana First Private Equity Fund	29.97	5,281	-	-	5,281	548	-	-	-	(5,158)	671
Korea Credit Bureau Co., Ltd.	9.00	6,485	-	(135)	6,350	185	-	-	-	-	6,535
Darby Hana Infrastructure Fund Management	9.90	1,482	-	(99)	1,383	399	-	-	-	-	1,782
CM International financing leases	25.00	202,173	-	-	202,173	(64,223)	(136,336)	4,815	-	-	6,429
Beijing Langzi Asset Management	13.57	46,258	-	(1,674)	44,584	3,407	-	994	-	(3,679)	45,306
Somesevit Corporation	1.92	-	-	-	-	-	-	-	-	-	-
Midan City Development Co., Ltd.	2.17	-	-	-	-	-	-	-	-	-	-
Masan Marine New Town Co., Ltd.	-	101	-	-	101	-	-	-	-	(101)	-
Company K startup winwin fund	23.81	6,931	-	-	6,931	160	-	(461)	-	(1,010)	5,620
BSK-6 Patent Technology Investment Association	20.00	813	1,200	-	2,013	(20)	-	-	-	-	1,993
Fidelis Private Equity Fund No.2	29.63	3,005	-	(246)	2,759	849	-	-	-	(600)	3,008
Koramco Professional Investment Real Estate No.73	25.76	1,683	-	-	1,683	11	-	-	-	-	1,694
Koramco Professional Investment Real Estate No.87	21.13	1,500	-	(60)	1,440	(25)	-	-	-	-	1,415
KEB Hana-KVIC Unicorn Fund of Funds	90.90	857	5,200	-	6,057	(388)	-	-	-	-	5,669
Ourcrowd international invest Co., Ltd.	22.19	14,049	-	-	14,049	-	-	922	-	-	14,971
Hana Alternative Energy Infra No.3-1	50.00	-	35	-	35	-	-	-	-	-	35
Hana Alternative Energy Infra No.3-2	50.00	-	724	(12)	712	-	-	-	-	-	712
Harvest Private Equity Fund Specializing in Start-Up and Venture Business I	27.30	-	3,000	-	3,000	-	-	-	-	-	3,000
Bank for investment and Development of Vietnam (BIDV)	15.00	-	1,272,969	-	1,272,969	-	-	-	-	-	1,272,969
PT Sinarmas Hana Finance	30.00	3,118	-	-	3,118	(176)	-	-	255	-	3,197
		₩ 988,345	₩ 1,283,128	₩ (2,226)	₩ 2,269,247	₩ (27,414)	₩ (136,336)	₩ 18,789	₩ 255	₩ (18,078)	₩ 2,106,463

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18.3 Changes in the investment in an associate for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Classification	Owner ship (%)	2018									
		Equity method valuation									
		Beginning balance	Acquisition, and others	Dividend	Book value before valuation	Earnings (loss)	Impairment of equity method	Changes in equity	Others	Disposal	Ending balance
Bank of Jilin	16.98	₩ 644,252	₩ -	₩ -	₩ 644,252	₩ 19,522	₩ -	₩ 30,835	₩ -	₩ -	₩ 694,609
Hana First Private Equity Fund	29.97	16,586	-	-	16,586	(4,658)	-	-	-	(6,647)	5,281
Korea Credit Bureau	9.00	5,601	-	(113)	5,488	997	-	-	-	-	6,485
Darby Hana Infrastructure Fund Management	9.90	1,242	-	(79)	1,163	319	-	-	-	-	1,482
CM International financing leases	25.00	201,064	-	-	201,064	2,135	-	(1,026)	-	-	202,173
Beijing Langzi Asset Management	17.70	45,113	-	(1,690)	43,423	4,070	-	(42)	-	(1,193)	46,258
Somesevit Corporation	1.92	-	-	-	-	-	-	-	-	-	-
Midan City Development Co., Ltd.	2.17	-	-	-	-	-	-	-	-	-	-
Masan Marine New Town Co., Ltd.	10.00	101	-	-	101	-	-	-	-	-	101
Company K startup winwin fund	23.80	9,643	-	-	9,643	(756)	-	234	-	(2,190)	6,931
Darby Latin American Private Debt Fund III	-	6,770	-	-	6,770	(103)	-	-	-	(6,667)	-
Darby Latin American Private Debt Fund IIIA	-	1,045	-	-	1,045	4	-	-	-	(1,049)	-
BSK-6 Patent Technology Investment Association	20.00	885	-	-	885	(72)	-	-	-	-	813
Fidelis Private Equity Fund No.2	29.70	-	3,000	(342)	2,658	347	-	-	-	-	3,005
Koramco Professional Investment Type Real Estate No. 73	25.76	-	1,700	-	1,700	(17)	-	-	-	-	1,683
Koramco Professional Investment Type Real Estate No. 87	21.13	-	1,500	-	1,500	-	-	-	-	-	1,500
KEB Hana – KVIC Unicorn Fund of Funds	90.90	-	1,000	-	1,000	(143)	-	-	-	-	857
Ourcrowd international invest Co., Ltd.	22.19	-	14,049	-	14,049	-	-	-	-	-	14,049
PT Sinarmas Hana Finance	30.00	3,253	-	-	3,253	41	-	-	(176)	-	3,118
		₩ 935,555	₩ 21,249	₩ (2,224)	₩ 954,580	₩ 21,686	₩ -	₩ 30,001	₩ (176)	₩ (17,746)	₩ 988,345

18.4 The Group discontinued recognizing its losses in shares since the balance of investments in associates was “0” and the losses which are accumulated for the year ended December 31, 2019 and before for the year ended December 31, 2018 are as follows (Korean won in millions):

Company	2019	
	Amount for the current year	Accumulated amount before the current year
Someesvit Corporation	₩ (35)	₩ (928)
Midan City Development Co., Ltd.	-	(523)
	₩ (35)	₩ (1,451)

Company	2018	
	Amount for the current year	Accumulated amount before the current year
Someesvit Corporation	₩ (13)	₩ (893)
Midan City Development Co., Ltd.	(103)	(523)
	₩ (116)	₩ (1,416)

18.5 Details of adjustments from net assets of associates to carrying values of shares thereof as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019				
	Net assets	Ownership (%)	Share of net assets	Goodwill, etc..	Carrying value
Bank of Jilin	₩ 5,137,174	14.01	₩ 719,578	₩ 11,879	₩ 731,457
Hana First Private Equity Fund	2,239	29.97	671	-	671
Korea Credit Bureau Co., Ltd.	66,566	9.00	5,991	544	6,535
Darby Hana Infrastructure Fund Management	17,993	9.90	1,782	-	1,782
CM International financing leases	571,060	25.00	142,765	(136,336)	6,429
Beijing Langzi Asset Management Co., Ltd.	334,616	13.57	45,407	(101)	45,306
Somesevit Corporation	(48,312)	1.92	(928)	928	-
Midan City Development Co., Ltd.	(24,102)	2.17	(523)	523	-
Company K startup winwin fund	23,608	23.81	5,620	-	5,620
BSK-6 Patent Technology Investment Association	9,963	20.00	1,993	-	1,993
Fidelis Private Equity Fund No.2	10,155	29.63	3,008	-	3,008
Koramco Professional Investment Type Real Estate No.73	6,387	25.76	1,645	49	1,694
Koramco Professional Investment Type Real Estate No.87	6,818	21.13	1,441	(26)	1,415
KEB Hana-KVIC Unicorn Fund of Funds	6,235	90.90	5,669	-	5,669
Ourcrowd international invest Co., Ltd.	67,467	22.19	14,971	-	14,971
Hana Alternative Energy Infra No.3-1	71	50.00	35	-	35
Hana Alternative Energy Infra No.3-2	1,397	50.00	695	17	712
Harvest Private Equity Fund Specializing in Start-Up and Venture Business I	10,877	27.30	2,969	31	3,000
Bank for investment and Development of Vietnam (BIDV)	3,888,314	15.00	583,247	689,722	1,272,969
PT Sinarmas Hana Finance	10,505	30.00	3,152	45	3,197

18.5 Details of adjustments from net assets of associates to carrying values of shares thereof as of December 31, 2019 and 2018 are as follows (Korean won in millions) (cont' d)

Classification	2018				
	Net assets	Ownership (%)	Share of net assets	Goodwill, etc.	Carrying value
Bank of Jilin	₩ 4,007,465	16.98	₩ 680,483	₩ 14,126	₩ 694,609
Hana First Private Equity Fund	17,620	29.97	5,281	-	5,281
Korea Credit Bureau	66,009	9.00	5,941	544	6,485
Darby Hana Infrastructure Fund Management	14,964	9.90	1,482	-	1,482
CM International financing leases	808,693	25.00	202,173	-	202,173
Beijing Langzi Asset Management	261,357	17.70	46,258	-	46,258
Somesevit Corporation	(46,499)	1.92	(893)	893	-
Midan City Development Co., Ltd.	(24,102)	2.17	(523)	523	-
Masan Marine New Town Co., Ltd.	1,008	10.00	101	-	101
Company K startup winwin fund	29,110	23.80	6,931	-	6,931
BSK-6 Patent Technology Investment Association	4,065	20.00	813	-	813
Fidelis Private Equity Fund No.2	10,119	29.70	3,005	-	3,005
Koramco Professional Investment Type Real Estate No.73	6,433	25.76	1,657	26	1,683
Koramco Professional Investment Type Real Estate No.87	7,100	21.13	1,500	-	1,500
KEB Hana-KVIC Unicorn Fund of Funds	943	90.90	857	-	857
Ourcrowd international invest Co., Ltd.	50,700	22.19	11,250	2,799	14,049
PT Sinarmas Hana Finance	10,286	30.00	3,086	32	3,118

18.6 On July 22, 2019, the Group signed the stock acquisition agreement with the Vietnamese commercial bank, Joint Stock Commercial Bank for Investment and Development of Vietnam (the "BIDV") by participating in capital increase allocated to third parties as follows:

Number of shares acquired: 603,302,706

Amount of stock acquired: VND 20,295,103,029,840

Ownership percentage: 15% (Under the agreement above, In December 2019, one representative nominated by the consolidated company was appointed as a member of the BIDV Board.

The Financial Services Commission (FSC) notified on September 17 that the foreign direct investment report has been processed. On October 2, the Bank applied for approval on the transaction and on October 31 it obtained final approval on the stock acquisition transaction from the State Bank of Vietnam (SBV).

On November 6, 2019, the acquisition process was completed upon final payment of the stocks acquired.

18.7 Details of investment shares in marketable associates as of December 31, 2019 are as follows. (Korean won in millions, except for price per share)

Classification	Market Price	Price per share (In Korean won)
Bank for Investment and Development of Vietnam (BIDV)	₩ 1,392,121	₩ 2,308

19. Property and equipment

19.1 Property and equipment as of December 31, 2019 and 2018 consist of the following (Korean won in millions):

Classification	2019				
	Acquisition cost	Accumulated depreciation	Government grants	Accumulated Impairment-loss	Book value
Land	₩ 836,872	₩ -	₩ -	₩ (6,454)	₩ 830,418
Buildings	852,268	(266,345)	-	(6,142)	579,781
Leasehold improvements	350,593	(279,104)	-	-	71,489
Equipment and vehicles	788,048	(655,241)	(152)	-	132,655
Construction in progress	6,472	-	-	-	6,472
Others	67,957	-	-	-	67,957
Right-of-use asset-real estate	731,366	(206,439)	(368)	-	524,559
Right-of-use asset-equipment and vehicles	19,815	(6,137)	-	-	13,678
Right-of-use asset-others	367	(107)	-	-	260
	<u>₩ 3,653,758</u>	<u>₩ (1,413,373)</u>	<u>₩ (520)</u>	<u>₩ (12,596)</u>	<u>₩ 2,227,269</u>

Classification	2018			
	Acquisition cost	Accumulated depreciation	Government grants	Book value
Land	₩ 925,512	₩ -	₩ -	₩ 925,512
Buildings	885,197	(259,954)	-	625,243
Leasehold improvements	377,835	(295,994)	-	81,841
Equipment and vehicles	872,545	(742,486)	-	130,059
Construction in progress	29,393	-	-	29,393
Others	69,574	-	-	69,574
	<u>₩ 3,160,056</u>	<u>₩ (1,298,434)</u>	<u>₩ -</u>	<u>₩ 1,861,622</u>

