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Samsung Electro-Mechanics Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2018 and 2017
with the independent auditor's report

SAMSUNG
ELECTRO-MECHANICS

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Independent auditor's report

The Shareholders and Board of Directors
Samsung Electro-Mechanics Co., Ltd.

Report on the audit of the consolidated financial statements

Opinion

We have audited the accompanying consolidated financial statements of Samsung Electro-Mechanics Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as of December 31, 2018 and 2017, 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 the notes to the financial statements, including a summary of significant accounting policies and other explanatory information.

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidate financial position of the Group as of December 31, 2018 and 2017, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards.

Basis of opinion

We conducted our audit 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 audit 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.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. For each matter below, our description of how our audit addressed the matter is provided in that context.

We have fulfilled the responsibilities described in the Auditor's responsibilities for the audit of the consolidated financial statements section of our report, including in relation to these matters. Accordingly, our audit included the performance of procedures designed to respond to our assessment of the risks of material misstatement of the consolidated financial statements. The results of our audit procedures, including the procedures performed to address the matters below, provide the basis for our audit opinion on the accompanying consolidated financial statements.

[1] Capitalization of development cost

The Group has capitalized KRW 66,700 million R&D cost as part of the intangible asset. It consists of 4 projects for developing Panel Level Package ("PLP") business. The R&D expenditure is capitalized if it meets the criteria and occurs from the commercial product development stage. The Group amortized the completed projects by applying 5- year economic useful life.

Capitalization of development cost was chosen as our Key audit matters because recognition of intangible assets involves management's judgements including the amount of development cost to be capitalized, its recognition timing, including the amount of estimated future economic benefits and, etc.

Our audit procedures are as follows:

- Evaluation of the management's assumption used for development cost's distribution and recalculation to verify that development cost was properly recognized according to its internal policy
- Document the inspection of management's assessment on whether a criteria was met before the initial recognition
- Document the inspection in relation to assumptions used by the management on future economic benefits and basis over the amortization period
- Review the estimate for capitalized development cost
- Evaluation of the model and assumptions applied on the impairment testing by using our own specialists
- Evaluation of appropriateness on the development cost disclosure

[2] Revenue recognition criteria (principal versus agent considerations)

As mentioned in Note 19, the Group recognized revenue amounted to KRW 8,193,023 million during the current year.

When another party is involved in providing goods or services to customers, the Group determines whether it is a principal or an agent on the basis of the entity control transfers in relation to the specified goods or service. The Group recognizes gross revenues when the Group transfers promised goods or services to customers as a principal whereas net revenues are recognized as an agent.

For some goods, customers request the specifications and provide raw materials and equipment necessary for manufacturing. We determined that this type of subcontracting transactions or similar structure transactions can lead to revenue misstatement so the issue was chosen as our Key audit matter.

Our audit procedures that we performed in the current year for revenue recognition are as follows:

- Inspection of Group's contracts when they were acting as a principal
- Inspection of Group's contracts when they were acting as an agent
- Recalculation on the net revenue adjustment
- Evaluation of management's assumptions and basis used to determine revenue recognition at gross or net
- Evaluation of appropriateness on the disclosure in relation to principal versus agent considerations

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

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with Korean International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of 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's 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's financial reporting process.

Auditor's responsibilities for the audit of the 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 Korean Auditing Standards (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 Korean Auditing Standards (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 financial statements, including the disclosures, and whether the 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.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The partner in charge of the audit resulting in this independent auditor's report is *Jaeick Song.*

Ernst & Young Han Young

March 8, 2019

This audit report is effective as of March 8, 2019, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the date of the independent auditor's report to the time this report is used. Such events and circumstances could significantly

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2018 and 2017

“The accompanying financial statements, including all footnotes and disclosures, have been prepared by, and are the responsibility of, the Group.”

Lee, Yun Tae
Chief Executive Officer
Samsung Electro-Mechanics Co., Ltd.

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2018 and 2017

	Notes	Korean won 2018	Korean won 2017	US dollar (Note 2) 2018	US dollar (Note 2) 2017
Assets					
Current assets:					
Cash and cash equivalents	4	₩ 1,002,374,471,773	₩ 444,609,329,777	$ 896,498,052	$ 397,647,196
Current financial assets	5	243,542,157,639	123,482,249,407	217,817,867	110,439,361
Trade and other receivables	6,23	1,060,910,372,005	912,897,439,592	948,851,062	816,472,085
Short-term loans		546,593,519	234,828,973	488,859	210,025
Advanced payments		35,844,500,364	6,270,546,824	32,058,403	5,608,216
Prepaid expenses		36,396,555,152	35,754,069,726	32,552,147	31,977,524
Prepaid income tax		19,206,307,573	36,656,270,634	17,177,630	32,784,430
Inventories, net	7	1,115,565,877,099	918,893,353,446	997,733,545	821,834,678
Right of return assets	14	10,906,310,579	-	9,754,325	-
		3,525,293,145,703	2,478,798,088,379	3,152,931,890	2,216,973,515
Non-current assets:					
Investment in associates	8	60,213,757,585	53,284,973,129	53,853,642	47,656,715
Available-for-sale financial assets	9	-	725,530,836,477	-	648,896,196
Equity instruments designated at fair value	9	150,889,138,429	-	134,951,380	-
Long-term loans		2,197,986,394	2,227,119,045	1,965,823	1,991,878
Property, plant and equipment	10	4,558,010,182,821	4,154,682,907,789	4,076,567,555	3,715,841,971
Intangible assets, net	11	162,460,608,115	149,487,113,350	145,300,606	133,697,445
Non-current financial assets	5	36,789,814,260	42,144,771,902	32,903,868	37,693,204
Long-term trade and other receivables	6	29,375,843,577	39,388,966,877	26,273,002	35,228,483
Long-term prepaid expenses		38,799,612,190	38,908,099,610	34,701,379	34,798,408
Deferred tax assets	21	80,884,116,755	82,950,666,490	72,340,682	74,188,951
		5,119,621,060,126	5,288,605,454,669	4,578,857,937	4,729,993,251
Total assets		**₩ 8,644,914,205,829**	**₩ 7,767,403,543,048**	**$ 7,731,789,827**	**$ 6,946,966,766**

(Continued)

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2018 and 2017 (Cont'd)

		Korean won		US dollar (Note 2)	
	Notes	2018	2017	2018	2017
Liabilities					
Current liabilities:					
Trade and other payables	12,23	₩ 891,417,868,679	₩ 728,590,026,558	$ 797,261,308	$ 651,632,257
Short-term borrowings	13	961,955,861,424	1,203,792,484,010	860,348,682	1,076,641,163
Advances received		7,247,601,229	13,678,164,173	6,482,069	12,233,400
Current financial liabilities	5	35,569,932,235	23,533,985,774	31,812,836	21,048,194
Income tax payables		156,011,756,482	3,479,589,499	139,532,919	3,112,056
Current portion of long-term borrowings	13	432,049,753,433	467,529,000,000	386,414,233	418,145,962
Unearned income		5,027,369,701	7,812,409,821	4,496,349	6,987,217
Provisions for product warranties		3,408,156,425	5,694,037,266	3,048,168	5,092,601
Refund liabilities	14	16,895,712,999	-	15,111,093	-
		2,509,584,012,607	2,454,109,697,101	2,244,507,657	2,194,892,850
Non-current liabilities:					
Long-term borrowings	13	1,060,133,398,202	897,616,232,181	948,156,156	802,804,966
Long-term other payables	12	86,081,670,197	58,283,364,943	76,989,241	52,127,149
Long-term unearned income		15,306,671,215	11,153,131,310	13,689,895	9,975,075
Net employee defined benefit liabilities	15	26,141,991,061	13,511,148,911	23,380,727	12,084,025
Deferred tax liabilities	21	1,168,906,288	1,238,582,272	1,045,440	1,107,756
		1,188,832,636,963	981,802,459,617	1,063,261,459	878,098,971
Total liabilities		**₩ 3,698,416,649,570**	**₩ 3,435,912,156,718**	**$ 3,307,769,116**	**$ 3,072,991,821**
Equity					
Issued capital	18	₩ 388,003,400,000	₩ 388,003,400,000	$ 347,020,302	$ 347,020,302
Share premium	18	1,045,201,199,091	1,045,201,199,091	934,801,180	934,801,180
Other components of equity	18	(146,701,455,500)	(146,701,455,500)	(131,206,024)	(131,206,024)
Accumulated other comprehensive income	9,18	355,200,814,069	335,297,333,286	317,682,510	299,881,346
Other capital reserves	18	1,952,365,257,472	2,225,865,257,472	1,746,145,477	1,990,756,871
Retained earnings		1,226,978,445,193	383,977,481,806	1,097,378,092	343,419,624
Equity attributable to owners of the parent		**4,821,047,660,325**	**4,231,643,216,155**	**4,311,821,537**	**3,784,673,299**
Non-controlling interests		125,449,895,934	99,848,170,175	112,199,174	89,301,646
Total equity		**4,946,497,556,259**	**4,331,491,386,330**	**4,424,020,711**	**3,873,974,945**
Total liabilities and equity		**₩ 8,644,914,205,829**	**₩ 7,767,403,543,048**	**$ 7,731,789,827**	**$ 6,946,966,766**

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

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2018 and 2017

	Notes	Korean won 2018	Korean won 2017	US dollar (Note 2) 2018	US dollar (Note 2) 2017
Sales	3,23	₩ 8,193,023,252,994	₩ 6,838,474,133,399	$ 7,327,630,134	$ 6,116,156,098
Cost of sales	19,23	(5,805,531,038,267)	(5,430,059,519,148)	(5,192,318,253)	(4,856,506,144)
Gross profit		**2,387,492,214,727**	**1,408,414,614,251**	**2,135,311,881**	**1,259,649,954**
Selling and administrative expenses	19	(1,369,439,415,141)	(1,102,211,185,689)	(1,224,791,535)	(985,789,451)
Operating profit		**1,018,052,799,586**	**306,203,428,562**	**910,520,346**	**273,860,503**
Finance income	20	12,776,639,298	11,007,953,030	11,427,099	9,845,231
Finance costs	20	(90,121,880,044)	(66,063,752,236)	(80,602,701)	(59,085,728)
Share of profit of associates	8,20	7,208,249,820	7,964,641,871	6,446,874	7,123,372
Other income	20	295,361,022,808	223,995,277,042	264,163,333	200,335,637
Other expenses	10,20	(302,883,861,819)	(229,559,442,465)	(270,891,568)	(205,312,085)
Profit before tax		**940,392,969,649**	**253,548,105,804**	**841,063,383**	**226,766,930**
Income tax expense	21	255,374,455,447	76,292,111,429	228,400,372	68,233,710
Profit for the year		**₩ 685,018,514,202**	**₩ 177,255,994,375**	**$ 612,663,011**	**$ 158,533,220**
Other comprehensive income:					
Other comprehensive income (loss) not to be reclassified to profit or loss in subsequent periods (net of tax):					
Net gains (losses) on valuation of equity instruments designated at fair value OCI	9	(467,843,285,755)	-	(418,427,051)	-
Net gains (losses) on disposal of equity instruments designated at fair value OCI	9	451,339,730,000	-	403,666,693	-
Capital changes in equity method	8	1,633,971,054	-	1,461,382	-
Re-measurement gains (losses) on defined benefit plans	15	(26,951,294,019)	(47,733,648,622)	(24,104,547)	(42,691,753)
Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods (net of tax):					
Capital changes in equity method	8	-	304,913,361	-	272,707
Net gains (losses) on valuation of available-for-sale financial assets	9	-	(14,470,223,127)	-	(12,941,797)
Exchange differences on translation of foreign operations		16,420,531,624	(75,113,343,986)	14,686,103	(67,179,451)
Other comprehensive loss for the year, net of tax		**(25,400,347,096)**	**(137,012,302,374)**	**(22,717,420)**	**(122,540,294)**
Total comprehensive income (loss) for the year, net of tax		**₩ 659,618,167,106**	**₩ 40,243,692,001**	**$ 589,945,591**	**$ 35,992,926**

(Continued)

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2018 and 2017 (Cont'd)

	Notes	Korean won 2018	Korean won 2017	US dollar (Note 2) 2018	US dollar (Note 2) 2017
Profit for the year attributable to:					
Equity holders of the parent		656,241,635,879	161,739,107,180	586,925,710	144,655,315
Non-controlling interests		28,776,878,323	15,516,887,195	25,737,303	13,877,906
		₩ 685,018,514,202	**₩ 177,255,994,375**	**$ 612,663,013**	**$ 158,533,221**
Total comprehensive income (loss) for the year attributable to:					
Equity holders of the parent		629,826,970,853	29,441,579,057	563,301,110	26,331,794
Non-controlling interests		29,791,196,253	10,802,112,944	26,644,483	9,661,133
		₩ 659,618,167,106	**₩ 40,243,692,001**	**$ 589,945,593**	**$ 35,992,927**
Earnings per share:	22				
Basic and diluted, profit for the year attributable to ordinary equity holders of the parent		₩ 8,685	₩ 2,139	$ 7.77	$ 1.91
Basic and diluted, profit for the year attributable to preferred shareholders of the parent		₩ 8,735	₩ 2,189	$ 7.81	$ 1.96

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

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2018 and 2017
(Korean won)

	Attributable to equity holders of the parent								
	Issued capital	Share premium	Other components of equity	Accumulated other comprehensive income	Other capital reserves	Retained earnings	Sub-total	Non-controlling interests	Total equity
as of January 1, 2017	**₩ 388,003,400,000**	**₩ 1,045,201,199,091**	**₩ (146,701,455,500)**	**₩ 419,861,212,787**	**₩ 2,215,365,257,472**	**₩ 318,388,325,948**	**₩ 4,240,117,939,798**	**₩ 97,467,358,634**	**₩ 4,337,585,298,432**
Profit for the year	-	-	-	-	-	161,739,107,180	161,739,107,180	15,516,887,195	177,255,994,375
Other comprehensive income:									
Re-measurement gains on defined benefit plans	-	-	-	-	-	(47,733,648,622)	(47,733,648,622)	-	(47,733,648,622)
Capital changes in equity method	-	-	-	304,913,361	-	-	304,913,361	-	304,913,361
Net losses on valuation of available-for-sale financial asset	-	-	-	(14,470,223,127)	-	-	(14,470,223,127)	-	(14,470,223,127)
Exchange differences on translation of foreign operations	-	-	-	(70,398,569,735)	-	-	(70,398,569,735)	(4,714,774,251)	(75,113,343,986)
Total comprehensive income (loss)	**-**	**-**	**-**	**(84,563,879,501)**	**-**	**114,005,458,558**	**29,441,579,057**	**10,802,112,944**	**40,243,692,001**
Dividends	-	-	-	-	-	(37,916,302,700)	(37,916,302,700)	(8,319,418,195)	(46,235,720,895)
Appropriation of retained earnings	-	-	-	-	10,500,000,000	(10,500,000,000)	-	-	-
Issue of share capital of subsidiary	-	-	-	-	-	-	-	29,606,792	29,606,792
Stock redemption of subsidiary	-	-	-	-	-	-	-	(131,490,000)	(131,490,000)
as of December 31, 2017	**₩ 388,003,400,000**	**₩ 1,045,201,199,091**	**₩ (146,701,455,500)**	**₩ 335,297,333,286**	**₩ 2,225,865,257,472**	**₩ 383,977,481,806**	**₩ 4,231,643,216,155**	**₩ 99,848,170,175**	**₩ 4,331,491,386,330**
as of January 1, 2018	**₩ 388,003,400,000**	**₩ 1,045,201,199,091**	**₩ (146,701,455,500)**	**₩ 335,297,333,286**	**₩ 2,225,865,257,472**	**₩ 383,977,481,806**	**₩ 4,231,643,216,155**	**₩ 99,848,170,175**	**₩ 4,331,491,386,330**
Effect of adoption of new accounting standards (Note2)	-	-	-	19,366,851,790	-	(2,986,263,273)	16,380,588,517	(109,734,304)	16,270,854,213
Profit for the year	-	-	-	-	-	656,241,635,879	656,241,635,879	28,776,878,323	685,018,514,202
Other comprehensive income:									
Re-measurement gains on defined benefit plans	-	-	-	-	-	(26,951,294,019)	(26,951,294,019)	-	(26,951,294,019)
Capital changes in equity method	-	-	-	1,633,971,054	-	-	1,633,971,054	-	1,633,971,054
Net gains (losses) on valuation of equity instruments designated at fair value OCI	-	-	-	(467,855,649,930)	-	-	(467,855,649,930)	12,364,175	(467,843,285,755)
Net gains (losses) on disposal of equity instruments designated at fair value OCI	-	-	-	451,339,730,000	-	-	451,339,730,000	-	451,339,730,000
Foreign currency translation adjustments	-	-	-	15,418,577,869	-	-	15,418,577,869	1,001,953,755	16,420,531,624
Total comprehensive income (loss)	**-**	**-**	**-**	**536,628,993**	**-**	**629,290,341,860**	**629,826,970,853**	**29,791,196,253**	**659,618,167,106**
Dividends	-	-	-	-	-	(56,803,115,200)	(56,803,115,200)	(4,078,569,398)	(60,881,684,598)
Appropriation of retained earnings	-	-	-	-	(273,500,000,000)	273,500,000,000	-	-	-
Others	-	-	-	-	-	-	-	(1,166,792)	(1,166,792)
as of December 31, 2018	**₩ 388,003,400,000**	**₩ 1,045,201,199,091**	**₩ (146,701,455,500)**	**₩ 355,200,814,069**	**₩ 1,952,365,257,472**	**₩ 1,226,978,445,193**	**₩ 4,821,047,660,325**	**₩ 125,449,895,934**	**₩ 4,946,497,556,259**

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

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2018 and 2017

		Korean won		US dollar (Note 2)	
	Notes	2018	2017	2018	2017
Operating activities					
Cash flows from operating activities	24	₩ 1,640,496,362,856	₩ 775,766,668,252	$ 1,467,217,926	$ 693,825,837
Interest received		11,661,145,446	10,092,168,186	10,429,430	9,026,177
Income tax paid		(93,488,267,315)	(68,175,232,386)	(83,613,512)	(60,974,182)
Net cash flows from operating activities		**1,558,669,240,987**	**717,683,604,052**	**1,394,033,844**	**641,877,832**
Investing activities					
Increase (decrease) in other financial assets, net		(114,594,405,412)	197,575,412,962	(102,490,301)	176,706,388
Acquisition of FV-OCI		605,759,865,545	-		
Disposal of FV-OCI		(27,634,521,850)	-		
Proceeds from disposal of available-for-sale financial assets		-	19,642,610,516	-	17,567,848
Acquisition of available-for-sale financial assets		-	(2,757,206,040)	-	(2,465,974)
Proceeds from disposal of property, plant and equipment		31,547,046,319	91,594,265,409	28,214,870	81,919,565
Acquisition of property, plant and equipment		(1,195,189,266,500)	(1,476,318,325,155)	(1,068,946,665)	(1,320,381,294)
Proceeds from disposal of intangible assets		1,908,498,380	663,753,254	1,706,912	593,644
Acquisition of intangible assets		(12,548,914,843)	(67,818,379,986)	(11,223,428)	(60,655,022)
Dividends received		12,661,738,200	5,140,963,400	11,324,334	4,597,946
Net cash flows used in investing activities		**(698,089,960,161)**	**(1,232,276,905,640)**	**(1,141,414,278)**	**(1,102,116,899)**
Financing activities					
Proceeds from short-term borrowings		355,811,233,383	520,596,730,880	318,228,453	465,608,381
Repayment of short-term borrowings		(534,360,947,257)	(104,630,832,655)	(477,918,744)	(93,579,137)
Repayment of current portion of long-term borrowings		(351,337,600,000)	(350,758,602,000)	(314,227,350)	(313,709,509)
Proceeds from long-term borrowings		484,187,346,776	275,079,559,220	433,044,761	246,024,112
Repayment of long-term borrowings		(40,429,584,000)	(30,522,000,632)	(36,159,184)	(27,298,096)
Others		(1,166,792)	(101,883,208)	(1,044)	(91,122)
Interest paid		(89,188,397,902)	(65,707,638,170)	(79,767,819)	(58,767,228)
Dividends paid		(60,513,599,007)	(47,877,329,236)	(54,121,813)	(42,820,257)
Net cash flows from financing activities		**(235,832,714,799)**	**196,078,004,199**	**(210,922,740)**	**175,367,144**
Net increase (decrease) in cash and cash equivalents		624,746,566,027	(318,515,297,389)	41,696,826	(284,871,923)
Net foreign exchange difference		(66,981,424,031)	(32,686,059,475)	(59,906,470)	(29,233,574)
Cash and cash equivalents at January 1		444,609,329,777	795,810,686,641	397,647,194	711,752,694
Cash and cash equivalents at December 31		**₩ 1,002,374,471,773**	**₩ 444,609,329,777**	**$ 379,437,550**	**$ 397,647,197**

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

1. Organization and business

1.1 The Company

Samsung Electro-Mechanics Co., Ltd. (the "Company") was incorporated on August 8, 1973 under the laws of the Republic of Korea to engage in manufacture and sales of various electronic components. The ordinary shares of the Company have been publicly traded on the Korea Exchange since 1979.

The Company's manufacturing plants are located in Suwon, Busan, Sejong, Ulsan and Cheonan. The Company maintains its overseas business operations through 15 overseas direct subsidiaries and 1 overseas indirect subsidiaries located in the Americas, Europe and Asia.

1.2 Consolidated subsidiaries

Details of consolidated subsidiaries as of December 31, 2018 are as follows (Korean won in thousands):

Subsidiary	Issued capital	Number of shares	Equity interest	Principal activities	Domicile
Samsung Electro-Mechanics (Thailand) Co., Ltd.	₩ 13,130,733	3,181,869	75.00%	Network module manufacturing	Thailand
Dongguan Samsung Electro-Mechanics Co., Ltd. (*1)	73,534,869	-	100.00%	Chip component manufacturing	China
Tianjin Samsung Electro-Mechanics Co., Ltd. (*1)	129,269,389	-	81.76%	Chip component manufacturing	China
Samsung Electro-Mechanics Philippines, Corp.	53,917,212	4,046,711	100.00%	Chip component manufacturing	Philippines
Samsung High-Tech Electro-Mechanics(Tianjin) Co., Ltd. (*1)	38,972,998	-	95.00%	Camera module manufacturing	China
Kunshan Samsung Electro-Mechanics Co., Ltd. (*1)	268,087,500	-	100.00%	Multi-layer board manufacturing	China
Samsung Electro-Mechanics Vietnam Co., Ltd. (*1)	112,840,500	-	100.00%	Camera module, multi-layer board manufacturing	Vietnam
Samsung Electro-Mechanics America, Inc.	3,420,160	5,000	100.00%	Trading	US
Samsung Electro-Mechanics GmbH (*1)	3,089,662	-	100.00%	Trading	Germany
Calamba Premier Realty Corporation(*2)	3,383	398	39.80%	Real estate	Philippines
Samsung Electro-Mechanics Pte Ltd.	1,215,800	1,760,200	100.00%	Trading	Singapore
Samsung Electro-Mechanics (Shenzhen) Co., Ltd. (*1)	2,368,283	-	100.00%	Trading	China
Samsung Electro-Mechanics Japan Co., Ltd.	4,696,119	330,000	100.00%	Trading	Japan
Batino Realty Corporation	2,704	1,000	39.80%	Real estate	Philippines
Samsung Electro-Mechanics Software India Bangalore Private Limited	16,790	100,000	100.00%	Software development	India
Samsung Venture Investment Co., Ltd.(SVIC#19) (*1)	3,956,000	-	99.00%	Investment	Korea

1.2 Consolidated subsidiaries (cont'd)

The fiscal year for all subsidiaries ends on December 31.

(*1) These subsidiaries are limited liability entities that do not issue shares in accordance with local law.

(*2) Calamba Premier Realty Corporation is a direct subsidiary which wholly owns Batino Realty Coporation.

Samsung Electro-Mechanics do Brasil Intermediacoes de NegociosLtda was liquidiated during the year.

Although the Company's equity interests in Calamba Premier Realty Corporation and Batino Realty Corporation are less than 50%, it is assessed that the Company holds *de facto* control over these entities as the retirement pension fund for the employees of Samsung Electro-Mechanics Philippines, Corp. owns more than 50% of the equity interests.

The summary of the consolidated subsidiaries' financial position as of December 31, 2018 and the results of their financial performance for the year then ended, which have been included in the accompanying consolidated financial statements are as follows (Korean won in thousands):

Subsidiary	Total assets	Total liabilities	Sales	Profit (loss) for the year
Samsung Electro-Mechanics (Thailand) Co., Ltd.	₩ 206,957,912	₩ 49,800,539	₩ 367,025,044	₩ 8,701,331
Dongguan Samsung Electro-Mechanics Co., Ltd.	265,661,911	109,033,556	1,180,209,900	42,035,878
Tianjin Samsung Electro-Mechanics Co., Ltd.	946,210,181	498,128,304	1,501,322,088	138,063,642
Samsung Electro-Mechanics Philippines,Corp.	961,654,903	736,932,664	969,454,903	19,316,433
Samsung High-Tech Electro-Mechanics (Tianjin) Co., Ltd.	487,341,600	368,264,596	1,031,871,245	9,972,879
Kunshan Samsung Electro-Mechanics Co., Ltd.	437,417,171	330,976,748	223,731,741	(74,722,952)
Samsung Electro-Mechanics Vietnam Co., Ltd.	1,300,169,034	952,949,988	1,844,392,528	127,120,644
Samsung Electro-Mechanics America, Inc.	66,194,912	53,547,438	290,056,237	1,566,036
Samsung Electro-Mechanics GmbH	104,102,610	79,591,282	210,211,312	3,142,194
Calamba Premier Realty Corporation	7,519,697	6,000,768	-	3,477
Samsung Electro-Mechanics Pte Ltd.	85,924,643	62,784,796	282,953,294	4,460,845
Samsung Electro-Mechanics (Shenzhen) Co., Ltd.	476,741,055	365,667,766	1,960,759,298	80,483,904
Samsung Electro-Mechanics Japan Co., Ltd.	11,482,998	7,045,409	27,106,627	80,890
Batino Realty Corporation	4,423,971	3,790,700	-	109,549
Samsung Electro-Mechanics Software India Bangalore Private Limited	1,461,284	1,189,779	2,843,231	257,409
Samsung Venture Investment Co., Ltd. (SVIC#19)	15,388,003	52,173	-	(139,779)
	₩ 5,378,651,885	₩ 3,625,756,506	₩ 9,891,937,448	₩ 360,452,380

1.2 Consolidated subsidiaries (cont'd)

Profit attributable to non-controlling interests
Details of profit or loss attributable to non-controlling interests for the year ended December 31, 2018 are as follows (Korean won in thousands):

Subsidiary	Non-controlling ownership	Profit (loss)	Attributable to non-controlling interests
Samsung Electro-Mechanics Thailand Co., Ltd.	25.00%	₩ 9,449,860	₩ 2,362,465
Tianjin Samsung Electro-Mechanics Co., Ltd.	18.24%	140,304,478	25,591,537
Samsung High-Tech Electro-Mechanics (Tianjin) Co., Ltd.	5.00%	15,124,647	756,232
Calamba Premier Realty Corp.	60.20%	3,477	2,093
Batino Realty Corporation	60.20%	109,549	65,949
Samsung Venture Investment Co.,Ltd. (SVIC#19)	1.00%	(139,779)	(1,398)
		₩ 164,852,232	₩ 28,776,878

2. Summary of significant accounting policies

2.1 Basis of financial statements preparation

Samsung Electro-Mechanics Co., Ltd. and its subsidiaries (collectively referred to as the "Group") prepare statutory 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*. The accompanying consolidated financial statements have been translated into English from the Korean financial statements. In the event of differences in interpreting the financial statements or the independent auditor's report thereon, the Korean version, which is used for regulatory purposes, shall prevail.

The accompanying consolidated financial statements have been prepared on a historical cost basis, except for financial instruments that have been measured at fair value and when otherwise noted. The consolidated financial statements are presented in Korean won (KRW) with all values rounded to the nearest thousand, except when otherwise indicated.

United States dollar amounts
The US dollar amounts provided herein represent supplementary information solely for the convenience of the reader. All Korean won amounts of the 2018 and 2017 financial statements are translated to US dollars at US$1:₩1,181.1, the exchange rate in effect on December 31, 2018. Such presentation is not in accordance with Korean International Financial Reporting Standards, and should not be construed as a representation that the won amounts shown could be readily converted, realized or settled in US dollars at this or at any other rate.

2.2 Principles of consolidation

The consolidated financial statements comprise the financial statements of the Group and its subsidiaries as of December 31, 2018. Control is achieved when the Group is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Group controls an investee if and only if the Group has:

- Power over the investee (i.e. existing rights that give it the current ability to direct the relevant activities of the investee)
- Exposure, or rights, to variable returns from its involvement with the investee, and
- The ability to use its power over the investee to affect its returns

2.2 Principles of consolidation (cont'd)

When the Group has less than a majority of the voting or similar rights of an investee, the Group considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- The contractual arrangement with the other vote holders of the investee
- Rights arising from other contractual arrangements
- The Group's voting rights and potential voting rights

The Group re-assesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary. Assets, liabilities, income and expenses of a subsidiary acquired or disposed of during the year are included in the consolidated statement of comprehensive income from the date the Group gains control until the date the Group ceases to control the subsidiary.

Profit or loss and each component of other comprehensive income (OCI) are attributed to the equity holders of the parent of the Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with the Group's accounting policies. All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction.

If the Group loses control over a subsidiary, it derecognizes the related assets (including goodwill), liabilities, non-controlling interest and other components of equity while any related gain or loss is recognized in profit or loss. Any remaining investment is recognized at fair value.

2.3 Business combinations and goodwill

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured as the aggregate of the consideration transferred, measured at acquisition date fair value and the amount of any non-controlling interest in the acquiree. For each business combination, the acquirer measures the non-controlling interest in the acquiree either at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition costs incurred are expensed and included in administrative expenses.

When the Group acquires a business, it assesses the financial assets and liabilities assumed for appropriate classification and designation in accordance with the contractual terms, economic circumstances and pertinent conditions as of the acquisition date.

If the business combination is achieved in stages, any previously held equity interest is re-measured at its acquisition date fair value and any resulting gain or loss is recognized in profit or loss. It is then considered in the determination of goodwill.

Any contingent consideration to be transferred by the acquirer will be recognized at fair value at the acquisition date. Contingent consideration classified as an asset or liability that is a financial instrument and within the scope of KIFRS 1039 *Financial Instruments: Recognition and Measurement*, is measured at fair value with changes in fair value recognized either in either profit or loss or as a change to OCI. If the contingent consideration is not within the scope of KIFRS 1039, it is measured in accordance with the appropriate KIFRS. Contingent consideration that is classified as equity is not re-measured and subsequent settlement is accounted for within equity.