19.2 Changes in property and equipment for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

	2019															
Classification	Beginning balance		Additions		Disposal		Depreciation		Transfer out		Impairment loss		Others		Ending balance	
Land	₩	925,512	₩	-	₩	(11)	₩	-	₩	(88,731)	₩	(6,454)	₩	102	₩	830,418
Buildings		625,243		17,095		(123)		(27,104)		(29,169)		(6,165)		4		579,781
Leasehold improvements		62,534		27,891		(1,501)		(22,938)		4,554		-		949		71,489
Equipment and vehicles		130,059		68,283		(702)		(65,494)		868		-		(359)		132,655
Construction in progress		29,393		14,400		(349)		-		(36,973)		-		1		6,472
Others		69,574		-		(1,617)		-		-		-		-		67,957
Right-of-use asset- real estate		579,698		251,789		(101,698)		(211,398)		-		-		6,168		524,559
Right-of-use asset- equipment and vehicles		16,803		4,810		(1,121)		(6,995)		-		-		181		13,678
Right-of-use asset- others		339		-		-		(106)		-		-		27		260
	₩	2,439,155	₩	384,268	₩	(107,122)	₩	(334,035)	₩	(149,451)	₩	(12,619)	₩	7,073	₩	2,227,269

	2018													
Classification	Beginning balance		Additions		Disposal		Depreciation		Transfer out		Others		Ending balance	
Land	₩	854,024	₩	1,477	₩	(26,264)	₩	-	₩	96,233	₩	42	₩	925,512
Buildings		476,807		20,310		(6,431)		(21,272)		153,669		2,160		625,243
Leasehold improvements		75,233		36,613		(3,781)		(26,702)		20		458		81,841
Equipment and vehicles		143,924		62,788		(4,467)		(70,299)		16		(1,903)		130,059
Construction in progress		15,555		16,165		-		-		(2,266)		(61)		29,393
Others		69,809		-		(235)		-		-		-		69,574
	₩	1,635,352	₩	137,353	₩	(41,178)	₩	(118,273)	₩	247,672	₩	696	₩	1,861,622

20. Investment property

20.1 Details of investment property as of December 31, 2019 and 2018 are as follows (Korean won in millions):

	2019				
Classification	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Government grant	Book value
Land	₩ 414,393	₩ -	₩ (5,405)	₩ -	₩ 408,988
Buildings	315,889	(115,577)	(2,839)	(2,424)	195,049
	<u>₩ 730,282</u>	<u>₩ (115,577)</u>	<u>₩ (8,244)</u>	<u>(2,424)</u>	<u>₩ 604,037</u>

	2018				
Classification	Acquisition cost	Accumulated depreciation	Accumulated impairment loss		Book value
Land	₩ 359,470	₩ -	₩ (2)		₩ 359,468
Buildings	264,289	(95,444)	(645)		168,200
	<u>₩ 623,759</u>	<u>₩ (95,444)</u>	<u>₩ (647)</u>		<u>₩ 527,668</u>

20.2 Changes in investment property for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019						Ending balance
	Beginning balance	Disposition	Depreciation	Transfer (*)	Impairment Loss	Others	
Land	₩ 359,468	₩ (34,684)	₩ -	₩ 89,608	₩ (5,404)	₩ -	₩ 408,988
Buildings	168,200	(19,153)	(8,232)	59,843	(2,809)	(2,800)	195,049
	<u>₩ 527,668</u>	<u>₩ (53,837)</u>	<u>₩ (8,232)</u>	<u>₩ 149,451</u>	<u>₩ (8,213)</u>	<u>₩ (2,800)</u>	<u>₩ 604,037</u>

(*) The amount represents the change in the carrying amount of investment properties held by the Group due to the change in the ratio of lease occupancy.

Classification	2018				
	Beginning balance	Depreciation	Transfer (*)	Ending balance	
Land	₩ 455,701	₩ -	₩ (96,233)	₩ 359,468	
Buildings	330,453	(10,814)	(151,439)	168,200	
	₩ 786,154	₩ (10,814)	₩ (247,672)	₩ 527,668	

(*) The amount represents the change in the carrying amount of investment properties held by the Group due to the change in the ratio of lease occupancy.

20.3 Details of investment property, fair value and valuation technique as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Fair value (*)		Valuation method	Input variables
	2019	2018		
Land and Buildings	₩ 584,887	₩ 482,390	Appraised value of land Estimates based on cost method	Appraised value of land Refinancing cost

(*) The fair value of investment property is classified as Level 3 of fair value hierarchy.

20.4 Rental income and operating expenses arising from the Group's investment properties for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019		2018	
Rental income	₩	14,195		16,978
Operating cost directly related to Investment property that generate rental income		577		604

21. Intangible assets

21.1 Details of Intangible assets as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	Acquisition cost	Accumulated amortization	Accumulated impairment loss	Book value
Goodwill	₩ 892	₩ -	₩ -	₩ 892
Industrial proprietary rights	1,771	(1,097)	-	674
Core deposits	4,810	(1,813)	-	2,997
Software	215,936	(153,422)	-	62,514
Systems development costs	820,521	(698,565)	-	121,956
Memberships	20,879	-	(2,830)	18,049
Others	211,670	(116,418)	(29)	95,223
	₩ 1,276,479	₩ (971,315)	₩ (2,859)	₩ 302,305

Classification	2018			
	Acquisition cost	Accumulated amortization	Accumulated impairment loss	Book value
Goodwill	₩ 892	₩ -	₩ -	₩ 892
Industrial proprietary rights	1,604	(825)	-	779
Core deposits	4,980	(1,545)	-	3,435
Software	190,460	(133,848)	-	56,612
Systems development costs	775,420	(653,243)	-	122,177
Memberships	21,555	-	(3,198)	18,357
Others	183,117	(99,478)	(29)	83,610
	₩ 1,178,028	₩ (888,939)	₩ (3,227)	₩ 285,862

21.2 Changes in the carrying amount of intangible assets for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

	2019						
Classification	Beginning balance	Acquisition	Disposal	Amortization	Impairment loss	Others	Ending balance
Goodwill	₩ 892	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 892
Industrial proprietary rights	779	166	-	(271)	-	-	674
Core deposits	3,435	-	-	(671)	-	233	2,997
Software	56,612	26,223	-	(20,494)	-	173	62,514
Systems development costs	122,177	46,230	-	(47,603)	-	1,152	121,956
Memberships	18,357	1,037	(913)	-	(405)	(27)	18,049
Others	83,610	30,914	(19)	(19,445)	-	163	95,223
	<u>₩ 285,862</u>	<u>₩ 104,570</u>	<u>₩ (932)</u>	<u>₩ (88,484)</u>	<u>₩ (405)</u>	<u>₩ 1,694</u>	<u>₩ 302,305</u>

	2018						
Classification	Beginning balance	Acquisition	Disposal	Amortization		Others	Ending balance
Goodwill	₩ 892	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 892
Industrial proprietary rights	667	344	-	(232)		-	779
Core deposits	3,435	-	-	-	-	-	3,435
Software	51,786	22,130	(186)	(17,134)		16	56,612
Systems development costs	121,182	42,073	(178)	(40,973)		73	122,177
Memberships	18,917	-	(533)	-		(27)	18,357
Others	45,798	55,212	-	(16,228)		(1,172)	83,610
	<u>₩ 242,677</u>	<u>₩ 119,759</u>	<u>₩ (897)</u>	<u>₩ (74,567)</u>		<u>₩ (1,110)</u>	<u>₩ 285,862</u>

22. Non-current assets held for sale

22.1 Details of non-current assets held-for-sale as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Acquisition cost (*)	₩ 24,495	₩ 466,117
Accumulated impairment loss	-	-
Book value	<u>₩ 24,495</u>	<u>₩ 466,117</u>
Net fair value	₩ 24,495	₩ 709,802

(*) Acquisition cost is presented as net of accumulated depreciation before classification as non-current assets held-for-sale.

Non-current assets held-for-sale are composed of 8 collaterals acquired for the purpose of repayment of loans of which the sale is currently in progress as of December 31, 2019. Non-current assets held-for-sale as of December 31, 2018 include a head office building located in Myeong dong, of which the sale was completed on August 30, 2019.

22.2 Details of valuation techniques and inputs for measuring fair values of non-current assets held for sale as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Fair value (*)		Valuation method	Input variables
	2019	2018		
Land and Buildings	₩ 24,495	₩ 709,802	Estimates based on cost method	Appraised value of land, Refinancing cost

The fair value of non-current assets held for sale located in Myeong-dong, which the Bank used for head office, is ₩628,357 million as of December 31, 2019.

Independent valuer who has recently assessed similar properties in the area of the property being assessed performed the valuation of the non-current real estate held for sale, and it was classified as Level 3 according to fair value hierarchy

23. Other assets and merchant banking account assets

23.1 Details of other assets as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Guarantee deposits paid	₩ 846,784	₩ 838,445
Accounts receivable	10,945,884	6,101,995
Accrued income	1,038,202	975,227
Prepaid expenses	100,505	119,206
Suspense payments	56,361	43,072
Expenditures	2,608	1,594
Deposit money to court	6,794	9,415
Domestic exchange settlement debit	1,630,120	3,221,584
Other miscellaneous assets	61,252	39,739
Allowance for doubtful accounts for other assets	(7,947)	(9,653)
	₩ 14,680,563	₩ 11,340,624

23.2 Changes in the allowance for doubtful accounts for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Beginning balance	₩ 9,654	₩ 10,883
Write-offs	(1,923)	(1,514)
Provision(reversal) of allowance of doubtful accounts	817	276
Sale of non-performing loans etc.	(255)	1,586
Interest income on impaired assets	(30)	(140)
Collection of loans written-off in the prior year	6,775	(16)
Exchange rate fluctuation and others	(7,091)	(1,421)
Ending balance	₩ 7,947	₩ 9,654

23.3 Details of merchant banking account assets as of December 31, 2019 and December 2018 are as follows (Korean won in millions):

Classification	2019	2018
On-balance-sheet items:		
Merchant banking account-loans at FVTPL	₩ 47,837	₩ 3,995
Merchant banking account-debt securities at FVTPL	2,443,148	1,938,409
CMA assets:		
Debt securities at FVTPL	764,121	997,868
	₩ 3,255,106	₩ 2,940,272
Off-balance-sheet items:		
Commitments	₩ 955,000	₩ 1,199,000

24. Deposits

24.1 Deposit liabilities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Demand deposits		
Demand deposits in Korean won	₩ 10,168,382	₩ 9,975,626
Demand deposits in foreign currency	22,476,102	19,653,200
	32,644,484	29,628,826
Time and savings deposits		
Time and savings deposits in Korean won	218,062,222	196,769,035
Time and savings deposits in foreign currency	17,409,275	14,322,469
	235,471,497	211,091,504
Certificate of deposits	2,862,976	6,034,529
	₩ 270,978,957	₩ 246,754,859

24.2 Details of each customer of the deposits liabilities as of December 31, 2019 and 2018 are as follows. (Korean won in millions):

Classification	2019	2018
Personal	₩ 91,885,546	₩ 85,715,378
Corporates	92,095,213	78,362,146
Other banks	18,107,843	15,248,359
Public sectors	7,998,185	7,356,481
Other financial institutions	35,253,606	36,823,922
Government	7,351,665	6,897,317
Non-profit corporations	10,805,820	9,961,789
Foreign corporations	2,198,851	1,807,199
Others	5,282,228	4,582,268
	₩ 270,978,957	₩ 246,754,859

25. Financial liabilities at fair value through profit or loss

25.1 As of December 31, 2019 and 2018, details of financial liabilities at FVTPL are as follows (Korean won in millions):

Classification	2019	2018
Securities borrowed	₩ 21,548	₩ -
Derivative liabilities held-for-trading	3,685,693	3,089,884
	₩ 3,707,241	₩ 3,089,884

25.2 As of December 31, 2019 and 2018, details of financial liabilities designated as at FVTPL are as follows (Korean won in millions):

Classification	2019	2018
Deposits liabilities	₩ 537,253	₩ 500,692

Financial liabilities are measured at FVTPL in order to eliminate or significantly reduce a measurement or recognition inconsistency.

25.3 Difference between the book value and maturity amount of the financial liabilities designated as measured at fair value through profit or loss as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Book value	537,253	500,692
Redemption amount at maturity	540,000	510,000
Difference	₩ (2,747)	₩ (9,308)

26. Borrowings

Borrowings as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Lender	Annual interest rate (%)		2019		2018
Borrowings in Korean won						
BOK borrowings	BOK	0.50~0.75	₩	1,610,197	₩	1,315,139
Government borrowings	On-lending borrowings	0.50~2.35		1,502,220		1,376,437
Other borrowings	Korea Energy Management Corporation, etc.	0.00~3.70		2,558,901		2,379,337
				5,671,318		5,070,913
Borrowings denominated in foreign currencies						
Bank overdrafts	Foreign banks, etc.	3.00~8.00		232,624		308,313
Other borrowings	Shinhan bank, etc.	-0.35~12.50		7,550,107		8,773,902
				7,782,731		9,082,215
Call money						
Call money in foreign currencies	Woori Bank, etc.	-0.05~2.88		768,282		629,350
Bonds sold under repurchase agreements						
Bonds sold under repurchase agreements in Korean won	SUGAYAYOSHIKO, etc.	0.00		220		220
Bonds sold under repurchase agreements in foreign currencies	BBVA, etc.	2.51~2.66		522,336		449,708
				522,556		449,928
Others						
Bills sold	General customers	0.00~1.60		33,640		48,564
			₩	14,778,527	₩	15,280,970

27. Bonds

Bonds as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Lenders	Annual interest rate (%)		2019		2018
Bonds in Korean won						
Bonds	Institutions	1.30~2.38	₩	11,921,500	₩	14,410,000
Subordinated bonds	Institutions, etc.	2.40~7.75		5,291,980		4,780,500
Net gain (loss) on fair value hedges (current year)				(3,356)		102
Less: present value discount				(7,344)		(23,916)
				17,202,780		19,166,686
Bonds in foreign currencies						
Bonds	Institutions	2.21~3.11		5,254,747		4,551,084
Subordinated bonds	Institutions, etc.	3.63~9.95		1,028,942		991,019
Net gain (loss) on fair value hedges (current year)				78,297		(14,576)
Net gain (loss) on fair value hedges (before year)				(20,828)		(13,996)
Less: present value discount				(13,818)		(11,604)
				6,327,340		5,501,927
			₩	23,530,120	₩	24,668,613

28. Net defined benefit liabilities

28.1 Details of net defined benefit liabilities

Details of net defined benefit liabilities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification		2019		2018
Present value of defined benefit obligation	₩	1,987,690	₩	1,650,155
Fair value of plan assets		(1,661,791)		(1,511,664)
Net defined benefit liabilities	₩	325,899	₩	138,491

28.2 Defined benefit obligations

28.2.1 Changes in present value of defined benefit obligation

Changes in present value of defined benefit obligation for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Beginning balance	₩ 1,650,155	₩ 1,358,685
Current service cost	154,750	127,421
Past service cost	7,617	80,216
Interest cost	36,895	35,815
Remeasurements	222,805	118,192
Benefits paid	(83,429)	(66,681)
Changes due to transfers between affiliates	705	(2,197)
Others	(1,808)	(1,296)
Ending Balance	₩ 1,987,690	₩ 1,650,155

28.2.2 Total costs recognized in accordance to defined benefit plans

Total costs incurred in relation to defined benefit pension plans for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Current service cost	₩ 154,750	₩ 127,421
Past service cost	7,617	80,216
Interest cost	36,895	35,815
Interest income on plan assets	(31,234)	(34,895)
Actuarial gain	-	(718)
	₩ 168,028	₩ 207,839

28.2.3 Weighted average duration of defined benefit obligation as of December 31, 2019 and 2018 is 10.08 years and 10.17 years, respectively

28.3 Actuarial assumptions

28.3.1 Principal assumptions for actuarial valuation method as of December 31, 2019 and 2018 are as follows:

Classification	2019	
	Rate (%)	Content
Demographic assumptions		
Mortality rate	0.003~0.063	Korea Insurance Development Institute
Retirement rate	4.30	-
Financial assumptions		
Salary increasing rate	6.00	Average of past 5 years
Discounting rate	2.00	Return rate of AAA corporate bond
Classification	2018	
	Rate (%)	Content
Demographic assumptions		
Mortality rate	0.005~0.073	Korea Insurance Development Institute
Retirement rate	4.10	-
Financial assumptions		
Salary increasing rate	5.40	Average of past 5 years
Discounting rate	2.30	Return rate of AAA corporate bond

28.3.2 Present values of defined benefit obligations based on the changes in the principal actuarial assumptions as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019		
	Present value of defined benefit obligations	Increase by 1%	Decrease by 1%
Discounting rate	₩ 1,987,690	₩ 1,761,481	₩ 2,181,661
Salary increasing rate	1,987,690	2,178,574	1,760,248
Classification	2018		
	Present value of defined benefit obligations	Increase by 1%	Decrease by 1%
Discounting rate	₩ 1,650,155	₩ 1,473,930	₩ 1,798,091
Salary increasing rate	1,650,155	1,791,547	1,476,172

28.4 Plan assets

28.4.1 Changes in the fair value of plan assets plans for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Beginning balance	₩ 1,511,664	₩ 1,398,060
Employer contributions	202,308	154,218
Expected return on plan assets	31,234	34,895
Remeasurement	(3,672)	(12,201)
Benefits paid	(79,402)	(62,982)
Changes due to transfers between affiliates	892	(328)
Others	(1,233)	2
Ending Balance	₩ 1,661,791	₩ 1,511,664

28.4.2 Details of plan assets

Details of plan assets as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019		
	Active market existing	Active market not existing	Total
Time deposits	₩ -	₩ 1,603,563	₩ 1,603,563
Others	-	58,228	58,228
	₩ -	₩ 1,661,791	₩ 1,661,791

Classification	2018		
	Active market existing	Active market not existing	Total
Time deposits	₩ -	₩ 1,423,964	₩ 1,423,964
Others	-	87,700	87,700
	₩ -	₩ 1,511,664	₩ 1,511,664

28.4.3 The Group expects to contribute ₩155,568 million in 2019, in relation to the defined benefit plan.

28.5 Remeasurement of net defined benefit liabilities

Remeasurement of net defined benefit liabilities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Actuarial gains and losses		
Effects on changing financial assumptions	₩ (112,771)	₩ (72,370)
Effects on changing demographic assumptions	(30,219)	(27,714)
Others	(79,717)	(18,108)
	<u>(222,707)</u>	<u>(118,192)</u>
The return on plan assets		
The actual return on plan assets	30,319	25,110
The amount included in net interest of net defined benefit liabilities	(33,991)	(37,311)
	<u>(3,672)</u>	<u>(12,201)</u>
	<u>₩ (226,379)</u>	<u>₩ (130,393)</u>

29. Contingent liabilities, agreements, and provisions

29.1 Details of provisions as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Provision for payment guarantees:		
Financial guarantee contracts (*)	₩ 184	₩ 260
Non-financial guarantee contracts	46,479	66,720
Bills endorsed	14	75
	<u>46,677</u>	<u>67,055</u>
Allowances for unused commitments	58,462	59,690
Other allowances:		
Provision for restoration	74,149	64,211
Provision for lawsuits	50,549	6,868
Others	221,380	37,363
	<u>346,078</u>	<u>108,442</u>
	<u>₩ 451,217</u>	<u>₩ 235,187</u>

(*) The Group recognizes the amount exceeding the unamortized amount of the initial fair value at subsequent measurement of the financial guarantee contracts as provisions for payment guarantees. The Group recognizes the unamortized amount as financial guarantee contract liabilities in the amount of ₩17,020 million and ₩13,603 million as of December 31, 2019 and 2018, respectively.

29.2 Changes in unused commitments for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019				
	Unused commitments			Total	
	12 month expected credit loss	Lifetime expected credit losses			
		Non-credit- impaired loan	Credit-impaired loan		
Beginning balance	₩ 27,622	₩ 18,824	₩ 13,244	₩ 59,690	
Transfer to 12-month expected credit loss	879	(804)	(75)	-	
Transfer to non-credit- impaired loan	(675)	4,014	(3,339)	-	
Transfer to credit- impaired loan	(7)	(3)	10	-	
Provision (reversal of)	4,617	(2,786)	(3,210)	(1,379)	
Change in exchange rates	147	4	-	151	
Ending balance	₩ 32,583	₩ 19,249	₩ 6,630	₩ 58,462	
Classification	2018				
	Unused commitments			Total	
	12 month expected credit loss	Lifetime expected credit losses			
		Non-credit- impaired loan	Credit-impaired loan		
Beginning balance	₩ 28,883	₩ 20,000	₩ 15,703	₩ 64,586	
Transfer to 12-month expected credit loss	1,602	(1,589)	(13)	-	
Transfer to non-credit- impaired loan	(942)	5,316	(4,374)	-	
Transfer to credit- impaired loan	(15)	(10)	25	-	
Provision (reversal of)	(1,922)	(4,881)	1,903	(4,900)	
Changes in exchange rates	16	(12)	-	4	
Ending balance	₩ 27,622	₩ 18,824	₩ 13,244	₩ 59,690	

29.3 Changes in provision for financial guarantee contracts for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019			
	Financial acceptances and guarantees			Total
	12 month expected credit loss	Lifetime expected credit losses		
		Non-credit- impaired loan	Credit-impaired loan	
Beginning balance	₩ 237	₩ 23	₩ -	₩ 260
Transfer to 12-month expected credit loss	5	(5)	-	-
Transfer to non-credit- impaired loan	(4)	4	-	-
Transfer to credit- impaired loan	-	-	-	-
Reversal of provisions	(80)	(6)	-	(86)
Change in exchange rates	9	1	-	10
Ending balance	₩ 167	₩ 17	₩ -	₩ 184

Classification	2018				
	Financial acceptances and guarantees				Total
	12 month expected credit loss	Lifetime expected credit losses			
		Non-credit- impaired loan	Credit-impaired loan		
Beginning balance	₩ 408	₩ 69	₩ -	₩ 477	
Transfer to 12-month expected credit loss	2	(2)	-	-	
Transfer to non-credit- impaired loan	(9)	9	-	-	
Transfer to credit- impaired loan	-	-	-	-	
Provision (reversal of)	(188)	(56)	-	(244)	
Change in exchange rates	24	3	-	27	
Ending balance	₩ 237	₩ 23	₩ -	₩ 260	

29.4 Changes in other provisions for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					Ending balance
	Beginning balance	Provision (reversal of)	Used	Others		
Non-financial payment guarantees	₩ 66,795	₩ (22,234)	₩ -	₩ 1,932	₩	46,493
Other allowance:						
Provision for restoration	64,211	284	(2,080)	11,734		74,149
Provision for lawsuits	6,868	43,125	-	556		50,549
Others	37,363	184,357	(618)	278		221,380
	108,442	227,766	(2,698)	12,568		346,078
	₩ 175,237	₩ 205,532	₩ (2,698)	₩ 14,500	₩	392,571
Classification	2018					Ending balance
	Beginning balance	Provision (reversal of)	Used	Others		
Non-financial acceptances and guarantees	₩ 79,595	₩ (14,941)	₩ -	₩ 2,141	₩	66,795
Other allowance:						
Provision for restoration	55,071	6,103	(3,220)	6,257		64,211
Provision for lawsuits	69,110	(62,263)	-	21		6,868
Others	18,559	26,285	(8,604)	1,123		37,363
	142,740	(29,875)	(11,824)	7,401		108,442
	₩ 222,335	₩ (44,816)	₩ (11,824)	₩ 9,542	₩	175,237

29.5 Details of financial and payment guarantees as of December 31, 2019 and 2018 are as follows
(Korean won in millions):

Classification	2019	2018
Financial guarantee contracts in Korean won:		
Payment guarantees for bonds issuance	₩ 48,500	-
Payment guarantees for collateral for loans	96,622	₩ 97,079
Payment guarantees for purchasing loans	262,892	328,152
	<u>408,014</u>	<u>425,231</u>
Financial payment guarantees in foreign currencies:		
Local financial payment guarantees	-	76,462
Confirmed payment guarantees in Korean won	1,532,188	1,578,011
Confirmed payment guarantees in foreign currencies:		
Acquisition of letter of credit	1,499,597	924,390
Acceptance on letter of guarantees	94,087	106,636
Others	9,266,922	9,108,738
	<u>10,860,606</u>	<u>10,139,764</u>
Contingent payment guarantees:		
Letters of credit	3,683,083	3,495,006
Others	731,864	642,324
	<u>4,414,947</u>	<u>4,137,330</u>
Bills endorsed	12,254	24,878
	<u>₩ 17,228,009</u>	<u>₩ 16,381,676</u>

29.6 Commitments

Details of unused commitments as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Commitments on loans in Korean won	₩ 54,122,765	₩ 56,868,640
Commitments on loans in foreign currencies	25,556,946	21,342,457
Commitments on credit lines on asset-backed securities	661,352	881,283
Commitments on purchase of securities	7,522,652	1,859,348
Commitments on discounted notes from Merchant Banking	955,000	1,199,000
	₩ 88,818,715	₩ 82,150,728

29.7 Lawsuits

As of December 31, 2019, the Group is involved in 429 lawsuits as a plaintiff and 153 lawsuits as a defendant. The aggregate amounts of claims as plaintiff and defendant are ₩314,861 million and ₩150,495 million, respectively. The Group's major lawsuits in progress as a defendant are summarized as follows (Korean won in millions):

Plaintiff	Amount	Status of lawsuit		Content
		First trial	On appeal	
F*****Bankruptcy administrator	₩ 38,894	Win	In-progress	Return of an illicit gain
**** Securities Co., Ltd.	37,136	In-progress	-	Compensation for damages
**** Investments Co., Ltd.	16,798	In-progress	-	Compensation for damages

30. Other liabilities and merchant banking account liabilities

30.1 Details of other liabilities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Accounts payable from trust accounts	₩ 5,570,526	₩ 5,984,610
Foreign exchanges settlement credits	432,992	494,080
Domestic exchange settlement credits	3,624,430	3,719,241
Accounts payables	11,551,207	6,500,410
Accrued expenses	2,003,744	1,995,654
Unearned revenue	62,610	67,544
Deferred revenue	71	337
Deposits for letter of guarantees and others	618,731	332,626
Suspense payables	76,171	268,626
Taxes withheld	85,806	73,684
Security subscriptions	41,519	207,312
Accounts for agency businesses	367,060	269,884
Liability incurred by agency relationship	2,021,069	2,248,377
Lease liabilities	557,025	-
Financial guarantee contracts	17,020	13,603
Other liabilities	11,222	17,247
	₩ 27,041,203	₩ 22,193,235

30.2 Details of merchant banking account liabilities as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Merchant banking account deposits	₩ 2,088,241	₩ 2,338,924
Other Merchant banking account liabilities (*)	276	459
	₩ 2,088,517	₩ 2,339,383

(*) Including accrued expenses

30.3 Details of lease liabilities as of December 31, 2019 are as follows (Korean won in millions):

Classification	Par value	Present value discount	Book value
Real estate for business purpose	₩ 577,118	₩ (34,196)	₩ 542,922
Equipment and vehicles	14,174	(333)	13,841
Other assets	269	(7)	262
	₩ 591,561	₩ (34,536)	₩ 557,025

30.4 Changes in lease liabilities for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	Beginning book value	Increase	Amortization	Paid (*)	Others	Ending book value
Real estate for business purpose	₩ 529,141	₩ 215,272	₩ 10,419	₩ (218,551)	₩ 6,641	₩ 542,922
Equipment and vehicles	16,803	4,810	311	(8,242)	159	13,841
Other assets	339	-	7	-	(84)	262
	₩ 546,283	₩ 220,082	₩ 10,737	₩ (226,793)	₩ 6,716	₩ 557,025

(*) Total cash outflows related to lease liabilities as of December 31, 2019 is ₩226,668 million.