2.3 Business combinations and goodwill (cont'd)

Goodwill is initially measured at cost, being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interests, and any previous interest held, over the net identifiable assets acquired and liabilities assumed. If the fair value of the net assets acquired is in excess of the aggregate consideration transferred, the Group re-assesses whether it has correctly identified all of the assets acquired and all of the liabilities assumed and reviews the procedures used to measure the amounts to be recognized at the acquisition date. If the re-assessment still results in an excess of the fair value of net assets acquired over the aggregate consideration transferred, then the gain is recognized in profit or loss.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill has been allocated to a cash-generating unit and part of the operation within that unit is disposed of, the goodwill associated with the disposed operation is included in the carrying amount of the operation when determining the gain or loss on disposal. Goodwill disposed in these circumstances is measured based on the relative values of the disposed operation and the portion of the cash-generating unit retained.

2.4 Investment in associates

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but is not control or joint control over those policies.

The Group's investments in its associate and are accounted for using the equity method. Under the equity method, the investment in an associate is initially recognized at cost. The carrying amount of the investment is adjusted to recognize changes in the Group's share of net assets of the associate since the acquisition date. Goodwill relating to the associate is included in the carrying amount of the investment and is neither amortized nor individually tested for impairment.

The consolidated statement of comprehensive income reflects the share of the results of financial performance of the associate. Where there has been a change recognized directly in the equity of the associate, the Group recognizes its share of any changes and discloses this, when applicable, in the statement of changes in equity. Unrealized gains and losses resulting from transactions between the Group and the associate are eliminated to the extent of the interest in the associate.

The share of profit of associates is shown on the face of the statements of profit or loss and other comprehensive income. This is the profit attributable to equity holders of the associate and therefore is profit after tax and non-controlling interests in the subsidiaries of the associates.

The financial statements of the associate are prepared for the same reporting period as the Group. Where necessary, adjustments are made to bring the accounting policies in line with those of the Group.

After application of the equity method, the Group determines whether it is necessary to recognize an additional impairment loss on the Group's investment in its associates. At each reporting date, the Group determines whether there is objective evidence that the investment in the associate is impaired. If this is the case, the Group calculates the amount of impairment as the difference between the recoverable amount of the associate and its carrying value and recognizes the amount in the statements of profit or loss and other comprehensive income.

Upon loss of significant influence over the associate, the Group measures and recognizes any retaining investment at its fair value. Any difference between the carrying amount of the associate upon loss of significant influence and the fair value of the retaining investment and proceeds from disposal is recognized in profit or loss.

2.5 Current versus non-current classification

The Group presents assets and liabilities in the statement of financial position based on current/non-current classification.

An asset is current when it is:

- Expected to be realized or intended to be sold or consumed in the normal operating cycle
- Held primarily for the purpose of trading
- Expected to be realized within twelve months after the reporting period, or
- Cash or cash equivalent unless restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period

All other assets are classified as non-current.

A liability is current when:

- It is expected to be settled in the normal operating cycle
- It is held primarily for the purpose of trading
- It is due to be settled within twelve months after the reporting period, or
- There is no unconditional right to defer the settlement of the liability for at least twelve months after the reporting period

The Group classifies all other liabilities as non-current.

Deferred tax assets and liabilities are classified as non-current assets and liabilities.

2.6 Foreign currency translation

The Group's consolidated financial statements are presented in Korean won, which is also its functional currency. Each entity in the Group determines its own functional currency and items included in the financial statements of each entity are measured using that functional currency.

Transactions and balances
Transactions in foreign currencies are initially recorded by the Group entities at their respective functional currency rates prevailing at the date of the transaction.

Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rate of exchange ruling at the reporting date.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates as of the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value is determined.

Foreign operations
The assets and liabilities of foreign operations are translated into Korean won at the rate of exchange prevailing at the reporting date and their statements of profit or loss and other comprehensive incomes are translated at average exchange rate during the applicable period. The exchange differences arising on the translation are recognized in other comprehensive income. On disposal of a foreign operation, the gain or loss on translation of foreign operations recorded in other comprehensive income is reclassified to the statements of profit or loss and other comprehensive income. Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amounts of assets and liabilities arising on the acquisition are treated as assets and liabilities of the foreign operation and translated at the spot rate of exchange at the reporting date.

2.7 Cash and cash equivalents

Cash and cash equivalents in the consolidated statement of financial position comprise cash at banks and on hand and short-term deposits with a maturity of three months or less, which represent cash and cash equivalents on the consolidated statements of cash flows.

2.8 Financial instruments: Initial recognition and subsequent measurement

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

Financial assets

Initial recognition and measurement

Financial assets are classified, at initial recognition, as subsequently measured at amortised cost, fair value through other comprehensive income (OCI), and fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price determined under KIFRS 1115. Refer to the accounting policies in section (e) Revenue from contracts with customers.

In order for a financial asset to be classified and measured at amortised cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level.

The Group's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognised on the trade date, i.e., the date that the Group commits to purchase or sell the asset.

Subsequent measurement

For purposes of subsequent measurement, financial assets are classified in four categories:
- Financial assets at amortised cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon
- Financial assets at fair value through profit or loss

Financial assets at amortised cost (debt instruments)

This category is the most relevant to the Group. The Group measures financial assets at amortised cost if both of the following conditions are met:
- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows
- 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

Financial assets at amortised cost are subsequently measured using the effective interest (EIR) method and are subject to impairment. Gains and losses are recognised in profit or loss when the asset is derecognised, modified or impaired.

Financial assets at fair value through OCI (debt instruments)

The Group measures debt instruments at fair value through OCI if both of the following conditions are met:

- The financial asset is held within a business model with the objective of both holding to collect contractual cash flows and selling, and

- 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

For debt instruments at fair value through OCI, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in the statement of profit or loss and computed in the same manner as for financial assets measured at amortised cost. The remaining fair value changes are recognized in OCI. Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.
The Group's debt instruments at fair value through OCI includes investments in quoted debt instruments included under other non-current financial assets.

Financial assets designated at fair value through OCI (equity instruments)

Upon initial recognition, the Group can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under KIFRS 1032 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognised as other income in the statement of profit or loss when the right of payment has been established, except when the Group benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

The Group elected to classify irrevocably its non-listed equity investments under this category.

Financial assets at fair value through profit or loss

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 near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortised cost or at fair value through OCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

Financial assets at fair value through profit or loss are carried in the statement of financial position at fair value with net changes in fair value recognized in the statement of profit or loss.

2.8 Financial instruments: Initial recognition and subsequent measurement (cont'd)

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognised in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at fair value through profit or loss.

Derecognition
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 of the risks and rewards of the asset, nor transferred control of the asset, the Group continues to recognize the transferred asset to the extent of the Group's continuing involvement. 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.

Impairment of financial assets
Further disclosures relating to impairment of financial assets are also provided in the following notes:

- Disclosures for significant assumptions
- Debt instruments at fair value through OCI
- Trade receivables, including contract assets

The Group recognises an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognised in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

2.8 Financial instruments – impairment of financial assets (cont'd)

For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

Financial liabilities

Initial recognition and measurement
Financial liabilities within the scope of KIFRS 1039 are classified at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and in the case of loans and borrowings and payable, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts, financial guarantee contracts and derivative financial instruments.

Subsequent measurement
The measurement of financial liabilities depends on their classification.

Financial liabilities at fair value through profit or loss
Financial liabilities at fair value through profit or loss includes 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. This category includes derivative financial instruments entered into by the Group that are not designated as hedging instruments in hedge relationships as defined by KIFRS 1109. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments. Gains or losses on liabilities held for trading are recognized in the consolidated statement of profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied. The Group has not designated any financial liability as of fair value through profit or loss.

Loans and borrowings
After initial recognition, interest bearing loans and borrowings are subsequently measured at amortized cost using the effective interest rate method. Gains and losses are recognized in the consolidated statement of profit or loss when the liabilities are derecognized as well as through the effective interest rate method (EIR) amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fee or costs that are an integral part of the EIR.

Derecognition
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 statements of profit or loss.

Offsetting of financial instruments
Financial assets and financial liabilities are offset and the net amount reported in the consolidated statement of financial position 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 assets and settle the liabilities simultaneously.

2.9 Fair value measurement

The Group measures financial instruments, at fair value at each balance sheet date. Fair value related disclosures for financial instruments that are measured at fair value or where fair values are disclosed, are summarized in the following notes:

	Notes
Quantitative disclosures of fair value measurement hierarchy	26
Investment in unquoted equity shares	9
Financial instruments (including those carried at amortized cost)	26

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either:

- In the principal market for the asset or liability, or
- In the absence of a principal market, in the most advantageous market for the asset or liability

The principal or the most advantageous market must be accessible by the Group.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

The Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

All assets and liabilities for which fair value is measured or disclosed in the financial statements are categorized within the fair value hierarchy, described as follows, based on the lowest level input that is significant to the fair value measurement as a whole:

- Level 1 — Quoted (unadjusted) market prices in active markets for identical assets or liabilities
- Level 2 — Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable
- Level 3 — Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable

For assets and liabilities that are recognized in the consolidated financial statements on a recurring basis, the Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

For the purpose of fair value disclosures, the Group has determined classes of assets and liabilities on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy as explained above.

2.10 Inventories

Inventories are valued at the lower of cost and net realizable value. Purchase costs, transfer costs and costs incurred in bringing each product to its present location and conditions are accounted for initial cost of inventories. Unit costs of inventories are measured by weighted average basis. Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

2.11 Property, plant and equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and/or accumulated impairment losses, if any. Such cost includes the cost of replacing part of the property, plant and equipment and borrowing costs for long-term construction projects if the recognition criteria are met. When significant parts of property, plant and equipment are required to be replaced at intervals, the Group recognizes such parts as individual assets with specific useful lives and depreciates them accordingly. Likewise, when a major inspection is performed, its cost is recognized in the carrying amount of the plant and equipment as a replacement if the recognition criteria are satisfied. All other repair and maintenance costs are recognized in profit or loss as incurred. The residual values, useful lives and methods of depreciation of property, plant and equipment are reviewed at each financial year end and adjusted prospectively, if appropriate.

Depreciation of property, plant and equipment is provided using the straight-line method over the estimated useful life of the assets as follows:

	Years
Buildings	17 – 52
Structures	20 – 40
Machinery	4 – 5
Equipment	4 – 5
Vehicles	4 – 5

2.12 Leases

A lease is classified at the inception date as a finance lease or an operating lease. An operating lease is a lease other than a finance lease. Operating lease payments are recognized as an operating expense in the statement of profit or loss on a straight-line basis over the lease term.

2.13 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalized as part of the cost of the respective assets. All other borrowing costs are expensed in the period they occur.

2.14 Intangible assets

Intangible assets acquired separately 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. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and any accumulated impairment losses. Internally generated intangible assets, excluding capitalized development costs, are not capitalized and expenditure is reflected in the statements of profit or loss and other comprehensive income in the year in which the expenditure is incurred.

The useful lives of intangible assets are assessed as either finite or indefinite. Intangible assets with finite lives are amortized over the useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life is reviewed at least at each financial year end. Changes in the expected useful life or the expected pattern of consumption of future economic benefits embodied in the asset is accounted for by changing the amortization period or method, as appropriate, and are treated as changes in accounting estimates. The amortization expense on intangible assets with finite lives is recognized in the statements of profit or loss and other comprehensive income in the expense category consistent with the function of the intangible asset.

Intangible assets with indefinite useful lives are not amortized, but are tested for impairment annually, either individually or at the cash generating unit level. The assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable. If not, the change in useful life from indefinite to finite is made on a prospective basis.

Gains or losses arising from derecognition of an intangible asset are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognized in the consolidated statement of loss or profit when the asset is derecognized.

Research and development costs
Expenditures on research activities are recognized as expense in the period in which they incur. Expenditures on development activities are capitalized as intangible assets (development costs) when the assets become ready to use (development activities for the project are finished). The expenditures on specific projects are recognized as an intangible asset when the Group can demonstrate:

- The technical feasibility of completing the intangible asset so that it will be available for use or sale
- Its intention to complete and its ability to use or sell the asset
- How the asset will generate future economic benefits
- The availability of resources to complete the asset
- The ability to measure reliably the expenditure during development

Goodwill
Goodwill is accounted for as an intangible asset and is initially measured consideration paid which exceeds the cost of the investment over the Company’s share of the fair value of the subsidiary’s net identifiable assets.

Patents, licenses, software and membership
The patents have been granted for a period of 7~10 years by the relevant government agency with the option of renewal at the end of this period. Licenses for the use of intellectual property and software are granted for periods 4~5 and 4 years, respectively. Memberships for usage rights that are not kept for investment purposes, are regarded to have indefinite useful lives and are not amortized.

2.14 Intangible assets (cont'd)

A summary of the policies applied to the Group's intangible assets is as follows:

	Amortization methods	Estimated useful life
Development costs	Straight-line method over the expected useful life of the technology or product	5 years
Patents	Straight-line method over the licensed period	7 ~ 10 years
Industrial proprietary rights	〃	5 years
Other intangible assets	〃	5 years
Software	Straight-line method over their useful lives	4 ~ 5 years
Membership	Not amortized	indefinite

2.15 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 of disposal and its value in use. Recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. 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.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In determining fair value less costs to sell, an appropriate valuation model is used. These calculations are corroborated by valuation multiples, quoted share prices for publicly traded subsidiaries or other available fair value indicators.

The Group bases its impairment calculation on detailed budgets and forecast calculations, which are prepared separately for each of the Group's CGUs to which the individual assets are allocated. These budgets and forecast calculations generally cover a period of five years. For longer periods, a long-term growth rate is calculated and applied to project future cash flows after the fifth year.

Impairment losses of continuing operations are recognized in the consolidated statement of comprehensive income in expense categories consistent with the function of the impaired asset, except for property previously revalued with the revaluation was taken to other comprehensive income. In this case, the impairment is also recognized in other comprehensive income up to the amount of any previous revaluation.

For assets excluding goodwill, an assessment is made at each reporting date to determine whether there is an indication that previously recognized impairment losses no longer exist or have decreased. If such indication exists, the Group estimates the asset's or cash-generating unit's recoverable amount. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the statements of profit or loss and other comprehensive income unless the asset is carried at a revalued amount, in which case the reversal is treated as a revaluation increase.

2.15 Impairment of non-financial assets (cont'd)

The following criteria are also applied in assessing impairment of specific assets:

Goodwill
Goodwill is tested for impairment annually (as of December 31) and when circumstances indicate that the carrying value may be impaired. Impairment is determined for goodwill by assessing the recoverable amount of each cash-generating unit (or group of cash-generating units) to which the goodwill relates. When the recoverable amount of the cash generating unit is less than their carrying amount an impairment loss is recognized. Impairment losses relating to goodwill cannot be reversed in future periods.

Intangible assets
Intangible assets with indefinite useful lives are tested for impairment annually as of December 31 either individually or at the cash generating unit level, as appropriate and when circumstances indicate that the carrying value may be impaired.

2.16 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. When the Group expects some or all of a provision to be reimbursed, for example under an insurance contract, the reimbursement is recognized as a separate asset but only when the reimbursement is virtually certain. The expense relating to any provision is presented in the consolidated statement of comprehensive income net of any reimbursement.

If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, when appropriate, the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognized as a finance cost. The Group accrues provision for warranty corresponding to the estimated costs of future repairs and returns, based on the past experience. The provision for product warranties is charged to selling and administrative expenses when the goods covered by warranties are sold to customers.

Asset (allowance) and liability (emission obligation)
The Group is allocated with emission allowances free of charge by the government in accordance with the Act on Allocation and Trading of Emission Allowances in the Republic of Korea. The allowances are allocated to the Group every year for planned periods, and the Group should submit the equivalent number of emission allowances for actual emissions.

The Group measures the emission allowances that it receives from the government free of charge at nil, and measures any purchased emission allowances at cost. In addition, emission allowances are derecognized in the financial statements when they are delivered to the government or sold.

A liability (emission obligation) is recognized only where actual emissions exceed the allocated emission allowances, and the cost of emissions is recognized as an operating cost. The liability is measured by adding the following (1) and (2).

(1) The carrying value of emission allowances for the year to be delivered to the government
(2) The best estimate of expenditures, as of the end of a reporting period, in performing emission obligations exceeding the above emission allowances

Estimated emissions of the Group during 2018 are expected as 421,624KAU, which is less than the allocated emission allowances issued by the government. The Group does not have any emission right held for sale.

2.17 Employee benefits

Pension benefits and other post-employment benefits
The Group operates a defined benefit pension plan in Korea, the cost of providing benefits under the defined benefit plan is determined using the projected unit credit method. Re-measurements, comprising of actuarial gains and losses, the effect of the asset ceiling, excluding net interest (not applicable to the Group) and the return on plan assets (excluding net interest), are recognized immediately in the statement of financial position with a corresponding debit or credit to retained earnings through OCI in the period in which they occur. Re-measurements are not reclassified to profit or loss in subsequent periods.

Past service costs are recognized in profit or loss on the earlier of:

- The date of the plan amendment or curtailment, and
- The date that the Group recognizes restructuring-related costs

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Group recognizes the following changes in the net defined benefit obligation under 'cost of sales' and 'Selling and administrative expenses' in consolidated statement of comprehensive income.

Other long-term employee benefits
Other long-term employee benefits, not due within twelve months after the end of the period in which the employees render the related service, are discounted to the present value of expected future payments required to settle the obligation resulting from employee service in the current and prior periods. Changes arising from remeasurements are recognized in profit or loss.

2.18 Treasury shares

Own equity instruments which are reacquired (treasury shares) are recognized at cost and deducted from equity. No gain or loss is recognized in the statements of profit or loss and other comprehensive income on the purchase, sale, issue or cancellation of the Group's own equity instruments. Any difference between the carrying amount and the consideration is recognized in other capital reserves.

2.19 Cash dividend

The Company recognizes a liability to pay a dividend when the distribution is authorized and the distribution is no longer at the discretion of the Company. A distribution is authorized when it is approved by the shareholders. A corresponding amount is recognized directly in equity.

2.20 Share-based payment transactions

Employees of the Group receive remuneration in the form of share-based payment transactions, whereby employees render services as consideration for equity instruments.

The cost of equity-settled transactions is determined by the fair value at the date when the grant is made using an appropriate valuation model.

That cost is recognized in employee benefits expense, together with a corresponding increase in equity (other capital reserves), over the period in which the service and, where applicable, the performance conditions are fulfilled (the vesting period). The cumulative expense recognized for equity-settled transactions at each reporting date until the vesting date reflects the extent to which the vesting period has expired and the Group's best estimate of the number of equity instruments that will ultimately vest. The expense or credit in the statement of profit or loss and other comprehensive income for a period represents the movement in cumulative expense recognized as of the beginning and end of that period.

Service and non-market performance conditions are not taken into account when determining the grant date fair value of awards, but the likelihood of the conditions being met is assessed as part of the Group's best estimate of the number of equity instruments that will ultimately vest. Market performance conditions are reflected within the grant date fair value. Any other conditions attached to an award, but without an associated service requirement, are considered to be non-vesting conditions.

2.20 Share-based payment transactions (cont'd)

Non-vesting conditions are reflected in the fair value of an award and lead to an immediate expensing of an award unless there are also service and/or performance conditions.
No expense is recognized for awards that do not ultimately vest, except for equity-settled transactions where vesting is conditional upon a market or non-vesting condition, which are treated as vesting irrespective of whether or not the market or non-vesting condition is satisfied, provided that all other performance and/or service conditions are satisfied.

When the terms of an equity-settled transaction award are modified, the minimum expense recognized is the expense as if the terms had not been modified, if the original terms of the award are met. An additional expense is recognized for any modification that increases the total fair value of the share-based payment transaction, or is otherwise beneficial to the employee as measured at the date of modification.

When an equity-settled award is cancelled, it is treated as if it vested on the date of cancellation, and any expense not yet recognized for the award is recognized immediately. This includes any award where non-vesting conditions within the control of either the entity or the employee are not met.

2.21 Revenue recognition

The Group is in the business of manufacturing and selling electronics equipment. Revenue from contracts with customers is recognised when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Group expects to be entitled in exchange for those goods or services.

Sale of goods (obilligation)

Revenue from sale of equipment is recognised at the point in time when control of the asset is transferred to the customer, generally on delivery of the equipment.

Variable consideration

f the consideration in a contract includes a variable amount, the Group estimates the amount of consideration to which it will be entitled in exchange for transferring the goods to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognised will not occur when the associated uncertainty with the variable consideration is subsequently resolved. Some contracts for the sale of electronics equipment provide customers with a right of return and volume rebates. The rights of return and volume rebates give rise to variable consideration.

Variable consideration for expected return

The Group uses the expected value method to estimate the goods that will not be returned because this method best predicts the amount of variable consideration to which the Group will be entitled. The requirements in KIFRS 1115 on constraining estimates of variable consideration are also applied in order to determine the amount of variable consideration that can be included in the transaction price. For goods that are expected to be returned, instead of revenue, the Group recognises a refund liability. A right of return asset (and corresponding adjustment to cost of sales) is also recognised for the right to recover products from a customer.

Warranty obligations

The Group typically provides warranties for general repairs of defects that existed at the time of sale, as required by law. These assurance-type warranties are accounted for under KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets*. Refer to the Note 16 on warranty provisions.

Assets and liabilities arising from rights of return

Right of return assets
Right of return asset represents the Group's right to recover the goods expected to be returned by customers. The asset is measured at the former carrying amount of the inventory, less any expected costs to recover the goods, including any potential decreases in the value of the returned goods. The Group updates the measurement of the asset recorded for any revisions to its expected level of returns, as well as any additional decreases in the value of the returned products.

Refund liabilities
A refund liability is the obligation to refund some or all of the consideration received (or receivable) from the customer and is measured at the amount the Group ultimately expects it will have to return to the customer. The Group updates its estimates of refund liabilities (and the corresponding change in the transaction price) at the end of each reporting period. Refer to above accounting policy on variable consideration.

2.22 Taxes

Current income tax
Current income tax assets and liabilities for the current and prior periods are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted, at the reporting date in the countries where the Group operates and generates taxable income.

Current income tax relating to items recognized directly in equity is recognized in equity and not in the statements of profit or loss and other comprehensive income. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred tax
Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

- When the deferred tax liability arises from the initial recognition of goodwill.
- When the deferred tax liability arises from the initial recognition 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 or loss.
- In respect of taxable temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, 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, the carry forward of unused tax credits and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry forward of unused tax credits and unused tax losses can be utilized except:

- When the deferred tax asset relating to the deductible temporary difference arises from the initial recognition 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 or loss.
- In respect of deductible temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized.

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are reassessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year 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 relating to items recognized outside profit or loss is recognized outside profit or loss. Deferred tax items are recognized in correlation to the underlying transaction either in other comprehensive income or directly in equity.

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

2.23 Government grants

Government grants are recognized where there is reasonable assurance that the grant will be received and all attached conditions will be complied with. Government grants, which is used for the acquisition of certain assets, is accounted for as a deduction from the acquisition cost of the acquired assets. Such grants amount is offset against the depreciation or amortization of the acquired assets during such assets' useful life.

2.24 New and amended standards and interpretations

The Group applied for the first time certain standards and amendments, which are effective for annual periods beginning on or after January 1, 2018. The nature and the impact of each new standard and amendment are described below:

KIFRS 1115 *Revenue from Contracts with Customers*

KIFRS 1115 supersedes KIFRS 1011 Construction Contracts, KIFRS 1018 Revenue and related Interpretations and it applies, with limited exceptions, to all revenue arising from contracts with its customers. KIFRS 1115 establishes a five-step model to account for revenue arising from contracts with customers and requires that revenue be recognised at an amount that reflects the consideration to which an entity expects to be entitled in exchange for transferring goods or services to a customer.

KIFRS 1115 requires entities to exercise judgement, taking into consideration all of the relevant facts and circumstances when applying each step of the model to contracts with their customers. The standard also specifies the accounting for the incremental costs of obtaining a contract and the costs directly related to fulfilling a contract. In addition, the standard requires extensive disclosures.

The Group adopted KIFRS 1115 using the full retrospective method of adoption. The effect of the transition on the current period has not been disclosed as the standard provides an optional practical expedient. The Group did not apply any of the other available optional practical expedients.

The effect of adopting KIFRS 1115 is, as follows:

Impact on statement of changes in equity as of January 1, 2018

	adjustments	Before adjustment	adjustment	After adjustment
Equity				
Retained earnings	(a)	₩ 383,977,482	₩ (1,515,199)	₩ 382,462,283
Non-controlling interests	(a)	99,848,170	(109,734)	99,738,436
Total equity		₩ 483,825,652	₩ (1,624,933)	₩ 482,200,719

Impact on statement of financial position as of December 31, 2018

	adjustments	Before adjustment	adjustment	After adjustment
Assets				
Right to return	(a)	₩ -	₩ 10,906,311	₩ 10,906,311
Total assets		-	10,906,311	10,906,311
Liabilities				
Refund liabilities	(a)	3,261,410	13,634,303	16,895,713
Total liabilities		3,261,410	13,634,303	16,895,713
Equity				
Retained earning	(a)	1,229,479,713	(2,501,268)	1,226,978,445
Non-controlling interests	(a)	125,676,620	(226,724)	125,449,896
Total Equity		₩ 1,355,156,333	₩ (2,727,992)	₩ 1,352,428,341

2.24 New and amended standards and interpretations (cont'd)

Impact on statement of comprehensive as of December 31, 2018

	Adjustments	December 31, 2018	adjustments	After adjustment
Revenue	(a)	₩ 8,193,202,584	₩ (179,331)	₩ 8,193,023,253
Cost of Sales	(a)	(5,804,607,310)	(923,728)	(5,805,531,038)
Gross profit		2,388,595,274	(1,103,059)	2,387,492,215
Profit for Equity holder		657,227,705	(986,069)	656,241,636
Profit for non- controlling interests		28,893,868	(116,990)	28,776,878
Other comprehensive income		(25,400,347)	-	(25,400,347)
Total comprehensive income effect		₩ 660,721,226	₩ (1,103,059)	₩ 659,618,167

Impact on statement of cash flows as of December 31, 2018

	Adjustments	December 31, 2018	adjustments	After adjustment
Profit	(a)	₩ 686,121,573	₩ (1,103,059)	₩ 685,018,514
Adjustment to reconcile profit:				
Loss on valuation of return asset	(a)	-	1,103,059	1,103,059
Net cash flows from operating activities		₩ 1,640,496,363	₩ -	₩ 1,640,496,363

Impact on basic and diluted earnings per share as of December 31, 2018

	December 31, 2018
Earning per share	₩
Basic(Diluted) profit for the year attributable to common shareholders	(13)
Basic(Diluted) profit for the year attributable to preferred shareholders	₩ (13)

Sales of goods (Obiligations)
The Group concluded that revenue for selling goods is generally to be recognized at a point in time it transfers controls over to customers. Therefore, KIFRS 1115 does not affect the period of revenue recognition. However, impacts on amount of revenue are descrbed below:

(a) Variable consideration – rights of return

Under KIFRS 1115, the consideration received from the customer is variable because the contract allows the customer to return the products. The Group used the expected value method to estimate the goods that will not be returned. For goods expected to be returned, the Group presented a refund liability and an asset for the right to recover products from the customer in the statement of financial position. The group adopted requirements of KIFRS 1115 in order to decide the amount of variable consideration. On adoption of KIFRS 1115, the Group recorded refund liabilities and related assets separately and the net effect was restated in Retained Earnings.

Upon adoption of KIFRS 1115, the statement of financial position as of January 1, 2018 was restated, resulting in recognition of *Right of return assets* and *Refund liabilities* of ₩11,830 million and ₩13,455 million respectively. As result of these adjustments, *Retained earnings and non-controlling interests* as of January 1, 2018 was restated by ₩1,515 million and ₩110 million respectively.

Under KIFRS 1115, the statement of financial position as of December 31, 2018 was influenced, resulting in recognition of *Right of return assets*, *Refund liabilities, Retained earnings and Non-controlling interests* of ₩10,906 million, ₩13,634 million, ₩2,501 million and ₩227 million respectively. The statement of profit or loss for the year ended December 31, 2018 was also influenced, resulting in decreases in *Revenue from contracts with customers* and *Cost of sales* of ₩179 million and ₩924 million respectively.

KIFRS 1109 *Financial Instruments*

KIFRS 1109 *Financial Instruments* replaces KIFRS 1039 *Financial Instruments: Recognition and Measurement* for annual eriods beginning on or after January 1, 2018, bringing together all three aspects of the accounting for financial instruments: classification and measurement; impairment; and hedge accounting.

The effect of adopting KIFRS 1109 is, as follows:

Impact on the statement of changes in equity:

(Korean won in millions)

	Adjustments		January 1, 2018
Equity			
Accumulated other comprehensive income	(a)	₩	19,366,852
Retained earnings	(b)	₩	(1,471,064)
Total equity			17,895,788

(a) Classification and surement

Under KIFRS 1109, debt instruments are subsequently measured at fair value through profit or loss, amortised cost, or fair value through OCI. The classification is based on two criteria: the Group's business model for managing the assets; and whether the instruments' contractual cash flows represent 'solely payments of principal and interest' on the principal amount outstanding.

The assessment of the Group's business model was made as of the date of initial application, January 1, 2018, and then applied retrospectively to those financial assets that were not derecognised before January 1, 2018. The assessment of whether contractual cash flows on debt instruments are solely comprised of principal and interest was made based on the facts and circumstances as of the initial recognition of the assets.

(b) Impairment

The adoption of KIFRS 1109 has fundamentally changed the Group's accounting for impairment losses for financial assets by replacing KIFRS 1039's incurred loss approach with a forward-looking expected credit loss (ECL) approach. KIFRS 1109 requires the Group to recognise an allowance for ECLs for all debt instruments not held at fair value through profit or loss and contract assets.

Amendments to KIFRS 1040 *Investment Property* — Transfers of Investment Property

The amendments clarify when an entity should transfer property, including property under construction or development into, or out of investment property. The amendments state that a change in use occurs when the property meets, or ceases to meet, the definition of investment property and there is evidence of the change in use. A mere change in management's intentions for the use of a property does not provide evidence of a change in use. The amendments has no effect on the Group's consolidated financial statements.

Amendments to KIFRS 1102 *Share-based Payment — Classification and Measurement of Share-based Payment Transactions*

The amendments to KIFRS 1102 *Share-based Payment* that address three main areas: the effects of vesting conditions on the measurement of a cash-settled share-based payment transaction; the classification of a share-based payment transaction with net settlement features for withholding tax obligations; and accounting where a modification to the terms and conditions of a share-based payment transaction changes its classification from cash settled to equity settled.
On adoption, entities are required to apply the amendments without restating prior periods, but retrospective application is permitted if elected for all three amendments and other criteria are met. The Group's accounting policy for cash-settled share based payments is consistent with the approach clarified in the amendments. In addition, the Group has no share-based payment transaction with net settlement features for withholding tax obligations and had not made any modifications to the terms and conditions of its share-based payment transaction. Therefore, these amendments do not have any impact on the Group's consolidated.

Amendments to KIFRS 1028 *Investments in Associates and Joint Ventures - Clarification that measuring investees at fair value through profit or loss is an investment-by-investment choice*

The amendments clarify that:

- An entity that is a venture capital organisation, or other qualifying entity, may elect, at initial recognition on an investment-by-investment basis, to measure its investments in associates and joint ventures at fair value through profit or loss.
- If an entity, that is not itself an investment entity, has an interest in an associate or joint venture that is an investment entity, the entity may, when applying the equity method, elect to retain the fair value measurement applied by that investment entity associate or joint venture to the investment entity associate's or joint venture's interests in subsidiaries. This election is made separately for each investment entity associate or joint venture, at the later of the date on which: (a) the investment entity associate or joint venture is initially recognised; (b) the associate or joint venture becomes an investment entity; and (c) the investment entity associate or joint venture first becomes a parent.