30.5 Details of contractual cash flows before discounting the lease liabilities by remaining maturity as of December 31, 2019 are as follows (Korean won in millions):

Classification	Less than 1 month	1-3 months	3-6 month	6 months-1 year	1 year- 5 years	More than 5 years	Total
Real estate for business purpose	₩ 16,552	₩ 32,772	₩ 46,906	₩ 88,885	₩ 256,622	₩ 135,381	₩ 577,118
Equipment and vehicles	577	1,136	1,649	3,034	7,358	420	14,174
Other assets	-	-	-	-	269	-	269
	₩ 17,129	₩ 33,908	₩ 48,555	₩ 91,919	₩ 264,249	₩ 135,801	₩ 591,561

31. Capital stock and other paid-in capital

31.1 Capital stock as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Number of shares authorized	2,000,000,000	2,000,000,000
Par value per share (In Korean won)	₩ 5,000	₩ 5,000
Number of shares issued and outstanding	1,071,915,717	1,071,915,717
Common stock	₩ 5,359,578	₩ 5,359,578

31.2 Other paid-in capital as of December 31, 2019 and 2018 are as follows (Korea won in millions):

Classification	2019	2018
Capital surplus (*1)	₩ 9,653,546	₩ 9,670,357
Hybrid securities (*2)	179,737	179,737
Capital adjustments		
Stock option	(5,470)	(9,638)
Others	(32,083)	(32,257)
	(37,553)	(41,895)
	₩ 9,795,730	₩ 9,808,199

(*1) The amount recognized as other capital surplus as of December 31, 2019 consists of the amount recognized for business combinations under common control and stock options that are not exercised and recognized as capital adjustments.

(*2) There is expiry date of hybrid securities, but the Group has the right to continuously extend the maturity and accordingly, the requirements for capital are fulfilled.

32. Accumulated other comprehensive loss

Changes in accumulated other comprehensive loss for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019						
	Beginning balance	Increase (decrease)	Transfer of retained earnings	Changes in shares in associates	Reclassification (*)	Tax effects	Ending balance
Loss on valuation of financial assets at FVOCI	₩ (121,340)	₩ 102,831	₩ 88	₩ 877	₩ (9,408)	₩ (23,436)	₩ (50,388)
Changes in equity of investments in associates	(60,021)	21,024	-	-	-	(5,781)	(44,778)
Gain (loss) on valuation of net investment hedges of foreign operations	3,763	(25,953)	-	-	-	7,137	(15,053)
Exchange differences on translation of foreign operations	(355,051)	96,118	-	33,404	-	(5,011)	(230,540)
Loss on valuation of fair value hedges	(6,771)	(3,220)	-	-	-	885	(9,106)
Remeasurement of defined benefit plan	(331,393)	(226,326)	-	(208)	-	62,287	(495,640)
	<u>₩ (870,813)</u>	<u>₩ (35,526)</u>	<u>₩ 88</u>	<u>₩ 34,073</u>	<u>₩ (9,408)</u>	<u>₩ 36,081</u>	<u>₩ (845,505)</u>

(*) Loss on valuation of financial assets at FVOCI recognized as accumulated other comprehensive loss is reclassified due to disposal of financial assets at FVOCI.

Classification	2018					
	Beginning balance	Increase and (decrease)	Transfer of retained earnings	Reclassification (*)	Tax effects	Ending balance
Loss on valuation of financial assets at FVOCI	₩ (474,274)	₩ 465,499	₩ 24,697	₩ (1,184)	₩ (136,078)	₩ (121,340)
Changes in equity of investments in associates	(81,977)	30,284	-	-	(8,328)	(60,021)
Gain on valuation of net investment hedges of foreign operations	12,712	(12,343)	-	-	3,394	3,763
Exchange differences on translation of foreign operations	(341,805)	(7,733)	-	-	(5,513)	(355,051)
Loss on valuation of fair value hedges	-	(9,340)	-	-	2,569	(6,771)
Remeasurement of defined benefit plan	(237,291)	(130,537)	537	-	35,898	(331,393)
	₩ (1,122,635)	₩ 335,830	₩ 25,234	₩ (1,184)	₩ (108,058)	₩ (870,813)

(*) Loss on valuation of financial assets at FVOCI recognized as accumulated other comprehensive loss is reclassified due to disposal of financial assets at FVOCI.

33. Retained earnings

33.1 Details of retained earnings as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Legal reserve		
Earned surplus reserve (*1)	₩ 1,417,500	₩ 1,223,000
Voluntary reserve		
Revaluation reserves on property, plant and equipment (*2)	409,574	411,081
Other reserves (*3)	174,666	177,103
Regulatory reserve for bad debts (*4)	2,048,540	1,843,898
Other voluntary reserves	4,552,482	3,588,194
	7,185,262	6,020,276
Unappropriated retained earnings	2,311,105	2,879,378
	₩ 10,913,867	₩ 10,122,654

(*1) The *Banking Law* of the Republic of Korea requires the Group to appropriate at least 10% of net income after income tax to legal reserve, until such reserve equals 100% of its paid-in capital. This reserve is restricted to the payment of cash dividends; however, it can be used to reduce deficit or be transferred to capital.

(*2) The Group records gains from revaluation of property and equipment previously recognized as other comprehensive income to the voluntary reserve, as it applies the revaluation amount as deemed cost at the first-time adoption of KIFRS. The reserve is recognized in distributable retained earnings when the relevant property and equipment are disposed.

(*3) Relevant Japanese regulations require the Group's overseas branches located in Japan to appropriate a minimum of 10% of net income for the period as a legal reserve, until such reserve equals ¥2,000 million. This reserve is restricted to be used upon liquidation of the Japanese branches. Chennai, Panama, Singapore, Hong Kong, Hanoi and Hochiminh branches' statutory reserves are included in other reserves in accordance with the relevant regulations.

(*4) The Group has provided allowances for possible loan losses in accordance with KIFRS. The difference in this amount and the provision of allowance accumulated in accordance with the minimum accumulation ratio required by FSS has been accounted for as regulatory reserve for bad debts.

33.2 Changes in appropriated retained earnings for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Beginning balance	₩ 10,122,654	₩ 8,735,759
Effect of changes in accounting policy	-	301,831
Net income	2,139,759	2,085,920
Dividends	(1,336,800)	(972,600)
Dividends on hybrid securities	(9,814)	(9,814)
Reclassification of loss on valuation of equity securities at FVOCI upon derecognition	(64)	(17,905)
Others	(1,868)	(537)
Ending balance	₩ 10,913,867	₩ 10,122,654

33.3 Dividends

Details of calculation on common stock dividends for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions and shares in units):

Classification	2019 (*1)		2018	
Number of dividend shares		1,071,915,717		1,071,915,717
Par value per share	₩	5,000	₩	5,000
Par dividend ratio		17.94%		16.55%
Dividend per share	₩	896.99	₩	827.30
Dividends	₩	961,500	₩	886,800
Net income (*2)	₩	2,139,759	₩	2,085,920
Dividend pay-out ratio based on net income		44.93%		42.51%
Adjusted income after deducting provisions for bad debt reserve (*2)	₩	1,946,869	₩	1,889,615
Dividends pay-out ratio based on adjusted income after deducting provisions for bad debt		49.39%		46.93%

(*1) Dividends for 2019 will be submitted to the general Board of Directors' meeting to be held on March 19, 2020.

(*2) Adjusted income amount after reflecting net income and provisions for bad debts reserve is based on the controlling company's shares.

34. Regulatory reserve for bad debts

Regulatory reserve for bad debt is calculated and disclosed in accordance with Article 29, Section 1 and 2 of supervision of Banking Business of the Republic of Korea.

34.1 Details of regulatory reserve for bad debts as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Beginning balance	₩ 2,139,549	₩ 1,934,322
Planned provision for bad debts	192,890	205,227
Ending balance	₩ 2,332,439	₩ 2,139,549

34.2 Provisions for bad debt reserve and income adjusted for deductions of provisions for bad debt for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Net income attributable to equity holders of the parent before deducting provisions for bad debt	₩ 2,139,759	₩ 2,085,920
Provision of bad debt reserve	(192,890)	(196,305)
Adjusted income after deducting provisions for bad debt	₩ 1,946,869	₩ 1,889,615
Basic earnings per share adjusted after reflecting reserve for bad debt (*1) (Korean won)	₩ 1,807	₩ 1,754
Diluted earnings per share adjusted after reflecting reserve for bad debt (*2) (Korean won)	₩ 1,807	₩ 1,754

(*1) The dividend on hybrid equity securities in the amount of ₩9,814 million and ₩9,814 million for the years ended December 31, 2019 and 2018, respectively, were deducted from the adjusted income after reflecting the bad debt reserve for the calculation of earnings per share after reflecting reserve for bad debt for each period.

(*2) Because it does not have dilutive potential ordinary stock, basic earnings per share is the same as diluted earnings per share.

35. Operating income and operating expenses

35.1 Operating income for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Interest income	₩ 10,053,972	₩ 9,378,701
Fees and commission income	882,305	835,895
Gains on financial instruments at FVTPL	14,979,424	11,559,767
Gains on fair value hedging derivative instruments	169,410	71,827
Gains on financial instruments at FVOCI	49,820	10,883
Changes in credit risk loss for financial instruments	-	1,956
Other operating income	4,067,592	4,144,724
	<u>₩ 30,202,523</u>	<u>₩ 26,003,753</u>

35.2 Operating expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Interest expenses	₩ 4,639,959	₩ 4,081,500
Fees and commission expenses	206,984	195,502
Losses on financial instruments at FVTPL	14,553,896	11,294,896
Losses on fair value hedging derivative instruments	160,669	83,830
Losses on financial instruments at FVOCI	1,442	3,594
Changes in credit risk loss for financial instruments	228,030	183,123
General and administrative expenses	3,311,402	3,025,472
Other operating expenses	4,384,231	4,264,930
	<u>₩ 27,486,613</u>	<u>₩ 23,132,847</u>

36. Net interest income

36.1 Interest income for the years ended December 31, 2019 and 2018 is as follows (Korean won in millions):

Classification	2019	2018
Interest income from using effective interest method		
Interest income on due from banks	₩ 151,245	₩ 139,318
Interest income on loans	8,818,016	8,217,571
Interest income on financial assets at FVOCI	665,778	698,766
Interest income on securities at amortized cost	351,671	259,911
	9,986,710	₩ 9,315,566
Interest income on financial assets at FVTPL	67,262	63,135
	₩ 10,053,972	₩ 9,378,701

36.2 Interest expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Interest expenses on deposit liabilities	₩ 3,579,850	₩ 3,066,319
Interest expenses on borrowings	259,838	268,179
Interest expenses on financial liabilities at FVTPL	13,501	11,675
Interest expenses of bonds	668,889	623,084
Others	117,881	112,243
	₩ 4,639,959	₩ 4,081,500

37. Net fees and commission income

37.1 Fees and commission income for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Commissions received from loans and others	₩ 559,969	₩ 538,014
Commissions received on guarantee	74,317	71,428
Commissions related foreign exchange	248,019	226,453
	₩ 882,305	₩ 835,895

37.2 Fees and commission expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Commissions paid borrowings and others	₩ 158,872	₩ 152,117
Commissions related foreign exchange	48,112	43,385
	₩ 206,984	₩ 195,502