The amendments has no effect on the Group's consolidated financial statements.

Amendments to KIFRS 1101 *First-time Adoption of International Financial Reporting Standards - Deletion of short-term exemptions for first-time adopters*

Short-term exemptions in paragraphs E3–E7 of KIFRS 1101 were deleted because they have now served their intended purpose. This amendment is not applicable to the Group.

2.25 Significant accounting judgments, estimates and assumptions

The preparation of the Group's consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the accompanying disclosures, and the disclosure of contingent liabilities. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities affected in future periods.

Other disclosures relating to the Group's exposure to risks and uncertainties includes Capital management, Financial instruments risk management and policies, Sensitivity analyses disclosures (Note 26).

Estimates and assumptions

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date, that have a significant risk of causing a material adjustments to the carrying amounts of assets and liabilities within the next financial year, are described below. The Group based its assumptions and estimates on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond control of the Group. Such changes are reflected in the assumptions when they occur.

Impairment of non-financial assets
The Group assesses, at each reporting date, whether there is an indication that an asset may be impaired. Goodwill and intangible assets with indefinite useful lives are tested for impairment annually, or when circumstances indicate that the carrying value may be impaired. Other non-financial assets are tested for impairment when circumstances indicate that its carrying amount may not be recoverable. In determining a value in use, management estimates future cash flows to be derived from the asset or CGU, and applies the appropriate discount rate to those future cash flows.

Deferred tax assets
Deferred tax assets are recognized for unused tax losses in the extent that it is probable that future taxable income will be available for tax losses. Management of the associate makes key judgments to determine the amount of deferred tax assets that are recognized based on the timing and level of future tax strategy and tax benefits.

Pension benefits
The cost of defined benefit pension plans and the present value of the pension obligation are determined using actuarial valuations. An actuarial valuation involves making various assumptions. These include the determination of the discount rate, future salary increases, mortality rates and future pension increases. Due to the complexity of the valuation, the underlying assumptions and its long term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. All assumptions are reviewed at each reporting date.

Fair value of financial instruments
When the fair values of financial assets and financial liabilities recorded in the statement of financial position cannot be measured based on quoted prices in active markets, their fair value is measured using valuation techniques including the DCF model. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing fair values. Judgments include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions about these factors could affect the reported fair value of financial instruments.

Development costs

The Group capitalizes development costs. Initial capitalization of costs is based on management's judgment that technological and economic feasibility is confirmed, usually when a product development project has reached a defined milestone according to an established project management model. In determining the amounts to be capitalized, management makes assumptions regarding the expected future cash generation of the project, discount rates to be applied and the expected period of benefits. As of December 31, 2018, the carrying amount of capitalized development costs was ₩66,700 million.

Estimating variable consideration for returns and volume rebates

The Group estimates variable considerations to be included in the transaction price for the sale of goods. The Group developed a statistical model for forecasting sales returns. The model used the historical return data of each product to come up with expected return percentages. These percentages are applied to determine the expected value of the variable consideration. Any significant changes in experience as compared to historical return pattern will impact the expected return percentages estimated by the Group.

The Group's expected volume rebates are analysed on a per customer basis for contracts that are subject to a single volume threshold. Determining whether a customer will be likely entitled to rebate will depend on the customer's historical rebates entitlement and accumulated purchases to date.

The Group applied a statistical model for estimating expected volume rebates for contracts with more than one volume threshold. The model uses the historical purchasing patterns and rebates entitlement of customers to determine the expected rebate percentages and the expected value of the variable consideration. Any significant changes in experience as compared to historical purchasing patterns and rebate entitlements of customers will impact the expected rebate percentages estimated by the Group.

The Group updates its assessment of expected returns and volume rebates quarterly and the refund liabilities are adjusted accordingly. Estimates of expected returns and volume rebates are sensitive to changes in circumstances and the Group's past experience regarding returns and rebate entitlements may not be representative of customers' actual returns and rebate entitlements in the future. As of December 31, 2018, the amount recognised as refund liabilities for the expected returns and volume rebates was ₩16,896 million.

2.26 Standards issued but not yet effective

The standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are disclosed below. The Group intends to adopt these standards, if applicable, when they become effective.

KIFRS 1116 *Leases*

KIFRS 1116 was issued in January 2016 and it replaces KIFRS 1017 *Leases*, KIFRS 2104 *Determining whether an Arrangement contains a Lease*, KIFRS 2015 *Operating Leases-Incentives* and KIFRS 2027 *Evaluating the Substance of Transactions* Involving the Legal Form of a Lease. KIFRS 1116 sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for all leases under a single on-balance sheet model similar to the accounting for finance leases under KIFRS 1017. The standard includes two recognition exemptions for lessees – leases of 'low-value' assets (e.g., personal computers) and short-term leases (i.e., leases with a lease term of 12 months or less). At the commencement date of a lease, a lessee will recognize a liability to make lease payments (i.e., the lease liability) and an asset representing the right to use the underlying asset during the lease term (i.e., the right-of-use asset). Lessees will be required to separately recognize the interest expense on the lease liability and the depreciation expense on the right-of-use asset.

Lessees will be also required to remeasure the lease liability upon the occurrence of certain events (e.g., a change in the lease term, a change in future lease payments resulting from a change in an index or rate used to determine those payments). The lessee will generally recognize the amount of the remeasurement of the lease liability as an adjustment to the right-of-use asset.

Lessor accounting under KIFRS 1116 is substantially unchanged from today's accounting under KIFRS 1017. Lessors will continue to classify all leases using the same classification principle as in KIFRS 1017 and distinguish between two types of leases: operating and finance leases.

KIFRS 1116 also requires lessees and lessors to make more extensive disclosures than under KIFRS 1017.
KIFRS 1116 is effective for annual periods beginning on or after January 1, 2019. Early application is permitted, but not before an entity applies KIFRS 1115. A lessee can choose to apply the standard using either a full retrospective or a modified retrospective approach. The standard's transition provisions permit certain reliefs.

The Group is assessing the potential effect of the amendments on its consolidated financial statements. The Group will apply these amendments on the required effective date.

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

Under KIFRS 1109, a debt instrument can be measured at amortised 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 should be applied retrospectively and are effective from January 1, 2019, with earlier application permitted. These amendments have no impact on the consolidated financial statements of the Group.

Amendments to KIFRS 1110 and KIFRS 1028: *Sale or Contribution of Assets between an Investor and its Associate or Joint Venture*
The amendments address the conflict between KIFRS 1110 and KIFRS 1028 in dealing with the loss of control of a subsidiary that is sold or contributed to an associate or joint venture. The amendments clarify that the gain or loss resulting from the sale or contribution of assets that constitute a business, as defined in KIFRS 1103, between an investor and its associate or joint venture, is recognised in full. Any gain or loss resulting from the sale or contribution of assets that do not constitute a business, however, is recognised only to the extent of unrelated investors' interests in the associate or joint venture. The KASB has deferred the effective date of these amendments indefinitely, but an entity that early adopts the amendments must apply them prospectively. The Group will apply these amendments when they become effective.

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

The amendments to KIFRS 1019 address the accounting when a plan amendment, curtailment or settlement occurs during a reporting period. The amendments specify that when a plan amendment, curtailment or settlement occurs during the annual reporting period, an entity is required to:

- Determine current service cost for the remainder of the period after the plan amendment, curtailment or settlement, using the actuarial assumptions used to remeasure the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event
- Determine net interest for the remainder of the period after the plan amendment, curtailment or settlement using: the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event; and the discount rate used to remeasure that net defined benefit liability (asset).

The amendments also clarify that an entity first determines any past service cost, or a gain or loss on settlement, without considering the effect of the asset ceiling. This amount is recognised in profit or loss. An entity then determines the effect of the asset ceiling after the plan amendment, curtailment or settlement. Any change in that effect, excluding amounts included in the net interest, is recognised in other comprehensive income.

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. These amendments will apply only to any future plan amendments, curtailments, or settlements of the Group.

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). This clarification is relevant because it implies that the expected credit loss model in KIFRS 1109 applies to such 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, recognised 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. Since the Group does not have such long-term interests in its associate and joint venture, the amendments will not have an impact on its consolidated financial statements.

IFRIC Interpretation 23 *Uncertainty over Income Tax Treatment*

The Interpretation addresses the accounting for income taxes when tax treatments involve uncertainty that affects the application of KIFRS 1012 and does not apply to taxes or levies outside the scope of KIFRS 1012, nor does it specifically include requirements relating to interest and penalties associated with uncertain tax treatments. The Interpretation specifically addresses the following:

- Whether an entity considers uncertain tax treatments separately
- The assumptions an entity makes about the examination of tax treatments by taxation authorities
- How an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates
- How an entity considers changes in facts and circumstances

The Group has to determine whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments. The approach that better predicts the resolution of the uncertainty should be followed. The interpretation is effective for annual reporting periods beginning on or after January 1, 2019, but certain transition reliefs are available. The Group will apply the interpretation from its effective date. Since the Group operates in a complex multinational tax environment, applying the Interpretation may affect its consolidated financial statements. In addition, the Group may need to establish processes and procedures to obtain information that is necessary to apply the Interpretation on a timely basis.

Annual Improvements 2015-2017 Cycle (issued in December 2017)
These improvements include:

- **KIFRS 1103 *Business Combinations***

The amendments clarify that, when an entity obtains control of a business that is a joint operation, it applies the requirements for a business combination achieved in stages, including remeasuring previously held interests in the assets and liabilities of the joint operation at fair value. In doing so, the acquirer remeasures its entire previously held interest in the joint operation.

An entity applies those amendments to business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early application permitted. These amendments will apply on future business combinations of the Group.

- **KIFRS 1111 *Joint Arrangements***

A party that participates in, but does not have joint control of, a joint operation might obtain joint control of the joint operation in which the activity of the joint operation constitutes a business as defined in KIFRS 1103. The amendments clarify that the previously held interests in that joint operation are not remeasured.

An entity applies those amendments to transactions in which it obtains joint control on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early application permitted. These amendments are currently not applicable to the Group but may apply to future transactions.

- **KIFRS 1012 *Income Taxes***

The amendments clarify that the income tax consequences of dividends are linked more directly to past transactions or events that generated distributable profits than to distributions to owners. Therefore, an entity recognises the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognised those past transactions or events.

An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application is permitted. When an entity first applies those amendments, it applies them to the income tax consequences of dividends recognised on or after the beginning of the earliest comparative period. Since the Group's current practice is in line with these amendments, the Group does not expect any effect on its consolidated financial statements.

- **KIFRS 1023 *Borrowing Costs***

The amendments clarify that an entity treats as part of general borrowings any borrowing originally made to develop a qualifying asset when substantially all of the activities necessary to prepare that asset for its intended use or sale are complete.

An entity applies those amendments to borrowing costs incurred on or after the beginning of the annual reporting period in which the entity first applies those amendments. An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application permitted. Since the Group's current practice is in line with these amendments, the Group does not expect any effect on its consolidated financial statements.

2.27 Approval of the financial statements

Approval of the consolidated financial statements of the Group for the year ended December 31, 2018 were approved by the Board of Directors' meeting on January 29, 2019 for submission to the general shareholders' meeting.

3. Operating segment

The Group has three reportable operating segments, which are organized based on each segment's products and sales.

- Module Solution: Camera module, Network module
- Component Solution: Chip components (MLCC, inductors, chip resisters and others)
- Printed Circuit Board Solution: Semiconductor PKG board, high density multi-layer boards, panel level package

Sales to Samsung Electronics Co., Ltd. is more than 10% of its total sales, amounted to ₩3,634 billion for the year ended December 31, 2018.

The following table summarizes the results of financial performance of the Group by operating segment for the years ended December 31, 2018 and 2017 (Korean won in millions):

	2018			
	Module Solution	Component Solution	Printed Circuit Board Solution	Consolidated
Sales	₩ 3,113,765	₩ 3,550,146	₩ 1,529,112	₩ 8,193,023
Operating profit	88,850	1,117,077	(187,874)	1,018,053
Profit for the year	43,626	811,201	(169,808)	685,019

	2017			
	Module Solution	Component Solution	Printed Circuit Board Solution	Consolidated
Sales	₩ 3,011,959	₩ 2,357,091	₩ 1,469,424	₩ 6,838,474
Operating profit	85,571	290,399	(69,767)	306,203
Profit for the year	55,591	255,428	(133,763)	177,256

Geographic information is as follows:

	Major products	Major customers
Korea	Passive element, camera module, semiconductor package substrate, high density multi-layer board and others	Samsung Electronics, LG Display, TESLA and others
China and Southeast Asia	passive element, camera module, high density multi-layer board and others	Samsung Electronics, Xiaomi, Samsung Display, OPPO and others
Japan	passive element, semiconductor package substrate	Shinko, Hitachi and others
America	passive element, semiconductor package substrate	Intel Corporation, Future and others
Europe	passive element, semiconductor package substrate	Rutronik, Bosch, Avnet and others

3. Operating segment information (cont'd)

The results of financial performance of the Group by geographic segment for the years ended December 31, 2018 and 2017 (Korean won in millions) are as follows:

2018

	Korea		Overseas					Adjustment	Consolidated
	Domestic	Export	China	Southeast Asia	America	Europe	Japan		
Sales	₩ 638,939	₩ 2,390,872	₩ 3,008,016	₩ 1,632,826	₩ 287,333	₩ 207,930	₩ 27,107	₩ -	₩ 8,193,023
Non-current assets		3,478,014	1,050,131	1,559,885	447	233	307	(969,396)	5,119,621

2017

	Korea		Overseas					Adjustment	Consolidated
	Domestic	Export	China	Southeast Asia	America	Europe	Japan		
Sales	₩ 474,940	₩ 2,436,967	₩ 2,623,788	₩ 905,138	₩ 249,702	₩ 115,400	₩ 32,539	₩ -	₩ 6,838,474
Non-current assets		3,770,359	980,308	1,518,463	846	255	292	(981,918)	5,288,605

4. Cash and cash equivalents

Cash and cash equivalents as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Cash at banks and on hand	₩ 19,796	₩ 23,945
Short-term deposits	1,002,354,676	444,585,385
	₩ 1,002,374,472	₩ 444,609,330

5. Financial assets and liabilities

Financial assets and liabilities as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Current	Non-current	Current	Non-current
Financial assets:				
Financial instruments	₩ 242,514,928	₩ 22,239	₩ 122,442,296	₩ 22,000
Held-to-maturity investments	2,220	93,915	34,745	96,135
Accrued income	476,372	-	624,519	-
Business guarantee deposits	548,638	-	380,689	-
Lease guarantee deposits	-	36,673,660	-	42,026,637
	₩ 243,542,158	₩ 36,789,814	₩ 123,482,249	₩ 42,144,772
Financial liabilities:				
Withholdings	₩ 32,663,368	₩ -	₩ 20,858,569	₩ -
Withholding deposits	2,906,564	-	2,675,417	-
	₩ 35,569,932	₩ -	₩ 23,533,986	₩ -

Restricted deposits as of December 31, 2018 and 2017 consist of the following (Korean won in thousands):

	Financial institution	2018	2017	Description
Short-term financial instruments	Woori Bank	₩ 42,400,000	₩ 42,400,000	Financial support reserve for strategic alliances
Long-term financial instruments	Woori Bank and 6 other banks	22,239	22,000	Overdraft facilities
		₩ 42,422,239	₩ 42,422,000	