38. Net gain (loss) from financial instruments at FVTPL

38.1 Details of gain (loss) on financial assets and liabilities at FVTPL for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Gains from financial instruments at FVTPL		
Financial assets and liabilities at FVTPL		
Gain on valuation	₩ 71,947	₩ 81,811
Gain on disposals	48,382	66,200
	120,329	148,011
Derivatives instruments held-for-trading		
Gain on valuation of derivatives		
Gain on currency related derivatives	3,499,808	3,055,164
Gain on interest rate related derivatives	280,646	232,886
Gain on stock related derivatives	119	894
Other valuation gain	-	2,053
	3,780,573	3,290,997
Gain on transaction of derivatives		
Gain on currency related derivatives	9,371,286	6,918,577
Gain on interest rate related derivatives	1,469,265	1,197,264
Gain on stock related derivatives	234,417	4,562
	11,074,968	8,120,403
Gain on securities sold	1,167	30
	₩ 14,977,037	₩ 11,559,441
Loss from financial instruments at FVTPL		
Financial instruments at FVTPL		
Loss on valuation	67,873	54,776
Loss on disposals	21,747	97,119
Others	229	665
	89,849	152,560
Derivatives instruments held-for-trading		
Loss on valuation of derivatives		
Loss on currency related derivatives	3,161,177	2,900,121
Loss on interest rate related derivatives	202,065	154,295
Loss on stock related derivatives	66	301
Others	1,337	-
	3,364,645	3,054,717
Loss on transaction of derivatives		
Loss on currency related derivatives	9,563,469	6,825,163
Loss on interest rate related derivatives	1,520,950	1,241,872
Loss on stock related derivatives	4,657	5,039
	11,089,076	8,072,074
Loss on securities sold	1,394	168
	₩ 14,544,964	₩ 11,279,519
	₩ 432,073	₩ 279,922

38.2 Details of gain (loss) on financial assets and liabilities designated as measured at FVTPL for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Gain on financial assets and liabilities designated as at FVTPL		
Deposits		
Gain on valuation	₩ 2,387	₩ 326
	<u>2,387</u>	<u>326</u>
Loss on financial assets and liabilities designated at FVTPL		
Deposits		
Loss on valuation	6,574	15,377
Loss on disposals	2,358	-
	<u>8,932</u>	<u>15,377</u>
	<u>₩ (6,545)</u>	<u>₩ (15,051)</u>

39. Gain (loss) from derivative financial instruments used for hedging

Gain (loss) from derivative instruments used for hedging for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Gain from derivative instruments used for hedging		
Hedged item		
Gain on valuation		
Gain on valuation of bonds	₩ 4,541	₩ 23,423
Gain on valuation of deposits	7,998	27,988
	12,539	51,411
Gain on transaction		
Gain on transaction of bonds	6,989	464
Gain on transaction of deposits	727	-
	7,716	464
Derivative instruments used for hedging		
Gain on valuation of derivatives		
Gain on valuation of currency related derivatives	4,675	3,910
Gain on valuation of interest rate related derivatives	119,312	9,152
	123,987	13,062
Gain on transaction of derivatives		
Gain on transaction of currency related derivatives	2,720	5,569
Gain on transaction of interest rate related derivatives	22,448	1,321
	25,168	6,890
	₩ 169,410	₩ 71,827
Loss from derivative instruments used for hedging		
Hedged item		
Loss on valuation		
Loss on valuation of bonds	79,482	8,949
Loss on valuation of deposits	41,489	8,160
	120,971	17,109
Loss on transaction		
Loss on transaction of bonds	14,632	1,174
Loss on transaction of deposits	6,954	624
	21,586	1,798
Derivative instruments used for hedging		
Loss on valuation of derivatives		
Loss on valuation of currency related derivatives	5,827	3,214
Loss on valuation of interest rate related derivatives	11,357	52,166
	17,184	55,380
Loss on transaction of derivatives		
Loss on transaction of currency related derivatives	-	9,543
Loss on transaction of interest rate related derivatives	928	-
	928	9,543
	₩ 160,669	₩ 83,830
	₩ 8,741	₩ (12,003)

40. Gain (loss) from financial instruments at FVOCI

Details of gain (loss) on financial assets and liabilities designated as at FVOCI for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Gain on disposal of financial instruments at FVOCI	₩ 49,820	₩ 10,883
Loss on disposal of financial instruments at FVOCI	1,442	3,594
	<u>₩ 48,378</u>	<u>₩ 7,289</u>

41. Impairment loss on financial assets

Impairment loss on financial assets for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Provision(reversal of) of credit loss of debt securities at FVOCI	₩ 408	₩ (1,956)
Provision for bad debts for securities at amortized cost	1,740	2,418
Provision for bad debts of loan losses	225,065	180,429
Provision for bad debts of other asset losses	817	276
	<u>₩ 228,030</u>	<u>₩ 181,167</u>

42. General and administrative expenses

General and administrative expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Salaries	₩ 1,547,156	₩ 1,502,996
Retirement benefits – defined benefits plans	168,028	207,839
Retirement benefits – defined contribution plans	365	205
Termination benefits	299,823	107,531
Employee welfare	95,894	86,717
Depreciation	342,267	129,087
Amortization	88,484	74,567
Rental fees(*)	66,602	237,083
Entertainment expenses	19,570	19,136
Taxes and dues	119,637	107,978
Advertising expenses	115,425	108,622
Others	448,151	443,711
	<u>₩ 3,311,402</u>	<u>₩ 3,025,472</u>

(*) Rental fees include ₩970 million of expense related to the lease of low-value assets.

43. Other operating income

Other operating income for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Gain on disposal of loans	₩ 17,819	₩ 34,957
Reversal of provision for payment guarantees	22,320	15,185
Reversal of allowances for unused commitments	1,379	4,900
Reversal of other provisions	-	29,875
Trust commissions	211,039	197,981
Gain on foreign exchange transaction	3,678,338	3,758,071
Gain on merchant banking accounts (*)	69,732	60,636
Dividends income	9,901	12,724
Others	57,064	30,395
	₩ 4,067,592	₩ 4,144,724

(*) Details of gain on merchant banking accounts for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Interest income	₩ 49,448	₩ 43,085
Fees and commission income	475	429
Gain on disposal of debt securities at FVTPL	1,480	1,023
Gain on valuation of debt securities at FVTPL	88	111
Gain on valuation of CMA securities	132	2
Gain on disposal of bills	18,109	15,986
	₩ 69,732	₩ 60,636

44. Other operating expenses

Other operating expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Loss on disposal of loans	₩ 4,742	₩ 655
Provision of payment guarantees transferred	227,766	-
Contribution to Korea Credit Guarantee Fund	309,923	262,641
Insurance fee on deposit	342,417	329,637
Loss on foreign exchange transaction	3,450,050	3,628,592
Loss on merchant banking accounts (*)	45,756	40,272
Others	3,577	3,133
	<u>₩ 4,384,231</u>	<u>₩ 4,264,930</u>

(*) Details of loss on merchant banking accounts for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Interest expenses	₩ 45,754	₩ 40,128
Others	2	144
	<u>₩ 45,756</u>	<u>₩ 40,272</u>

45. Other non-operating income

Other non-operating income for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Rental income	₩ 14,195	₩ 16,978
Gain on disposal of property and equipment	18,163	17,949
Gain on disposal of investment property	3,317	-
Gain on disposal of intangible asset	-	178
Gain on disposal of non-current assets held for sale	429,305	-
Gain on disposal of investments in associates	73,930	812
Gain on equity method	37,419	26,418
Gain on termination of lease assets	1,171	-
Others	15,539	30,440
	<u>₩ 593,039</u>	<u>₩ 92,775</u>

46. Other non-operating expenses

Other non-operating expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Loss on disposal of property and equipment	₩ 1,603	₩ 3,831
Impairment loss on property and equipment	12,620	-
Loss on disposal of investment property	15,045	-
Impairment loss on investment property	8,212	-
Loss on disposal of intangible asset	86	4
Impairment loss on intangible asset	405	-
Loss on equity method	64,833	4,731
Collection expenses for written-off claims	1,349	1,685
Collection commissions for written-off claims	4,838	3,971
Loss on disposal of investments in associates	10,254	1,199
Impairment loss on investments in associates	136,336	-
Loss on termination of lease assets	1,484	-
Donations	90,572	58,204
Others	30,016	19,356
	<u>₩ 377,653</u>	<u>₩ 92,981</u>

47. Income tax expense

47.1 The components of income tax expense for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Current income taxes		
Current income taxes	₩ 864,630	₩ 703,586
Prior year's income tax adjustments recognized in the current year	(20,658)	(65,891)
Changes in deferred tax assets (liabilities)	(53,890)	138,306
Income tax directly recognized in equity	36,677	44,222
Tax effect of consolidated tax returns	(45,960)	(41,955)
Income tax expenses	<u>₩ 780,799</u>	<u>₩ 778,268</u>

47.2 Income tax expenses and reconciliations by multiplying net income by the tax rate for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Net income before tax	₩ 2,931,296	₩ 2,870,700
Tax at the statutory rate (*)	797,780	770,742
Non-taxable income	(3,254)	(3,361)
Non-deductible expenses	4,860	4,487
Tax credits	(20,626)	(7,692)
Income tax expenses of foreign branches and subsidiaries	55,996	31,102
Tax effect of consolidated tax return	(47,026)	(41,956)
Prior year's income tax adjustments recognized in the current year	(20,658)	(65,891)
Others (Effect of change in tax rates, etc.)	13,727	90,837
Income tax expenses	₩ 780,799	₩ 778,268
Effective tax rate (%)	26.64	27.11

(*) 11% for under ₩200 million, 22% for ₩200 million to ₩20 billion, 24.2% for ₩20 billion to ₩300 billion and 27.5% for ₩300 billion and above.

47.3 Temporary differences and deferred tax assets (liabilities) as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	
	Deductible (taxable) temporary differences	Deferred tax assets (liabilities)
Loss on valuation of securities	₩ 495,735	₩ 136,327
Valuation of investment in associates	(597,351)	(164,271)
Gain on valuation of derivatives	(587,344)	(161,520)
Deemed dividends	155,957	42,888
Deferred loan fees, net of expenses	(354,056)	(97,365)
Accrued income	(368,280)	(101,277)
Accrued expenses	64,509	17,740
Provisions for payment guarantees	43,993	12,098
Plan assets	(1,661,400)	(456,885)
Defined benefit liabilities	1,955,677	537,811
Other provisions	319,213	87,784
Bad debt expenses	700,890	192,745
Depreciation	(6,293)	(1,731)
Valuation of fair value resulting from merger	11,838	3,255
Dormant deposits	32,765	9,010
Allowance for advanced depreciation	(180,315)	(49,587)
Deemed cost for property and equipment	(709,702)	(195,168)
Gain on valuation of financial instruments at FVOCI	88,345	24,295
Investment in kind	18,479	5,082
Financial guarantee contracts	2,706	744
Deferred reward points income	71	19
Others	404,914	111,353
	₩ (169,649)	₩ (46,653)
Domestic deferred tax liabilities		(46,653)
Foreign deferred tax assets (*)		39,218
Foreign deferred tax liabilities (*)		(67,194)
		₩ (74,629)

47.3 Temporary differences and deferred tax assets (liabilities) as of December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Classification	2018	
	Deductible (taxable) temporary differences	Deferred tax assets (liabilities)
Loss on valuation of securities	₩ 384,953	₩ 105,862
Valuation of investment in associates	(461,574)	(126,933)
Gain on valuation of derivatives	(283,487)	(77,959)
Deemed dividends	156,718	43,097
Deferred loan fees, net of expenses	(319,524)	(87,869)
Accrued income	(306,074)	(84,170)
Accrued expenses	139,583	38,384
Provisions for payment guarantees	58,047	15,963
Plan assets	(1,511,444)	(415,588)
Defined benefit liabilities	1,519,582	417,817
Other provisions	108,600	29,865
Bad debt expenses	690,642	189,178
Depreciation	(12,764)	(3,510)
Valuation of fair value valuation resulting merger	32	9
Dormant deposits	17,556	4,828
Allowance for advanced depreciation	(180,315)	(49,587)
Deemed cost for property and equipment	(914,566)	(251,506)
Gain on valuation of financial instruments at FVOCI	170,659	46,963
Net loss carried over	71,188	15,661
Investment in kind	18,479	5,082
Financial guarantee contracts	1,775	488
Deferred reward points income	337	93
Others	314,914	85,436
	₩ (336,683)	₩ (98,396)
Domestic deferred tax liabilities		(98,396)
Foreign deferred tax assets (*)		55,845
Foreign deferred tax liabilities (*)		(85,968)
		₩ (128,519)

(*) Deferred tax assets of foreign branches are not offset against the deferred tax liabilities due to the differences in tax jurisdictions.

The effective income tax rate of 27.5% as of December 31, 2019, is applied when calculating deferred tax assets or liabilities. Also, deferred tax assets are recognized when it is foreseeable that future taxable income will be incurred and that future tax credits will be realized.

47.4 The unrealized temporary differences on investment assets of associates as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Less: temporary difference	₩ 337,867	₩ 321,087
Add: temporary difference	(355,579)	(355,579)
	₩ (17,712)	₩ (34,492)

47.5 Details of deferred taxes charged (credited) directly to equity as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	
	Before tax amounts	Deferred tax assets (liabilities)
Gain (loss) on valuation of financial assets at FVOCI	₩ (96,186)	₩ 26,451
Changes in equity on investments in associates	(61,764)	16,985
Exchange differences on translation of foreign operations	(27,443)	7,547
	₩ (185,393)	₩ 50,983

Classification	2018	
	Before tax amounts	Deferred tax assets (liabilities)
Gain (loss) on valuation of financial assets at FVOCI	₩ (173,869)	₩ 47,814
Changes in equity on investments in associates	(82,788)	22,767
Exchange differences on translation of foreign operations	(45,665)	12,558
	₩ (302,322)	₩ 83,139

48. Earnings per share

48.1 Weighted-average number of ordinary shares for the years ended December 31, 2019 and 2018 are as follows (shares):

Classification	Periods	Number of shares	Weights	Weighted-average number of ordinary shares
2019	2019.01.01~2019.12.31	1,071,915,717	365/365	1,071,915,717
2018	2018.01.01~2018.12.31	1,071,915,717	365/365	1,071,915,717

Since the Group does not have potentially dilutive ordinary stock, the weighted average number of shares of ordinary stock outstanding per basic share is the same as the weighted average number of shares of ordinary stock outstanding per diluted share.

48.2 The Group's basic earnings per share for the years ended December 31, 2019 and 2018 are calculated as follows (Korean won in millions except per share amounts):

Classification	2019	2018
Net income attributable to owners of the parent for the year	₩ 2,139,759	₩ 2,085,920
Dividends on hybrid equity securities	(9,814)	(9,814)
Net income attributable to common stock	2,129,945	2,076,106
Weighted-average number of shares of ordinary stocks outstanding	1,071,915,717	1,071,915,717
Basic earnings per share (Korean won) (*)	₩ 1,987	₩ 1,937

(*) Basic earnings per share (EPS) are the same as diluted EPS for the years ended December 31, 2019 and 2018.

49. Share-based payment

When the stock options are exercised, the Group has the option to settle either through issuance of new shares or treasury stock or through payment of cash equivalents to the difference between the market price and the exercise price. The number of exercisable stock option is determined in accordance with management performance and the calculation criteria for the number of exercisable shares. In addition, Hana Financial Group and the Group operate a Performance Share Plan to provide performance-linked shares to the executives and heads of the Group.

Details of liabilities related to share-based payment and total intrinsic value of rights accounted for as accounts payable in case that option holders achieve rights to receive cash or other assets as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Book value of liabilities related to share-based payment		
Stock options	₩ -	₩ 23
Performance Share (granted by the Group)	19,147	11,301
Performance Share (granted by HFG)	16,597	33,915
	<u>₩ 35,744</u>	<u>₩ 45,239</u>

The compensation costs for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Costs recognized due to share-based payment		
Stock options	₩ (23)	₩ (305)
Equity-linked special incentive (granted by the Bank)	8,368	5,674
Equity-linked special incentive (granted by HFG)	(95)	2,219
	<u>₩ 8,250</u>	<u>₩ 7,588</u>

49.1 Stock options

There are no stock options provided by the Bank to the employees as of December 31, 2019.

Changes in shares of stock options for the years ended December 31, 2019 are as follows (Korean won and share):

Grant date	Shares at the beginning	Exercise	Divesture	Extinguished upon maturity	Shares at the end	Stock option outstanding	Exercise price
2011-08-10	333,000	-	-	(333,000)	-	-	₩ 9,100
2011-08-26	42,290	-	-	(42,290)	-	-	8,500
2011-09-02	11,250	-	-	(11,250)	-	-	8,400
	<u>386,540</u>	<u>-</u>	<u>-</u>	<u>(386,540)</u>	<u>-</u>	<u>-</u>	

There is no exercise of the stock options for the year ended December 31, 2019.

49.2 Performance-linked share-based compensation

Details of performance-linked stocks granted to the executives and department head of the Group as of December 31, 2019 are as follows:

Classification	6 th	7 th	8 th	9 th
Granted by	Hana Financial Group	Hana Bank	Hana Bank	Hana Bank
Grant date	2016-01-01	2017-01-01	2018-01-01	2019-01-01
Payment date	2018-12-31	2019-12-31	2020-12-31	2021-12-31
Grant period	2016-01-01~ 2018-12-31	2017-01-01~ 2019-12-31	2018-01-01~ 2020-12-31	2019-01-01~ 2021-12-31
Grace period	2019-01-01~ 2019-12-31	2020-01-01~ 2020-12-31	2021-01-01~ 2021-12-31	2022-01-01~ 2022-12-31
Payment period	Within 2020-04-30	Within 2021-04-30	Within 2022-04-30	Within 2023-04-30
Grant method	Payment of cash equivalents to the difference between the market price and the exercise price or treasury stock	Payment of cash equivalents to the difference between the market price and the exercise price	Payment of cash equivalents to the difference between the market price and the exercise price	Payment of cash equivalents to the difference between the market price and the exercise price
Shares at settlement date (*)	447,363	293,911	129,492	90,726

(*) Hana Financial Group (HFG) and the Group provide the executives and department head of the Bank with the right to receive stocks. The amount of stocks paid is adjusted based on the performance. The amounts of 6th stock grants are adjusted based on the assessment indicator of which the group performance (relative shareholders' rate of return) is 40% and bank performance (ROE, net income) is 60%. The amounts of 7th, 8th and 9th stock grants are adjusted based on the assessment indicator of which the group performance (relative shareholders' rate of return) is 40% and bank performance (ROE, net income, soundness) is 60%.

50. Cash flow information

50.1 Details of cash and cash equivalents as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Cash	₩ 2,280,574	₩ 2,120,840
Due from banks in Korean won	10,565,443	11,058,022
Due from banks in foreign currencies	7,156,410	7,273,261
	20,002,427	20,452,123
Less: Restricted balances	13,576,666	15,266,212
Deposits which have a maturity period of three months or above	788,296	812,820
	₩ 5,637,465	₩ 4,373,091

50.2 Significant non-cash transactions for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	2018
Initial recognition of right-of-use assets/lease liabilities	₩ 546,283	₩ -
Transfer from prepaid rental fees to right-of-use assets	31,250	-
Transfer from leasehold improvements to right-of-use assets	19,307	-
Change in right-of-use assets during the year	58,344	-
Change in right-of-use liabilities during the year	237,410	-
Gain on valuation of financial assets at FVOCI	95,169	240,243
Transfer from property and equipment to investment properties	149,451	211,817
Transfer from non-current asset held for sale to advances received	135,226	-
Gain on differences on translation of foreign operations	112,570	9,028

50.3 Changes in liabilities arising from financing activities for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019					
	Beginning balance	Financing activities	Exchange rate fluctuation	Fair value hedging	Other	Ending balance
Borrowings	₩ 15,280,970	₩ (878,547)	₩ 373,709	₩ -	₩ 2,395	₩ 14,778,527
Bonds	24,668,613	(1,366,966)	95,478	104,114	28,881	23,530,120
Lease liabilities	546,283	(226,668)	-	-	237,410	557,025
	₩ 40,495,866	₩ (2,472,181)	₩ 469,187	₩ 104,114	₩ 268,686	₩ 38,865,672

Classification	2018					
	Beginning balance	Financing activities	Exchange rate fluctuation	Fair value hedging	Other	Ending balance
Borrowings	₩ 13,774,502	₩ 1,373,999	₩ 132,469	₩ -	₩ -	₩ 15,280,970
Bonds	22,311,737	2,214,647	79,958	7,209	55,062	24,668,613
	₩ 36,086,239	₩ 3,588,646	₩ 212,427	₩ 7,209	₩ 55,062	₩ 39,949,583

51. Related parties

51.1 Transactions with related parties for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019							
	Income			Expenses				
	Interest income	Fees and commission income	Other income	Bad debt expense	Interest expenses	Fees and commission expenses	Other expenses	
Controlling company:								
Hana Financial Group (HFG)	₩ 28	₩ 3,884	₩ 70,898	₩ -	₩ 38	₩ 55	₩ -	
Associates:								
Bank of Jilin	162	1	7	-	-	-	49	
CM International financing leases	6,024	-	-	38,635	2	-	-	
Beijing Langzi Asset Management Co., Ltd.	1,014	282	32	(149)	70	-	(3)	
PT Sinarmas Hana Finance	2,006	3	-	40	65	-	2	
Hana First Private Equity Fund	-	3	-	-	32	-	-	
Korea Credit Bureau	-	-	-	-	78	-	-	
Darby Hana Infrastructure Fund Management	-	1	1	-	280	-	-	
Masan Marine New Town Co., Ltd.	89	-	-	(2)	4	-	-	
Company K startup winwin fund	-	-	-	-	4	-	-	
Fidelis Private Equity Fund No.2	-	-	246	-	-	-	-	
KEB Hana-KVIC Unicorn Fund of Funds	-	-	-	-	13	-	-	
	₩ 9,295	₩ 290	₩ 286	₩ 38,524	₩ 548	₩ -	₩ 48	

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51.1 Transactions with related parties for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions) (cont'd)

Classification	2019						
	Income			Expenses			
	Interest income	Fees and commission income	Other income	Bad debt expense	Interest expenses	Fees and commission expenses	Other expenses
Entities under common control:							
Hana Financial Investment Co., Ltd.	128	160	6,423	(3)	1,367	2	13,205
Hana Card Co., Ltd.	56	79,321	4,296	25	1,872	6,426	-
Hana Capital Co., Ltd.	-	381	82	11	282	-	575
Hana Asset Trust Co., Ltd.	-	37	-	-	2,141	-	-
Hana Alternative Asset Management Co., Ltd.	10	16	453	-	845	-	-
Hana TI Co., Ltd.	-	3	3	-	304	6,953	65,982
Hana Life Insurance Co., Ltd.	16	13,757	826	-	55	-	3,841
Hana Savings Bank	-	12	31	-	1	-	-
Hana Investors Services Company	14	1	649	-	49	-	-
Hana Ventures Inc.	-	-	-	-	475	-	-
Hana Ventures No. 2 New Technology Business Investment Association	-	-	-	-	1	-	-
Hana Ventures No. 3 New Technology Business Investment Association	-	-	-	-	1	-	-
Hana F&I Co., Ltd	629	-	225	(59)	23	-	-
	<u>₩ 853</u>	<u>₩ 93,688</u>	<u>₩ 12,988</u>	<u>₩ (26)</u>	<u>₩ 7,416</u>	<u>₩ 13,381</u>	<u>₩ 83,603</u>

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51.1 Transactions with related parties for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions) (cont'd)

Classification	2019						
	Income			Expenses			
	Interest income	Fees and commission income	Other income	Bad debt expense	Interest expenses	Fees and commission expenses	Other expenses
Other related parties:							
Gunsan BIO Energy Co., Ltd.	-	-	-	-	17	-	-
Finnq Co., Ltd.	-	882	5	-	10	4	-
Mirae Credit Information Services Corp.	77	11	-	-	32	1,036	-
UBS Hana Asset Management Co., Ltd.	-	2	14	-	158	1	-
F&U Credit Information Co., Ltd.	-	7	-	-	8	-	-
BNP Asset Development Co., Ltd.	115	-	-	-	-	-	-
SmartScore Co., Ltd.	-	-	-	-	1	-	-
Lotte Accelerator Corporation	-	-	-	-	36	-	-
Hana Power Infrastructure No. 1 Private Investment Co., Ltd.	659	60	-	(250)	62	-	-
GMHB Co., Ltd.	538	-	-	401	-	-	-
KOCREF REIT 30	-	-	-	-	-	-	1,696
Hanon Private Investment Co., Ltd.	-	-	-	-	2	-	-
Myoungshin Co., Ltd.	1	-	-	-	-	-	-
Dangsandong PFV Co., Ltd.	-	-	-	-	1	-	-
Fresheasy Co., Ltd.	166	-	-	101	8	-	-
Dowon development Co., Ltd.	69	202	5	66	-	-	-
	1,625	1,164	24	318	335	1,041	1,696
Key management	16	-	-	(3)	41	-	-
	₩ 11,817	₩ 99,026	₩ 84,196	₩ 38,813	₩ 8,378	₩ 14,477	₩ 85,347

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51.1 Transactions with related parties for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions) (cont'd)