5. Financial assets and liabilities (Cont'd)

Held-to-maturity investments as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Fair value	Book value	Fair value	Book value
Within 1 year	₩ 2,220	₩ 2,220	₩ 34,745	₩ 34,745
After 1 year but less than 5 years	93,915	93,915	96,135	96,135
	₩ 96,135	₩ 96,135	₩ 130,880	₩ 130,880

Financial assets measured at amortized cost using the effective interest rate method as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Effective interest rate (%)	Book value	Effective interest rate (%)	Book value
Long-term guarantee deposits	2.22 ~ 2.67	₩ 36,673,660	2.22 ~ 2.94	₩ 42,026,637

6. Trade and other receivables

Trade and other receivables as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Current	Non-current	Current	Non-current
Trade receivables	₩ 984,737,784	₩ -	₩ 828,687,653	₩ -
Allowance for doubtful accounts	(80,476)	-	-	-
Other receivables	81,911,072	30,246,327	86,118,630	40,344,721
Allowance for doubtful accounts	(5,658,008)	(870,483)	(1,908,843)	(955,754)
	₩ 1,060,910,372	₩ 29,375,844	₩ 912,897,440	₩ 39,388,967

The changes in allowance for doubtful accounts for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
As of January 1	₩ 2,864,597	₩ 3,734,258
Effect of adoption of new accounting standards	1,471,064	-
Allowance for doubtful accounts - trade	(1,143,185)	(69,902)
Allowance (reversal) for doubtful accounts - others	3,439,038	(174,162)
Write-off	(22,547)	(625,597)
As of December 31	₩ 6,608,967	₩ 2,864,597

6. Trade and other receivables (Cont'd)

As of December 31, 2018 and 2017, the aging analysis of trade and other receivables are as follows (Korean won in thousands):

	2018	2017
Neither past due nor impaired	₩ 1,065,675,834	₩ 934,645,012
Past due but not impaired:		
< 30 days	20,612,274	10,802,302
30 ~ 180 days	2,513,203	6,147,567
181 ~ 365 days	1,335,386	-
> 365 days	129,519	691,526
	24,610,382	17,641,395
	₩ 1,090,286,216	₩ 952,286,407

The Group disposed of its trade receivables in 2018 and 2017 in accordance with a factoring agreement entered into with various financial institutions. The Group did not derecognize the trade receivables, as the financial institutions hold recourse rights and the Group retains the related risk and rewards. The financial liability was recognized as short-term borrowings on the statements of financial position for the years ended December 31, 2018 and 2017 (Note 13).

Trade receivables factored with recourse as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Book value of trade receivables disposed	₩ 258,469,204	₩ 153,025,562
Book value of related borrowings	258,469,204	153,025,562

7. Inventories

Inventories as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			2017		
	Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Merchandise	₩ 206,923,276	₩ (26,580,893)	₩ 180,342,383	₩ 114,823,546	₩ (7,420,031)	₩ 107,403,515
Finished goods	401,226,928	(42,399,767)	358,827,161	317,603,826	(17,859,535)	299,744,291
Work-in-process	228,654,710	(26,583,240)	260,071,470	233,463,538	(17,895,767)	215,567,771
Components	25,797,867	-	25,797,867	33,977,256	-	33,977,256
Raw materials	190,340,328	(12,282,248)	178,058,080	176,804,066	(7,086,132)	169,717,934
Supplies	71,514,286	-	71,514,286	46,093,311	-	46,093,311
Materials in-transit	40,954,630	-	40,954,630	46,389,275	-	46,389,275
	₩ 1,223,412,025	₩ (107,846,148)	₩ 1,115,565,877	₩ 969,154,818	₩ (50,261,465)	₩ 918,893,353

The write-down amounting to ₩57,584,683 thousand was recognized for the year ended December 31, 2018 and reversal of write-down amounting to ₩3,094,263 thousand was recognized for the year ended December 31, 2017. Scrapped inventories amounted to ₩86,057,962 thousand and ₩60,003,551 thousand for the years ended December 31, 2018 and 2017, respectively.

Inventories primarily consist of telecommunication, PC and AV components and other electronic components, and have been insured against fire and other casualty losses for up to ₩1,230,884,185 thousand as of December 31, 2018.

8. Investment in associates

Investment in associates as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	Stemco Co., Ltd.				Samsung Economic Research Institute			
	2018		2017		2018		2017	
Number of shares		1,440,000		1,440,000		2,856,000		2,856,000
Equity interest		30.00%		30.00%		23.80%		23.80%
Acquisition cost	₩	7,200,000	₩	7,200,000	₩	14,280,000	₩	14,280,000
Shareholder portion	₩	39,592,269	₩	34,686,657	₩	20,621,489	₩	18,598,316
Book value	₩	39,592,269	₩	34,686,657	₩	20,621,489	₩	18,598,316
Domicile		Korea		Korea		Korea		Korea
Fiscal year end		December 31		December 31		December 31		December 31
Principal activities		Manufacturing and trading of semiconductor parts		Manufacturing and trading of semiconductor parts		Research and development, human resource development		Research and development, human resource development

The following table summarizes the financial position of associates as of December 31, 2018 and 2017, and the results of their financial performance for the years then ended (Korean won in thousands):

	Stemco Co., Ltd.				Samsung Economic Research Institute			
	2018		2017		2018		2017	
Current assets	₩	85,484,627	₩	90,553,684	₩	78,123,701	₩	71,981,435
Non-current assets		174,079,055		152,743,830		59,720,494		47,612,842
Total assets	₩	259,563,682	₩	243,297,514	₩	137,844,195	₩	119,594,277
Current liabilities	₩	87,869,192	₩	108,405,703	₩	32,168,367	₩	26,587,211
Non-current liabilities		39,720,259		19,269,620		19,030,918		14,862,881
Total liabilities	₩	127,589,451	₩	127,675,323	₩	51,199,285	₩	41,450,092
Total equity	₩	131,974,231	₩	115,622,191	₩	86,644,910	₩	78,144,185
Sales	₩	258,614,429	₩	223,454,867	₩	175,168,616	₩	167,682,467
Profit for the year		23,482,065		26,501,491		687,523		59,641
Other comprehensive income (expense)		986,975		(289,784)		7,813,202		700,736
Total comprehensive income (expense)		24,469,040		26,211,707		8,500,725		760,377

Details of changes in the carrying amount of equity method investments (Korean won in thousands):

	Jan. 1, 2018		Share of profit or loss in investee		Equity adjustments of investment in associates		Dividends income		Dec. 31, 2018	
Stemco Co., Ltd.	₩	34,686,657	₩	7,044,619	₩	296,093	₩	(2,435,100)	₩	39,592,269
Samsung Economic Research Institute		18,598,316		163,631		1,859,542		-		20,621,489
	₩	53,284,973	₩	7,208,250	₩	2,155,635	₩	(2,435,100)	₩	60,213,758

	Jan. 1, 2017		Share of profit or loss in investee		Equity adjustments of investment in associates		Dividends income		Dec. 31, 2017	
Stemco Co., Ltd.	₩	28,926,145	₩	7,950,447	₩	(86,935)	₩	(2,103,000)	₩	34,686,657
Samsung Economic Research Institute		18,417,346		14,195		166,775		-		18,598,316
	₩	47,343,491	₩	7,964,642	₩	79,840	₩	(2,103,000)	₩	53,284,973

8. Investment in associates (Cont'd)

Details of changes in the book value of investment in associates based on their net assets as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			
	Net assets (A)	Ownership (B)	Shareholder portion (A*B)	Book value
Stemco Co., Ltd.	₩ 131,974,231	30.00%	₩ 39,592,269	₩ 39,592,269
Samsung Economic Research Institute	86,644,910	23.80%	20,621,489	20,621,489
	₩ 218,619,141		₩ 60,213,758	₩ 60,213,758

	2017			
	Net assets (A)	Ownership (B)	Shareholder portion (A*B)	Book value
Stemco Co., Ltd.	₩ 115,622,191	30.00%	₩ 34,686,657	₩ 34,686,657
Samsung Economic Research Institute	78,144,185	23.80%	18,598,316	18,598,316
	₩ 193,766,376		₩ 53,284,973	₩ 53,284,973

9. Equity instruments designated at fair value and available for sale

Details of equity instruments designated at fair value and available for saleas of December 31, 2018 and 2017 are as follows (Korea won in thousands):

	2018						2017
					Cumulative impairment loss		
	Acquisition cost	Fair value	Book value	Unrealized gain	Before 2018	2018	Book value
Marketable securities	₩ 88,617,199	₩ 105,290,628	₩ 105,290,628	₩ 16,673,429	₩ -	₩ -	₩ 700,973,555
Non-marketable securities	29,167,703	46,495,736	45,598,510	24,367,955	(7,937,148)	-	24,557,281
	₩ 117,784,902	₩ 151,786,364	₩ 150,889,138	₩ 41,041,384	₩ (7,937,148)	₩ -	₩ 725,530,836

9-1 Marketable securities

Marketable securities as of December 31, 2017 and 2018 are as follows (Korea won in thousands):

	2018						2017	
	Number of shares	Equity interest	Acquisition cost	Fair value	Book value	Unrealized gain	Book value	Domicile
Samsung Heavy Industries Co., Ltd.	₩ 13,636,562	₩ 2.16%	₩ 88,310,573	₩ 101,046,924	₩ 101,046,924	₩ 12,736,351	₩ 65,448,155	Korea
Samsung C&T Corporation	-	-	-	-	-	-	630,000,000	Korea
iMarketkorea Inc.	613,252	1.71%	306,626	4,243,704	4,243,704	3,937,078	5,525,400	Korea
			₩ 88,617,199	₩ 105,290,628	₩ 105,290,628	₩ 16,673,429	₩ 700,973,555	

9. Available-for-sale financial assets (cont'd)

9-2 Non-marketable securities

Non-marketable securities as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018					2017	
	Number of shares	Equity interest (%)	Acquisition cost	Proportionate net asset value	Book value	Book value	Domicile
Samsung Venture Investment Co., Ltd. (*1)	1,020,000	17.00	₩ 5,100,000	₩ 7,495,980	₩ 7,495,980	₩ 8,101,860	Korea
SOLUM Co., Ltd.	4,650,000	12.34	2,325,000	15,331,050	15,331,050	2,325,000	Korea
Cosmotech Co., Ltd						-	Korea
KMAC fund	8,000	1.00	40.000	508,689	40,000	40,000	Korea
Intellectual Discovery	7,212	0.32	250,004	29,017	-	-	Korea
Korea Orbcom Ltd.	16,000	3.42	600,000	-	-	-	Korea
IMA	347,696	8.69	4.028.477	9,569,985	9,569,985	4,028,477	Hong Kong
DTI Inc.	333,333	2.77	564,799	-	-	-	US
Inkel Co., Ltd.	40	0.00	200	195	200	200	Korea
Cosmolink Co.,Ltd.	58,067	2.18	6,451,253	472,859	-	-	Korea
Postech Social Corporation Fund	7	1.67	73,334	-	73,334	88,334	Korea
SEMCNS Co., Ltd.	4,000,000	10.00	2,000,000	4,188,000	4,188,000	2,000,000	Korea
Optis Co., Ltd.	10,963	0.05	54,816	-	-	-	Korea
Power by Proxi						-	New Zealand
SBI VentureFund No4 Investment LPS	300,000,000	7.5	2,714,948	2,716,416	2,716,416	3,024,814	Japan
DS Asia Holdings	3,208,399	1.80	16,276	-	-	-	Hong Kong
Corephotonics	10,206	1.95	2,948,605	3,335,851	3,335,851	2,948,605	Israel
Sualab Co., Ltd.	12,680	3.66	1,999,991	2,847,694	2,847,694	1,999,991	Korea
			₩ 29,167,703	₩ 46,495,736	₩ 45,598,510	₩ 24,557,281	

(*1) Valuations on the investments in Samsung Venture Investment Co., Ltd. were performed by an independent professional appraiser, using fair values calculated using the discounted future cash flows method, guideline public company method, various financial ratios and other relevant information. The discount rate used for calculating fair value ranged 20.56% and risk-free interest rate was 2.25%.

	Discount rate	Risk free interest rate
Samsung Venture Investment Co., Ltd.	22.57%	2.57%
SemCNS Co., Ltd.	16.79%	2.57%
Solu-M Co., Ltd.	13.82%	2.57%
IMA	14.84%	3.69%

When determining the fair value of respective securities, the Group considered various factors including macro economics, business environment and business model of the investees obtained from information and data available at the valuation date. The Group assumed that the business structure of the investees would not be changed during the period of estimation.

Other non-marketable securities were recorded at acquisition cost due to a lack of comparable market prices or inability to reliably measure fair value.

9. Available-for-sale financial assets (cont'd)

Details of changes in accumulated other comprehensive income arising from valuation of available-for-sale financial assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018				
	January 1	Increase (decrease)	Disposal	Current year tax effect	December 31
Marketable securities:					
Samsung Heavy Industries Co., Ltd.	₩ 3,617,254	₩ 7,964,247	₩ -	₩ (1,927,348)	₩ 9,654,153
Samsung C&T Corporation	469,960,000	-	(620,000,000)	150,040,000	-
iMarketkorea Inc.	3,955,832	(1,281,697)	-	310,171	2,984,306
	477,533,086	6,682,550	(620,000,000)	148,422,823	12,638,459
Non-marketable securities:					
Samsung Venture Investment Co., Ltd.	2,313,241	(605,880)	-	70,103	1,777,464
Samsung Venture Investment No. 19	-	1,224,053	-	-	1,224,053
Solu-M Co., Ltd	-	13,006,050	-	(3,147,464)	9,858,586
SemCNS Co., Ltd	-	2,188,000	-	(529,496)	1,658,504
IMA	-	5,541,508	-	(1,341,045)	4,200,463
	2,313,241	21,353,731	-	(4,947,902)	18,719,070
	₩ 479,846,327	₩ 28,036,281	₩ (620,000,000)	₩ 143,474,921	₩ 31,357,529

	2017				
	January 1	Increase (decrease)	Disposal	Current year tax effect	December 31
Marketable securities:					
Samsung Heavy Industries Co., Ltd.	₩ 16,611,883	₩ (17,143,310)	₩ -	₩ 4,148,681	₩ 3,617,254
Samsung C&T Corporation	468,065,000	2,500,000	-	(605,000)	469,960,000
iMarketkorea Inc.	4,601,966	(852,420)	-	206,286	3,955,832
	489,278,849	(15,495,730)	-	3,749,967	477,533,086
Non-marketable securities:					
Samsung Venture Investment Co., Ltd.	2,062,791	280,500	-	(30,050)	2,313,241
Power by Proxi	2,974,910	12,305,709	(15,280,619)	-	-
	5,037,701	12,586,209	(15,280,619)	(30,050)	2,313,241
	₩ 494,316,550	₩ (2,909,521)	₩ (15,280,619)	₩ 3,719,917	₩ 479,846,327

10. Property, plant and equipment

Changes in the book value of property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018						
	January 1	Additions	Disposals	Transfers	Depreciation	Others (*)	December 31
Acquisition cost:							
Land	₩ 209,082,245	₩ -	₩ -	₩ -	₩ -	₩ 384,566	₩ 209,466,811
Buildings	2,052,083,904	2,058,589	(2,549,098)	43,694,406	-	26,419,099	2,121,706,900
Structures	127,284,079	453,294	(266,069)	15,981,293	-	800,806	144,253,403
Machinery	5,226,293,773	27,989,862	(213,083,725)	1,117,680,716	-	55,492,646	6,214,373,272
Vehicles	6,464,246	565,380	(2,338,740)	104,303	-	(310,613)	4,484,576
Equipment	301,338,940	19,241,702	(23,334,875)	25,313,344	-	4,860,539	327,419,650
Construction-in-progress	600,050,396	874,311,249	(416,251)	(1,065,439,175)	-	60,608,708	469,114,927
Machinery-in-transit	34,284,358	286,712,112	(215,973)	(137,334,887)	-	(151,350,355)	32,095,255
	₩ 8,556,881,941	₩ 1,211,332,188	₩ (242,204,731)	₩ -	₩ -	₩ (3,094,604)	₩ 9,522,914,794
Accumulated depreciation and impairment:							
Land	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
Buildings	(525,333,163)	-	1,843,952	-	(63,239,948)	(2,216,369)	(588,945,528)
Structures	(54,187,552)	-	127,718	-	(6,222,848)	(327,181)	(60,609,863)
Machinery	(3,596,016,526)	-	176,195,309	-	(608,474,661)	(45,492,014)	(4,073,787,892)
Vehicles	(4,551,211)	-	2,330,531	-	(739,928)	(21,709)	(2,982,317)
Equipment	(222,110,581)	-	21,535,642	-	(32,239,547)	(5,764,525)	(238,579,011)
Construction-in-progress	-	-	-	-	-	-	-
Machinery-in-transit	-	-	-	-	-	-	-
	₩ (4,402,199,033)	₩ -	₩ 202,033,152	₩ -	₩ (710,916,932)	₩ (53,821,798)	₩ (4,964,904,611)
Net book value:							
Land	₩ 209,082,245	₩ -	₩ -	₩ -	₩ -	₩ 384,566	₩ 209,466,811
Buildings	1,526,750,741	2,058,589	(705,146)	43,694,406	(63,239,948)	24,202,730	1,532,761,372
Structures	73,096,527	453,294	(138,351)	15,981,293	(6,222,848)	473,625	83,643,540
Machinery	1,630,277,247	27,989,862	(36,888,416)	1,117,680,716	(608,474,661)	10,000,632	2,140,585,380
Vehicles	1,913,035	565,380	(8,209)	104,303	(739,928)	(332,322)	1,502,259
Equipment	79,228,359	19,241,702	(1,799,233)	25,313,344	(32,239,547)	(903,986)	88,840,639
Construction-in-progress	600,050,396	874,311,249	(416,251)	(1,065,439,175)	-	60,608,708	469,114,927
Machinery-in-transit	34,284,358	286,712,112	(215,973)	(137,334,887)	-	(151,350,355)	32,095,255
	₩ 4,154,682,908	₩ 1,211,332,188	₩ (40,171,579)	₩ -	₩ (710,916,932)	₩ (56,916,402)	₩ 4,558,010,183

	2017						
	January 1	Additions	Disposals	Transfers	Depreciation	Others (*)	December 31
Acquisition cost:							
Land	₩ 205,236,186	₩ -	₩ (1,894,958)	₩ 7,126,753	₩ -	₩ (1,385,736)	₩ 209,082,245
Buildings	1,822,233,282	2,689,524	(26,320,839)	338,476,951	-	(84,995,014)	2,052,083,904
Structures	128,640,927	49,110	(3,056,121)	4,348,441	-	(2,698,278)	127,284,079
Machinery	4,961,572,387	36,069,599	(431,441,289)	869,240,368	-	(209,147,292)	5,226,293,773
Vehicles	6,914,551	618,104	(1,333,697)	517,181	-	(251,893)	6,464,246
Equipment	297,303,743	18,333,518	(31,507,880)	30,155,940	-	(12,946,381)	301,338,940
Construction-in-progress	544,639,889	880,888,036	-	(793,747,164)	-	(31,730,365)	600,050,396
Machinery-in-transit	60,360,745	530,106,391	-	(456,118,470)	-	(100,064,308)	34,284,358
	₩ 8,026,901,710	₩ 1,468,754,282	₩ (495,554,784)	₩ -	₩ -	₩ (443,219,267)	₩ 8,556,881,941
Accumulated depreciation and impairment:							
Land	₩ (401,835)	₩ -	₩ 390,816	₩ -	₩ -	₩ 11,019	₩ -
Buildings	(499,168,333)	-	21,181,330	-	(57,567,522)	10,221,362	(525,333,163)
Structures	(50,198,302)	-	1,529,662	-	(5,865,377)	346,465	(54,187,552)
Machinery	(3,534,118,238)	-	349,360,550	-	(513,514,148)	102,255,310	(3,596,016,526)
Vehicles	(5,194,681)	-	1,299,833	-	(790,172)	133,809	(4,551,211)
Equipment	(223,308,150)	-	26,533,711	-	(33,200,741)	7,864,599	(222,110,581)
Construction-in-progress	(70,866)	-	-	-	-	70,866	-
Machinery-in-transit	-	-	-	-	-	-	-
	₩ (4,312,460,405)	₩ -	₩ 400,295,902	₩ -	₩ (610,937,960)	₩ 120,903,430	₩ (4,402,199,033)
Net book value:							
Land	₩ 204,834,351	₩ -	₩ (1,504,142)	₩ 7,126,753	₩ -	₩ (1,374,717)	₩ 209,082,245
Buildings	1,323,064,949	2,689,524	(5,139,509)	338,476,951	(57,567,522)	(74,773,652)	1,526,750,741
Structures	78,442,625	49,110	(1,526,459)	4,348,441	(5,865,377)	(2,351,813)	73,096,527
Machinery	1,427,454,149	36,069,599	(82,080,739)	869,240,368	(513,514,148)	(106,891,982)	1,630,277,247
Vehicles	1,719,870	618,104	(33,864)	517,181	(790,172)	(118,084)	1,913,035
Equipment	73,995,593	18,333,518	(4,974,169)	30,155,940	(33,200,741)	(5,081,782)	79,228,359
Construction-in-progress	544,569,023	880,888,036	-	(793,747,164)	-	(31,659,499)	600,050,396
Machinery-in-transit	60,360,745	530,106,391	-	(456,118,470)	-	(100,064,308)	34,284,358
	₩ 3,714,441,305	₩ 1,468,754,282	₩ (95,258,882)	₩ -	₩ (610,937,960)	₩ (322,315,837)	₩ 4,154,682,908

(*) Others represent impairment loss, amortization of government subsidy, foreign exchange rate adjustments, transfers to inventories and others.

If a tangible asset is acquired at a price less than its fair value due to government subsidies, the acquisition cost of the tangible asset is the fair value at the acquisition date. Government subsidies are stated at cost less accumulated depreciation and are depreciated over the useful life of the asset. The amount offset by depreciation is ₩63,484 thousand.

10. Property, plant and equipment (cont'd)

Borrowing costs incurred amounting to ₩1,107,420 thousand for the years ended December 31, 2018, which were directly attributable to the acquisition and construction of qualifying property, plant and equipment, are capitalized as part of the cost of those assets.

The details of changes in accumulated impairment losses for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			
	January 1	Increase (decrease)	Disposal	December 31
Buildings	₩ 5,614,878	₩ -	₩ -	₩ 5,614,878
Machinery	132,718,715	20,492,821	(7,311,526)	145,900,010
Equipment	1,661,688	7,192	(32,454)	1,636,426
	₩ 139,995,281	₩ 20,500,013	₩ (7,343,980)	₩ 153,151,314

The Group expects that the future economic performance of certain cash flow generating units will not reach the expected level due to the decrease in demand for the products of those cash flow generating units and the reorganization of the production base. Hence the Group has reviewed the recoverable amount of the assets in the cash flow generating units.

The recoverable amount of a cash generating unit is determined based on the value in use.

The above impairment losses are included in other expense items in the 2017 consolidated statement of comprehensive income.

	2017				
	January 1	Increase (decrease)	Disposal	Others	December 31
Land	₩ 1,784,780	₩ -	₩ (1,784,780)	₩ -	₩ -
Buildings	5,614,878	-	-	-	5,614,878
Machinery	143,161,580	21,971,642	(26,982,469)	(5,432,038)	132,718,715
Equipment	1,725,000	12,227	(11,850)	(63,689)	1,661,688
	₩ 152,286,238	₩ 21,983,869	₩ (28,779,099)	₩ (5,495,727)	₩ 139,995,281

The Group revalued certain property, plant and equipment in accordance with the *Korean Asset Revaluation Act* on January 1, 1981 and July 1, 1998. The revalued amounts are recorded as deemed cost at the revaluation date in accordance with KIFRS 1101. The difference between the revaluation amount and book value prior to revaluation is recorded as revaluation surplus in retained earnings, and may not be utilized for cash dividends.

Property, plant and equipment are insured against fire and other casualty losses for up to ₩9,460,696,938 thousand and ₩7,828,596,098 thousand as of December 31, 2018 and 2017, respectively.

11. Intangible assets

Changes in the book value of intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018					
Acquisition cost:	January 1	Additions	Disposals	Amortization	Others (*)	December 31
Patent/industrial proprietary rights (**)	129,158,912	8,522,105	(2,340,839)	-	-,	135,340,178
Land usage rights	8,944,551	-	(1,311,472)	-	(19,570)	7,613,509
Software	128,347,190	4,193,410	(557,764)	-	22,990,909	154,973,745
Development cost (***)	62,168,455	8,255,505	-	-	-	70,423,960
Goodwill	64,162,099					
Others	32,730,726	100,000	(629,582)	-	(1,917,432)	30,283,712
	425,511,933	21,071,020	(4,839,657)	-	21,053,907	462,797,203
Accumulated amortization and impairment:						
Patent/industrial proprietary rights (**)	(109,461,419)	-	973,946	(4,019,293)	-	(112,506,766)
Land usage rights	(1,549,444)	-	-	(221,646)	13,340	(1,757,750)
Software	(99,709,154)	-	497,414	(17,535,351)	(265,479)	(117,012,570)
Development cost (***)	-	-	-	(3,724,287)	-	(3,724,287)
Goodwill	(64,162,099)					
Others	(1,142,704)	-	-	-	(30,419)	(1,173,123)
	(276,024,820)	-	1,471,360	(25,500,577)	(282,558)	(300,336,595)
Net book value:						
Patent/industrial proprietary rights (**)	19,697,493	8,522,105	(1,366,893)	(4,019,293)	-	22,833,412
Land usage rights	7,395,107	-	(1,311,472)	(221,646)	(6,230)	5,855,759
Software	28,638,036	4,193,410	(60,350)	(17,535,351)	22,725,430	37,961,175
Development cost (***)	62,168,455	8,255,505	-	(3,724,287)	-	66,699,673
Goodwill	-					
Others	31,588,022	100,000	(629,582)	-	(1,947,851)	29,110,589
	149,487,113	21,071,020	(3,368,297)	(25,500,577)	20,771,349	162,460,608

	2017					
Acquisition cost:	January 1	Additions	Disposals	Amortization	Others (*)	December 31
Patent/industrial proprietary rights (**)	133,926,424	7,157,864	(1,799,747)	-	(10,125,629)	129,158,912
Land usage rights	7,522,780		-	-	1,421,771	8,944,551
Software	121,152,539	8,334,030	(578,523)	-	(560,856)	128,347,190
Development cost (***)	-	62,168,455	-	-	-	62,168,455
Goodwill	64,162,099	-	-	-	-	64,162,099
Others	31,714,239	-	(650,052)	-	1,666,539	32,730,726
	358,478,081	77,660,349	(3,028,322)	-	(7,598,175)	425,511,933
Accumulated amortization and impairment:						
Patent/industrial proprietary rights (**)	(117,214,203)	-	678,897	(3,051,744)	10,125,631	(109,461,419)
Land usage rights	(1,357,019)	-	-	(273,991)	81,566	(1,549,444)
Software	(84,310,603)	-	576,372	(16,343,854)	368,931	(99,709,154)
Development cost (***)		-	-	-	-	-
Goodwill	(64,162,099)	-	-	-	-	(64,162,099)
Others	751,793	-	-	-	(1,894,497)	(1,142,704)
	(266,292,131)	-	1,255,269	(19,669,589)	8,681,631	(276,024,820)
Net book value:						
Patent/industrial proprietary rights (**)	16,712,221	7,157,864	(1,120,850)	(3,051,744)	2	19,697,493
Land usage rights	6,165,761	-	-	(273,991)	1,503,337	7,395,107
Software	36,841,936	8,334,030	(2,151)	(16,343,854)	(191,925)	28,638,036
Development cost (***)	-	62,168,455	-	-	-	62,168,455
Goodwill	-	-	-	-	-	-
Others	32,466,032	-	(650,052)	-	(227,958)	31,588,022
	92,185,950	77,660,349	(1,773,053)	(19,669,589)	1,083,456	149,487,113

11. Intangible assets (cont'd)

(*) Others represent impairment loss, amortization of government subsidy and adjustments resulting from foreign exchange differences.
(**) Industrial proprietary rights obtained a through business combination in 2012 include license contracts, customer lists and know-how, which were measured at fair value at the acquisition date.
(***) The Company has commenced new projects for Panel Level Package ("PLP") technology. The Company's development projects consist of 1) research stage to search the applicability of the new technology, 2) development of core technology to get feasible performance of certain product or its recipe, 3) pre-development stage to try certain proto type parts or module development tasks and 4) commercialization stage actually develop certain product using the results of preceding development stage.

Development costs for the projects prior to the commercialization stage for the year ended December 31, 2018 and 2017 amounted to ₩392,817,714 thousand and ₩401,601,618 thousand, respectively these costs are all expensed.

All development costs that The Group recognizes for 2017 and 2018 are generated by PLP projects. The Group has completed 2 projects (which amounted to ₩ 22,010 million) out of total 4 projects for development of PLP and started to amortize during the current year. The other 2 projects which amounted to ₩ 44,690 million are still in progress.

11-2 The details of expensed research and development costs incurred in 2018, 2017 are as follows (Korean won in thousands):

	2018	2017
Cost of Sales	₩ 57,729,808	₩ 71,408,802
Selling and administrative expenses	460,582,649	321,408,912
Total amount	₩ 518,312,457	₩ 392,817,714

11-3 Impairment tests for intangible assets with indefinite useful lives

The Group conducted impairment tests on membership and on intangible assets with indefinite useful lives and did not recognize any impairment loss.

The recoverable amount of membership is the higher of a membership's fair value less costs of disposal and its value in use. The Group uses net fair value if it is available. If it is not available, the Group estimates value in use and determines recoverable amounts.

12. Trade and other payables

Trade and other payables as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Current	Non-current	Current	Non-current
Trade payables	₩ 276,666,924	₩ -	₩ 281,305,654	₩ -
Other payables	300,701,306	1,860,074	241,059,593	1,706,800
Accrued expenses	308,800,875	84,221,596	201,317,498	56,576,565
Dividends payables	5,248,764	-	4,907,282	-
	₩ 891,417,869	₩ 86,081,670	₩ 728,590,027	₩ 58,283,365

Trade and other payables measured at amortized cost using the effective interest rate method as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Effective interest rate (%)	Book value	Effective interest rate (%)	Book value
Long-term other payables	2.22 ~ 6.49	₩ 1,860,074	2.22 ~ 6.49	₩ 1,706,800

13. Borrowings and leases

Short-term borrowings as of December 31, 2018 and 2017 consist of the following (Korean won in thousands):

Financial institution	Description	Annual interest rate (%) as of Dec. 31, 2017	2018	2017
Woori Bank and 5 other banks	Discount of commercial paper	LIBOR + 0.45 ~ 0.55	₩ 258,469,204	₩ 153,025,562
Citibank and 10 other banks	Subsidiaries' borrowings	2.67 ~ 5.00	703,486,657	1,050,766,922
			₩ 961,955,861	₩ 1,203,792,484

The Group entered into factoring agreements with recourse for its trade receivables with Woori Bank, Shinhan Bank, KEB Hana Bank, Kookmin Bank, Nonghyup Bank, ANZ, BOA and others. Factored receivables not overdue as of December 31, 2018 are accounted for as short-term borrowings (Note 6).