Classification	2018							
	Income				Expenses			
	Interest income	Fees and commission income	Other income	Bad debt expense	Interest expenses	Fese and commission expenses	Other expenses	
Controlling company:								
Hana Financial Group (HFG)	₩ -	₩ 2,748	₩ 3,020	₩ -	₩ 42	₩ -	₩ -	
Associates:								
Bank of Jilin	44	-	33	-	-	-	47	
CM International financing leases	6,964	-	-	424	-	-	-	
Beijing Langzi Asset Management Co., Ltd.	900	292	6	116	27	-	-	
PT Sinarmas Hana Finance	1,625	2	-	(29)	57	-	2	
Hana First Private Equity Fund	-	8	-	-	9	-	-	
Korea Credit Bureau	-	-	-	-	121	-	-	
Darby Hana Infrastructure Fund Management	-	-	1	-	210	-	-	
Masan Marine New Town Co., Ltd.	126	-	-	2	2	-	-	
Company K startup winwin fund	-	-	-	-	36	-	-	
Fidelis Private Equity Fund No.2	-	-	342	-	-	-	-	
KEB Hana-KVIC Unicorn Fund of Funds	-	-	-	-	5	-	-	
	₩ 9,659	₩ 302	₩ 382	₩ 513	₩ 467	₩ -	₩ 49	
Entities under common control:								
Hana Financial Investment Co., Ltd.	269	1,751	9,599	(12)	1,620	-	6,521	
Hana Card Co., Ltd.	-	78,737	4,704	(20)	2,178	4,919	1,045	
Hana Capital Co., Ltd.	-	377	232	(5)	204	-	481	
Hana Asset Trust Co., Ltd.	-	39	-	-	1,824	-	-	
Hana Alternative Asset Management Co., Ltd.	-	26	692	-	273	-	-	
Hana TI Co., Ltd.	-	7	-	-	135	7,800	60,999	
Hana Life Insurance Co., Ltd	-	14,779	1,192	-	62	-	1,132	
Hana Savings Bank	-	81	32	-	1	-	-	
Hana Investors Services Company	-	2	1,024	-	270	-	-	
Hana Ventures Inc.	-	-	-	-	49	-	-	
	₩ 269	₩ 95,799	₩ 17,475	₩ (37)	₩ 6,616	₩ 12,719	₩ 70,178	

51.1 Transactions with related parties for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions) (cont'd)

Classification	2018						
	Income			Expenses			
	Interest income	Fees and commission income	Other income	Bad debt expense	Interest expenses	Fees and commission expenses	Other expenses
Other related parties:							
Odin2 LLC	1,794	1	-	-	-	-	-
Gunsan BIO Energy Co., Ltd.	-	-	-	-	15	-	-
Finnq Co., Ltd.	-	262	-	-	5	-	-
Mirae Credit Information Services Corp.	117	10	-	(2)	55	946	-
UBS Hana Asset Management Co., Ltd.	-	1	7	-	-	-	-
F&U Credit Information Co., Ltd.	-	4	-	-	6	-	-
BNP Asset Development Co., Ltd.	216	-	-	23	-	-	-
Thehue Company Ltd.	-	-	-	(22)	-	-	-
Smartscore Co., Ltd.	2	-	-	-	2	-	-
Lotte Accelerator Corporation	-	-	-	-	57	-	-
Hana Power Infrastructure No. 1 Private Investment Co., Ltd.	745	60	-	652	35	-	-
GMHB Co., Ltd.	-	1	-	-	-	-	-
Myoungshin Co., Ltd.	4	1	-	-	-	-	-
	₩ 2,878	₩ 340	₩ 7	₩ 651	₩ 175	₩ 946	₩ -
Key management	79	-	-	(1)	39	-	-
	₩ 12,885	₩ 99,189	₩ 20,884	₩ 1,126	₩ 7,339	₩ 13,665	₩ 70,227

51.2 Significant transactions with related parties for the years ended December 31, 2019 and 2018 are as follows:

51.2.1 Details of significant borrowings and investment in cash to related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019				
	Beginning balance	Increase	Decrease	Others (*2)	Ending balance
Associates:					
Bank of Jilin	₩ 1,200	₩ 255,621	₩ (253,421)	₩ -	₩ 3,400
CM International financing leases	127,982	-	(50,219)	3,251	81,014
Beijing Langzi Asset Management Co., Ltd.	14,630	16,022	(1,657)	284	29,279
PT Sinarmas Hana Finance	17,627	20,161	(8,652)	1,446	30,582
Masan Marine New Town Co., Ltd.	1,513	-	(1,513)	-	-
Bank for investment and Development of Vietnam (BIDV)	-	11,578	-	-	11,578
	162,952	303,382	(315,462)	4,981	155,853
Entities under common control:					
Hana Financial Investment Co., Ltd.	500	3,500	(4,641)	1,141	500
Hana F&I Co., Ltd.	72,000	500,200	(572,200)	-	-
	72,500	503,700	(576,841)	1,141	500
Other related parties:					
Odin2 LLC	2,237	-	(2,237)	-	-
Mirae Credit Information Services Corp.	2,000	-	-	-	2,000
BNP Asset Development Co., Ltd.	4,900	-	(30)	(4,870)	-
Hana Power Infrastructure No. 1 Private Investment Co., Ltd.	16,512	-	(1,163)	-	15,349
GMHB Co., Ltd.	-	29,000	-	-	29,000
Myoungshin Co., Ltd.	184	-	(184)	-	-
Fresheasy Co., Ltd.	-	11,208	(1,000)	-	10,208
Dowon development Co., Ltd.	-	15,300	-	-	15,300
	25,833	55,508	(4,614)	(4,870)	71,857
Key management					
	1,748	-	(1,140)	-	608
	₩ 263,033	₩ 862,590	₩ (898,057)	₩ 1,252	₩ 228,818

(*1) Intraday overdrafts are excluded.

(*2) Others include the effect of changes in exchange rate.

51.2.1 Details of significant borrowings and investment in cash to related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Classification	2018				
	Borrowings (*1)				
	Beginning balance	Increase	Decrease	Others (*2)	Ending balance
Associates:					
Bank of Jilin	₩ 194,333	₩ 355,651	₩ (547,655)	₩ (1,129)	₩ 1,200
CM International financing leases	137,205	82,901	(93,725)	1,601	127,982
Beijing Langzi Asset Management Co., Ltd.	16,399	-	(1,626)	(143)	14,630
PT Sinarmas Hana Finance	16,195	4,187	(2,304)	(451)	17,627
Masan Marine New Town Co., Ltd.	1,513	-	-	-	1,513
	365,645	442,739	(645,310)	(122)	162,952
Entities under common control:					
Hana Financial Investment Co., Ltd.	-	-	-	500	500
Other related parties:					
Odin2 LLC	2,237	-	-	-	2,237
Mirae Credit Information Services Corp.	7,000	2,000	(7,000)	-	2,000
BNP Asset Development Co., Ltd.	4,900	100	(100)	-	4,900
Thehue Company Ltd.	5,250	-	(160)	(5,090)	-
Hana Power Infrastructure No. 1 Private Investment Co., Ltd.	16,512	-	-	-	16,512
Myoungshin Co., Ltd.	-	885	(1,084)	383	184
	35,899	2,985	(8,344)	(4,707)	25,833
	5,715	-	(3,967)	-	1,748
Key management	₩ 407,259	₩ 445,724	₩ (657,621)	₩ (4,329)	₩ 191,033

(*1) Intraday overdrafts are excluded.

(*2) Others include the effect of changes in exchange rate.

51.2.2 Details of significant cash investments with related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019	
	Investment in cash	
	Investments	Repayment and others
Associates:		
Bank of Jilin	₩ -	₩ (7,530)
Beijing Langzi Asset Management Co., Ltd.	-	(3,679)
Hana Equity Partners I, L.P	-	(5,158)
Masan Marine New Town Co., Ltd	-	(100)
Company KStartup winwin fund	-	(1,010)
BSK-6 Patent Technology Investment Association	1,200	-
Fidelis Private Equity Fund No.2	-	(600)
KEB Hana-KVIC Unicorn Fund of Funds	5,200	-
Hana Alternative Investment specialized Real Estate Investment Trust No. 3-1	35	-
Hana Alternative Investment specialized Real Estate Investment Trust No. 3-2	724	-
Bank for investment and Development of Vietnam(BIDV)	1,272,968	-
Harvest Private Equity Fund Specializing in Start-Up and Venture Business I	3,000	-
	1,283,127	(18,077)
Entities under common control:		
Hana Financial Investment Co., Ltd.	4,789	-
Hana Private Real Estate Investment Trust No.123-1(USD)	67,947	-
Hana F&I Co., Ltd	49,998	(127,383)
	122,734	(127,383)
Other related parties:		
Hana Digital Transformation Fund	12,000	-
	₩ 1,417,861	₩ (145,460)

51.2.2 Details of significant cash investments with related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd):

Classification	2018	
	Investment in cash	
	Investments	Repayment and others
Associates:		
Hana Equity Partners I, L.P	₩ -	₩ (6,647)
Company KStartup winwin fund	-	(2,190)
Fidelis Private Equity Fund No.2	3,000	-
Koramco Professional Invest Type Real Estate No.73	1,700	-
KEB Hana-KVIC Unicorn Fund of Funds	1,000	-
Koramco Professional Invest Type Real Estate No.87	1,500	-
Ourcrowd international Invest	14,049	-
	₩ 21,249	₩ (8,837)

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51.2.3 Details of significant deposits with related parties ended December 31, 2019 and 2018 are as follows (Korean won in millions):

Classification	2019									
	Deposits (*1)									
	Beginning balance		Increase		Decrease		Others (*2)		Ending balance	
Associates:										
PT Sinarmas	₩	806	₩	-	₩	-	₩	67	₩	873
Hana Finance										
Korea Credit		11,000		-		(11,000)		-		-
Bureau Co., Ltd.										
Darby Hana										
Infrastructure		14,000		14,500		(12,000)		-		16,500
Fund										
Management										
Company KStartup		-		3,000		(3,000)		-		-
winwin fund										
		25,806		17,500		(26,000)		67		17,373
Entities under										
common control:										
Hana Financial		5,000		24,000		(24,000)		-		5,000
Investment Co.,										
Ltd.										
Hana Card Co.,		3,505		4,005		(3,505)		-		4,005
Ltd.										
Hana Asset Trust		55,000		260,000		(190,000)		-		125,000
Hana Alternative										
Asset		6,632		126,000		(107,132)		-		25,500
Management Co.,										
Ltd.										
Hana TI Co., Ltd.		922		3,076		(4,073)		75		-
Hana Investors										
Services		11,000		-		(11,000)		-		-
Company										
Hana Ventures Inc.		26,000		40,260		(43,027)		-		23,233
		108,059		457,341		(382,737)		75		182,738
Other related										
parties:										
UBS Hana Asset		-		38,500		(29,500)		-		9,000
Management										
Co., Ltd.										
F&U Credit		500		500		(500)		-		500
Information Co.,										
Ltd.										
BNP Asset		10		-		(10)		-		-
Development										
Co., Ltd.										
Smartscore Co.,		101		-		(29)		-		72
Ltd.										
Lotte Accelerator		3,000		6,500		(6,500)		-		3,000
Corporation										
GMHB Co., Ltd.		-		100		-		-		100
Hanon Private		-		230		(230)		-		-
Investment Co.,										
Ltd.										
		3,611		45,830		(36,769)		-		12,672
Key management		3,920		-		(2,455)		-		1,465
	₩	141,396	₩	520,671	₩	(447,961)	₩	142	₩	214,248

(*1) Deposits/withdrawals arising from operations between related parties are excluded.

(*2) Others include the effect of changes in exchange rate

51.2.3 Details of significant deposits with related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Classification	2018				
	Deposits (*1)				
	Beginning balance	Increase	Decrease	Others (*2)	Ending balance
Associates:					
PT Sinarmas Hana Finance	₩ 790	₩ 38	₩ -	₩ (22)	₩ 806
Korea Credit Bureau Co., Ltd.	6,000	11,080	(6,080)	-	11,000
Darby Hana Infrastructure Fund Management	11,100	14,164	(11,264)	-	14,000
Company KStartup winwin fund	4,020	26,543	(30,563)	-	-
	21,910	51,825	(47,907)	(22)	25,806
Entities under common control:					
Hana Financial Investment Co., Ltd.	15,000	5,000	(15,000)	-	5,000
Hana Card Co., Ltd.	3,005	3,550	(3,050)	-	3,505
Hana Asset Trust	52,000	55,423	(52,423)	-	55,000
Hana Alternative Asset Management Co., Ltd.	9,630	30,354	(33,352)	-	6,632
Hana TI Co., Ltd.	-	922	-	-	922
Hana Investors Services Company	12,500	19,616	(21,116)	-	11,000
Hana Ventures Inc.	-	26,000	-	-	26,000
	92,135	140,865	(124,941)	-	108,059
Other related parties:					
F&U Credit information Co., Ltd.	-	500	-	-	500
Hana AIM Investment Management Inc.	2,006	-	-	(2,006)	-
BNP Asset Development Co., Ltd.	-	10	-	-	10
Smartscore Co., Ltd.	-	-	-	101	101
Lotte Accelerator Corporation	-	3,000	-	-	3,000
	2,006	3,510	-	(1,905)	3,611
Key management	9,735	-	(5,815)	-	3,920
	₩ 125,786	₩ 196,200	₩ (178,663)	₩ (1,927)	₩ 141,396

(*1) Deposits/withdrawals arising from operations between related parties are excluded.

(*2) Others include the effect of changes in exchange rate.

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51.3 Outstanding balances with related parties arising from the above transactions as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019				
	Accounts receivable	Other receivables	Allowance for doubtful accounts	Deposits	Other liabilities
Controlling company:					
Hana Financial Group (HFG)	₩ -	₩ 6,191	₩ -	₩ 3,456	₩ 469,507
Associates:					
Bank of Jilin	3,400	-	-	3,236	-
CM International financing leases	81,014	-	39,194	16	-
Beijing Langzi Asset Management Co., Ltd.	29,278	-	62	32,757	77
PT Sinarmas Hana Finance	30,582	53	64	906	-
Korea Credit Bureau Co., Ltd.	-	-	-	139	-
Darby Hana Infrastructure Fund Management	-	-	-	17,463	-
Midan City Development Co., Ltd.	-	-	-	2	-
Fidelis Private Equity Fund No.2	-	-	-	55	-
KEB Hana-KVIC Unicorn Fund of Funds.	-	-	-	957	-
Bank for investment and Development of Vietnam (BIDV)	11,578	2,504	-	3,380	-
	155,852	2,557	39,320	58,911	77
Entities under common control:					
Hana Financial Investment Co., Ltd.	500	8,615	73	358,692	11,978
Hana Card Co., Ltd.	-	12,836	142	147,784	44,438
Hana Capital Co., Ltd.	-	1,342	97	38,129	5,800
Hana Asset Trust	-	-	-	184,790	438
Hana Alternative Asset Management Co., Ltd.	-	1,997	-	31,201	686
Hana TI Co., Ltd.	-	5,779	-	7,960	3,428
Hana Life Insurance Co., Ltd.	-	4,201	-	-	4,680
Hana Saving Bank Co., Ltd.	-	-	-	-	52
Hana Investors Services Company	-	2,861	-	1,127	773
Hana Ventures Inc.	-	-	-	26,478	15
Hana Ventures No. 2 new technology business investment association	-	-	-	304	-
Hana Ventures No. 3 new technology business investment association	-	-	-	610	-
Hana F&I Co., Ltd	-	1,001	21	7,487	271
	500	38,632	333	804,562	72,559

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51.3 Outstanding balances with related parties arising from the above transactions as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions) (cont'd)

Classification	2019				
	Accounts receivable	Other receivables	Allowance for doubtful accounts	Deposits	Other liabilities
Other related parties:					
Gunsan bio-energy Corp.	-	-	-	2,047	-
Finnq Co., Ltd.	-	-	-	39,653	-
Mirae Credit Information Services Corp.	2,000	-	-	2,021	-
UBS Hana Asset Management Co., Ltd.	-	-	-	9,347	-
F&U Credit Information Co., Ltd.	-	-	-	519	-
Hana Lantern Energy Factory Private Equity Fund	-	-	-	8	-
Smartscore Co., Ltd.	-	-	-	135	-
Lotte Accelerator Corporation	-	-	-	3,274	-
Hana Power Infrastructure No. 1 Private Investment Co., Ltd.	15,349	-	441	26,765	-
GMHB Co., Ltd.	29,000	-	401	100	-
KOCREF REIT 30	-	1,354	-	-	-
Dangsandong PFV Co., Ltd.	-	-	-	76	-
Fresheasy Co., Ltd.	10,208	-	101	1,501	-
Dowon development Co., Ltd.	15,300	-	66	2	-
NPTK Emerging Asia Fund1 PEF	-	-	-	3	-
	71,857	1,354	1,009	85,451	-
Key management	608	-	-	3,020	-
	<u>₩ 228,817</u>	<u>₩ 48,734</u>	<u>₩ 40,662</u>	<u>₩ 955,400</u>	<u>₩ 542,143</u>

51.3 Outstanding balances with related parties arising from the above transactions as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions) (cont'd)

Classification	2018				
	Accounts receivable	Other receivables	Allowance for doubtful accounts	Deposits	Other liabilities
Controlling company:					
Hana Financial Group (HFG)	₩ -	₩ -	₩ -	₩ 4,385	₩ 270,460
Associates:					
Korea Credit Bureau Co., Ltd.	-	-	-	11,147	-
Darby Hana Infrastructure Fund Management	-	-	-	14,309	-
Hana First Private Equity Fund	-	2	-	592	-
Masan Marine New Town Co., Ltd.	1,513	-	2	811	-
Midan City Development Co., Ltd.	-	-	-	5	-
Fidelis Private Equity Fund No.2	-	-	-	35	-
KEB Hana-KVIC Unicorn Fund of Funds	-	-	-	1,104	-
Bank of Jilin	1,200	-	-	7	-
CM International financing leases	127,982	-	559	26	-
Beijing Langzi Asset Management LC	14,630	-	211	2,359	-
PT Sinarmas Hana Finance	17,627	30	25	815	-
	₩ 162,952	₩ 32	₩ 797	₩ 31,210	₩ -
Entities under common control:					
Hana Financial Investment Co., Ltd.	500	10,532	74	264,361	9,672
Hana Card Co., Ltd.	-	18	117	170,581	68,749
Hana Capital Co., Ltd.	-	-	86	20,240	4,737
Hana Asset Trust	-	-	-	114,748	376
Hana Alternative Asset Management Co., Ltd.	-	-	-	18,507	648
Hana TI Co., Ltd.	-	-	-	2,796	1,371
Hana Saving Bank Co., Ltd.	-	8	-	-	53
Hana Life Insurance Co., Ltd.	-	1,020	-	-	2,495
Hana Investors Services Company	-	-	-	12,855	811
Hana Ventures Inc.	-	-	-	29,213	44
	₩ 500	₩ 11,578	₩ 277	₩ 633,301	₩ 88,956

51.3 Outstanding balances with related parties arising from the above transactions as of December 31, 2019 and 2018 are summarized as follows (Korean won in millions): (cont'd)

Classification	2018				
	Accounts receivable	Other receivables	Allowance for doubtful accounts	Deposits	Other liabilities
Other related parties:					
Odin2. LLC	₩ 2,237	₩ -	₩ 2,237	₩ -	₩ -
Gunsan bio-energy Corp.	-	-	-	3,844	-
Finnq Co., Ltd.	-	-	-	9,748	-
Mirae Credit Information Services Corp.	2,000	-	-	1,809	-
UBS Hana Asset Management Co., Ltd	-	-	-	312	-
F&U Credit Information Co., Ltd.	-	-	-	529	-
BNP Asset Development Co., Ltd.	4,900	-	41	335	-
Hana Lantern Energy Factory Private Equity Fund	-	-	-	207	-
Smartscore Co., Ltd.	-	-	-	351	-
Lotte Accelerator Corporation	-	-	-	3,043	-
Myoungshin Co., Ltd.	184	-	1	3	-
Hana Power Infrastructure No. 1 Private Investment Co., Ltd	16,512	-	692	28,274	-
	25,833	-	2,971	48,455	-
Key management	1,748	-	-	3,920	-
	₩ 191,033	₩ 11,610	₩ 4,045	₩ 721,271	₩ 359,416

51.4 Guarantees and acceptances and collateral provided between controlling company and subsidiaries as of December 31, 2019 and 2018 are as follows (Korean won in millions):

Company	Classification	2019		Counterparty
			Limit	
The Hana Bank	Guarantees and acceptances denominated in foreign currencies	₩	21,542	Beijing Langzi Asset Management Co., Ltd.
	Commitment to purchase securities		900	BSK-6 Patent Technology Investment Association
	Commitment to purchase securities		93,800	KEB Hana-KVIC Unicorn Fund of Funds
	Commitment to purchase securities		34,965	Hana Alternative Investment specialized Real Estate Investment Trust No. 3-1
	Commitment to purchase securities		14,275	Hana Alternative Investment specialized Real Estate Investment Trust No. 3-2
	Import L/C opened		5,841	Hana Financial Investment Co., Ltd
	Unused limit related to payment guarantees denominated in foreign currencies		1,190	Hana Financial Investment Co., Ltd
	Unused limit related to loan commitments in Korean won		132,000	Hana Financial Investment Co., Ltd
	Commitment to purchase securities		8,474	Hana Financial Investment Co., Ltd
	Guarantees and acceptances denominated in foreign currencies		2,316	Hana Card Co., Ltd.
	Unused limit related to loan commitments in Korean won		500,000	Hana Card Co., Ltd.
	Unused limit related to loan commitments in Korean won		260,000	Hana Capital Co., Ltd.
	Unused limit related to loan commitments in Korean won		100,000	Hana F&I Co., Ltd.
	Unused limit related to loan commitments in Korean won		34,000	GMHB Co., Ltd.
	Unused limit related to factoring bond commitments in Korean won		223	Myoungshin Co., Ltd.
	Unused limit related to loan commitments in Korean won		8,792	Fresheasy Co., Ltd.
	Commitment to purchase securities		8,000	Hana Digital Transformation Fund
	Unused limit related to loan commitments in Korean won		4,700	Dowon development Co., Ltd.
	Unused limit related to loan commitments in foreign currencies		996	PT Sinarmas Hana Finance
	Bank of Jilin	Guarantees and acceptances denominated in foreign currencies		29,828
Hana Card Co., Ltd	Collateral provided		4,300	The Hana Bank
	Unused limit related to loan commitments in Korean won		139,907	The Hana Bank
Hana Capital Co., Ltd	Collateral provided		391,300	The Hana Bank

51.4 Guarantees and acceptances and collateral provided between controlling company and subsidiaries as of December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Company	Classification	2019		Counterparty
		Limit		
Hana Life Insurance Co., Ltd.	Unsettled arrangements (currency forward)	₩ 118,147		The Hana Bank
Hana F&I Co., Ltd.	Collateral provided		192,759	The Hana Bank
Hana Financial Investment Co., Ltd. (*)	Unsettled arrangements (interest rate swaps)		97,890	The Hana Bank
	Unsettled arrangements (currency forward)		105,888	The Hana Bank
	Guarantees and acceptances denominated in foreign currencies		20,000	The Hana Bank

(*) The Group is provided with additional investment or supplementary funding for the forward exchange or currency swap of the investment trust from swap bank Hana Financial Investment Co., Ltd. of the investment trust, which is a participant in the purchase of private equity.

51.4 Guarantees and acceptances and collateral provided between controlling company and subsidiaries as of December 31, 2019 and 2018 are as follows (Korean won in millions) (cont'd)

Company	Classification	2018		Counterparty
		₩	Limit	
The Hana Bank	Unused limit related to loan commitments in Korean won		500,000	Hana Card Co.Ltd.
	Guarantees and acceptances denominated in foreign currencies		2,236	Hana Card Co., Ltd
	Unused limit related to loan commitments in Korean won		260,000	Hana Capital Co., Ltd
	Unused limit related to loan commitments in Korean won		130,500	Hana Financial Investment Co., Ltd.
	Commitment to purchase securities		13,263	Hana Financial Investment Co., Ltd.
	Unused limit related to loan commitments in Korean won		327	Masan Marine New Town Co., Ltd.
	Commitment to purchase securities		2,100	BSK-6 Patent Technology Investment Association
	Guarantees and acceptances denominated in foreign currencies		21,132	Beijing Langzi Asset Management Co., Ltd.
	Commitment to purchase securities		99,000	KEB Hana - KVIC Unicorn Fund of Funds
	Unused limit related to factoring bond commitments in Korean won		151	Myoungshin Co., Ltd
	Unused limit related to loan commitments in foreign currencies		3,908	PT Sinarmas Hana Finance
Hana Card Co., Ltd	Collateral provided		3,800	The Hana Bank
	Unused limit related to loan commitments in Korean won		141,865	The Hana Bank
Hana Capital Co., Ltd	Collateral provided		392,911	The Hana Bank
Hana Financial Investment Co., Ltd. (*)	Unsettled arrangements (Currency forward)		7,246	The Hana Bank
	Unsettled arrangements (Interest rate swaps)		95,905	The Hana Bank

(*) The Group is provided with additional investment or supplementary funding for the forward exchange or currency swap of the investment trust from swap bank Hana Financial Investment Co., Ltd. of the investment trust, which is a participant in the purchase of private equity.

51.5 As of December 31, 2019 and 2018, the amount of intangible assets and others acquired by the Group through Hana TI is ₩ 5,139 million and ₩ 12,582 million, respectively.

51.6 Details of compensation for standing directors and executive officers for the years ended December 31, 2019 and 2018 are summarized as follows (Korean won in millions):

Classification	2019		2018	
Short-term employee payment	₩	17,247	₩	10,602
Retirement benefits		933		823
Stock options		3,423		3,578