13. Borrowings and leases(Cont'd)

Long-term borrowings denominated in Korean won and in foreign currency as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

Financial institution	Description	Annual interest rate (%) as of Dec. 31, 2017	2018	2017
Korea Development Bank	Facility borrowings	2.45	₩ 100,000,000	₩ 300,000,000
Korea Development Bank	Facility borrowings	2.78	200,000,000	200,000,000
Mizuho Bank and 13 other banks	Subsidiaries' borrowings	2.88 ~ 4.75	1,192,183,151	1,065,145,232
			1,492,183,151	1,365,145,232
Less current portion of borrowings			(432,049,753)	(467,529,000)
			₩ 1,060,133,398	₩ 897,616,232

The Group has entered into 230 commercial operating lease arrangements including the office leases with the 5th Radio Components Factory of Tianjin. Future minimum lease payables under the operating leases as of December 31, 2018 are as follows (Korean won in thousands):

	Minimum lease payables (*)
Within 1 year	₩ 9,636,154
After 1 year but less than 5 years	8,267,723
	₩ 17,903,877

(*) Minimum lease payables are denominated in various currencies and are translated using the average exchange rates during the year ended December 31, 2018.

14. Refund liabilities and Right of return assets

Details of Refund liabilities and Right of return assets are follows (Korean won in thousands):

	2018
Refund liabilities	₩ 16,895,713
Right of return assets	₩ 10,906,311

Refund liabilities are estimated obiligation to refund some or all of consideration received from customers and are measured at the amount the group estimates. Rights of return assets show the right of the Group to receive return assets as customers excercise their rights.

15. Defined benefit liabilities

The Group has a defined benefit pension plan for its employees, for which the present value of defined benefits liabilities is calculated using the projected unit credit method by an independent actuary firm.

Changes in defined benefit liabilities (assets) for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Changes in defined benefit liabilities(assets):		
At January 1	₩ 13,511,149	₩ (15,347,624)
Contributions by employer	(70,000,000)	(70,000,000)
Retirement benefits paid	(7,086,996)	(6,695,306)
Pension cost charged to profit or loss	53,487,622	46,926,454
Succession of defined benefit liabilities	(51,435)	710,131
Re-measurement losses (gains) in OCI	36,225,613	58,081,144
Exchange differences	53,038	(163,650)
At December 31	26,141,991	13,511,149
Defined benefit liabilities (assets) in the statement of financial position:		
Present value of defined benefit obligation	551,262,563	486,201,168
Fair value of plan assets	(525,120,572)	(472,690,019)
	₩ 26,141,991	₩ 13,511,149

Re-measurement gains on defined benefit plans (net of tax) of ₩ 26,951,294 thousand (2017: ₩ 44,025,507 thousand) was recognized as other comprehensive income.

Expenses recorded in relation to the defined benefit pension plan for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Current service cost	₩ 52,082,722	₩ 46,718,700
Interest cost on benefit obligation	18,945,708	14,965,746
Expected return on plan assets	(17,540,808)	(14,757,992)
	₩ 53,487,622	₩ 46,926,454

15. Defined benefit liabilities(cont'd)

Changes in the present value of the defined benefit obligation for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
At January 1	₩ 486,201,168	₩ 404,234,883
Benefits paid	(32,762,045)	(30,937,731)
Current service cost	52,082,722	46,718,700
Interest cost	18,945,708	14,965,746
Succession of defined benefit obligation	(51,435)	710,131
Past service cost	4,571,397	-
Re-measurement losses based on changes of demographic assumptions		
Re-measurement losses (gains) based on changes of financial assumptions	16,978,623	36,789,821
Re-measurement gains based on changes of experience adjustments	5,221,307	13,916,317
Exchange differences	75,118	(196,699)
At December 31	₩ 551,262,563	₩ 486,201,168

Changes in the fair value of plan assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
At January 1	₩ 472,690,019	₩ 419,582,507
Contributions by employer	70,000,000	70,000,000
Benefits paid	(25,678,049)	(24,242,425)
Expected return on plan assets	17,540,808	14,757,992
Re-measurement losses	(9,454,286)	(7,375,006)
Exchange differences	22,080	(33,049)
At December 31	₩ 525,120,572	₩ 472,690,019

The Group has funded 95% of its defined benefit obligation with Samsung Life Insurance Co., Ltd. The Group's employees are individually nominated as the vested beneficiaries of the defined benefit plan assets. Contributions related to the defined benefit obligation are expected to be ₩80,000 million for the next fiscal year.

The major categories of the fair value of total plan assets as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Cash and cash equivalents	₩ 524,537,501	₩ 472,021,225
Others	583,071	668,794
	₩ 525,120,572	₩ 472,690,019

The principal assumptions used in actuarial calculation as of December 31, 2018 and 2017 are as follows:

	2018	2017
Discount rate	3.10%	4.00%
Future salary increases	2.99%	3.43%

The following table demonstrates a sensitivity analysis on the effect of changes in the principal assumptions used in actuarial calculation on the present value of defined benefit obligation as of December 31, 2018 and 2017, respectively (Korean won in thousands):

15. Defined benefit liabilities(cont'd)

Effect of changes in the discount rate

	2018		2017	
	1% decrease	1% increase	1% decrease	1% increase
Impact on defined benefit liabilities	₩ 40,802,118	₩ (35,875,382)	₩ 49,445,821	₩ (42,441,025)

Effect of changes in future salaries

	2018		2017	
	1% decrease	1% increase	1% decrease	1% increase
Impact on defined benefit liabilities	₩ (37,266,358)	₩ 41,708,950	₩ (43,043,550)	₩ 49,225,967

The Group also operates a defined contribution pension plan for its employees. The Group's liabilities consist of fixed contributions to be made to a separate pension fund. Future retirement benefits are based on the contributions of the Group and investment gains from plan assets. Plan assets are managed in a seperate fund by independent trustees. For the years ended December 31, 2018 and 2017, defined contribution pension plan expenses amounted to ₩6,683,918 thousand and ₩5,047,808 thousand, respectively.

16. Provisions for product warranties

Provisions for warranty-related costs are recognized when the product is sold to the customers. Initial recognition is based on past experience on the level of repairs and returns. It is expected that most of these costs will be incurred in the next financial year.

17. Commitments and contingencies

17.1 Significant lines of credit

Significant lines of credit with financial institutions as of December 31, 2018 are as follows (Korean won in thousands and US dollar):

	Credit line (US$)	Credit line (₩)	Description
Woori Bank and 5 other banks	US$ 596,921,000 (Equivalent to ₩ 667,417,370)	₩ 80,000,000	Overdraft
Woori Bank and 1 other banks	US$ 7,000,000 (Equivalent to ₩7,826,700)	-	Import letter of credit
KEB Hana Bank	-	₩ 1,000,000	Local letter of credit
Woori Bank and 8 other banks	US$ 670,000,000 (Equivalent to ₩749,127,000)	₩ 150,000,000	Receivables factoring

The Group provided security deposits for its bank overdraft facilities (Note 5).

17.2 Litigation

As of December 31, 2018, the Group is a defendant in a class action lawsuit filed by Cygnus and other entities in Canada in connection with alleged price-fixing for capacitors. Total claims against the Group are currently undeterminable and the outcome of the proceedings cannot be reasonably estimated as of the end of the reporting period.

18. Issued capital

The Company is authorized to issue 200,000 thousand ordinary shares with a par value per share of ₩5,000. As of December 31, 2018, the Company holds 77,600,680 ordinary shares (including 2,906,984 preferred shares) amounting to ₩388,003,400 thousand, which were issued through a series of stock issuances since the Company's incorporation in 1973.

Under the Articles of Incorporation, the Company is authorized to issue 20,000 thousand shares of non-voting preferred shares. The non-voting preferred shares issued on or before February 27, 1997, are non-cumulative and entitled to an additional cash dividend of 1% of par value of ordinary shares. As of December 31, 2018, 2,906,984 of non-cumulative and non-voting preferred shares have been issued and outstanding.

In addition, the Company may issue cumulative, participating and non-voting preferred shares with a dividend rate of more than 1% of par value of ordinary shares with the approval of the Board of Directors or committee members entrusted by the Board of Directors. If the dividend rate of the ordinary shares exceeds that for preferred shares, such preferred shares are entitled to participate in cash dividend at the same dividend rate of ordinary shares. No such preferred share has been issued as of December 31, 2018.

In addition, the Company is authorized to issue to investors, other than current stockholders, convertible bonds and bonds with warrants for a norminal value of up to ₩1,500,000 million and ₩700,000 million, respectively. Convertible bonds amounting to ₩1,200,000 million shall be convertible to ordinary shares and the remaining ₩300,000 million shall be convertible to preferred shares. Bonds with warrants amounting to ₩450,000 million shall entitle the bondholders to purchase ordinary shares and the remaining ₩250,000 million shall entitle the bondholders to purchase preferred shares. No such convertible bonds or bonds with warrants have been issued as of December 31, 2018.

The Company has a stock option plan under which options to purchase shares of ordinary shares may be granted to key employees with the approval of the stockholders within the limit specified by the Korean Commercial Code. These stock options vest after a two-year vesting period and are exercisable within eight years from the day when the stockholders approved the grants. As of December 31, 2018, there is no stock option granted to the employees exercisable into ordinary shares.

Company's share premium of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Paid-in capital in excess of par value	₩ 931,477,700	₩ 931,477,700
Consideration for stock warrants	12,160,470	12,160,470
Gains on disposal of treasury stock	16,769,322	16,769,322
Exercise of stock option	1,201,580	1,201,580
Others	83,592,127	83,592,127
	₩ 1,045,201,199	₩ 1,045,201,199

Other components of equity as of December 31, 2018 and 2017 consist solely of treasury stock.

As of December 31, 2018, the Company's treasury stock comprising of 2,000,000 ordinary shares and 53,430 preferred shares were repurchased by the Company to stabilize its stock price, which are expected to dispose depending on the stock price.

18. Issued capital (cont'd)

Accumulated other comprehensive income as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Equity adjustments of investment in associates	₩ 2,372,371	₩ 738,400
Fair value loss and gain on equity instruments designated at FVOCI	31,357,529	-
Disposal loss and gain on equity instruments designated at FVOCI	451,339,730	-
Gains on valuation of available-for-sale financial assets	-	479,846,327
Exchange differences on translations of foreign operations	(129,868,816)	(145,287,394)
	₩ 355,200,814	₩ 335,297,333

Other capital reserves of the Company as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Legal reserve (*)	₩ 96,020,491	₩ 90,320,491
Business rationalization reserve	31,537,766	31,537,766
Capital expenditure reserve	7,895,000	7,895,000
Others	1,816,912,000	2,096,112,000
	₩ 1,952,365,257	₩ 2,225,865,257

(*) In accordance with the Korean Commercial Code, an amount equal to at least 10% of cash dividends is required to be appropriated as a legal reserve until the reserve equals 50% of paid-in capital. The legal reserve may not be utilized for cash dividends but may only be used to offset a deficit, if any, or be transferred to capital.

Details of dividends declared for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Attributable to ordinary shares (2018: ₩1,000 per share, 2017: ₩750 per share)	₩ 72,693,696	₩ 54,520,272
Attributable to preferred shares (2018: ₩1,050 per share, 2017: ₩800 per share)	2,996,232	2,282,843
	₩ 75,689,928	₩ 56,803,115

19. Operating profit

19-1 revenue from contracts with customers

The details of revenue from contracts with customers are follows (Korean won in millions):

	Module Solution	Component Soultion	Printed Circuit Board Solution	Total
Sales of Goods	₩ 3,069,011	₩ 3,527,107	₩ 1,474,095	₩ 8,070,213
Loyalty revenue	44,755	23,039	55,016	122,810
Totally revenue from contracts with customers	₩ 3,113,766	₩ 3,550,146	₩ 1,529,111	₩ 8,193,023

19. Operating profit (cont'd)

Details of revenue from contracts with customers by segments are followings (Korean won in millions):

	2018			
	Module Solution	Component soltuion	Printed Circuit Board Solution	Total
External customers	₩ 3,113,766	₩ 3,550,146	₩ 1,529,111	₩ 8,193,023
Adjustment and eliminations (*)	-	-	-	-
Total revenue	₩ 3,113,766	₩ 3,550,146	₩ 1,529,111	₩ 8,193,023

(*) Inter-segment revenues including intra-company sourcing are eliminated upon consolidation and reflected in the 'adjustments and eliminations' line.

Details of cost of sales and operating expenses for the years ended December 31, 2018 and 2017 by nature of expense are as follows (Korean won in thousands):

	2018	2017
Changes in inventories, etc.	₩ (176,525,438)	₩ (62,652,974)
Use of raw materials and supplies	3,141,901,336	3,135,376,164
Employee benefit expense	1,586,618,240	1,400,503,631
Depreciation and amortization	736,417,509	630,607,549
Outsourcing expenses	225,075,580	223,454,801
Commissions	151,093,744	145,887,738
Other expenses	1,510,389,482	1,059,093,796
	₩ 7,174,970,453	₩ 6,532,270,705

Details of employee benefit expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Salaries expenses	₩ 1,097,959,122	₩ 1,025,175,596
Pension costs	75,954,076	62,784,047
Employee welfare benefits	412,705,042	312,543,988
	₩ 1,586,618,240	₩ 1,400,503,631

19. Operating profit (cont'd)

Depreciation of property, plant and equipment and amortization of intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Depreciation	₩ 710,916,932	₩ 610,937,960
Amortization	25,500,577	19,669,589
	₩ 736,417,509	₩ 630,607,549

Details of selling and administrative expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Salaries and payroll expenses	₩ 242,333,473	₩ 231,787,408
Bonuses and other benefits	53,316,224	39,147,710
Pension costs	34,241,560	24,970,854
Employee welfare benefits	156,317,224	113,455,283
Commissions	69,416,730	57,784,763
Supplies expenses	44,771,166	49,928,515
Repairs expenses	39,828,454	13,461,077
Allowance for doubtful accounts - trade	(1,143,185)	(69,902)
Depreciation	61,153,020	54,880,099
Sample expenses	6,411,707	4,053,931
Freight expenses	753,849	25,359,757
Travel expenses	11,012,799	8,641,148
Research and development expense	460,582,649	321,408,912
IT expenses	60,038,696	52,935,372
Other expenses	130,405,049	104,466,259
	₩ 1,369,439,415	₩ 1,102,211,186

20. Non-operating profit and expenses

20.1 Finance income

Finance income consists solely of interest income and details for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Loans and receivables:		
Cash and cash equivalents	₩ 10,430,998	₩ 4,388,066
Other financial assets	2,345,641	6,619,887
	₩ 12,776,639	₩ 11,007,953

20.2 Finance costs

Finance costs consist solely of interest costs and details for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

		2018		2017
Financial liabilities carried at amortized cost:				
Borrowings	₩	90,020,230	₩	66,021,340
Other financial liabilities		101,650		42,412
	₩	90,121,880	₩	66,063,752

20.3 Share of profit in associates

Details of share of profit in associates for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

		2018		2017
Share of profit in associates	₩	7,208,250	₩	7,964,642

20.4 Other income

Details of other income for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

		2018		2017
Dividend income	₩	10,226,638	₩	3,037,963
Gain on disposal of available-for-sale financial investments		-		15,325,061
Reversal of allowance for other doubtful accounts		229,808		222,423
Commission income		891,022		1,099,505
Gain on disposal of property, plant and equipment		2,690,694		4,432,850
Gain on disposal of intangible assets		4,858		58,251
Gain on foreign currency transactions		216,222,377		136,915,277
Gain on foreign currency translation		11,894,942		32,280,695
Others		53,200,684		30,623,252
	₩	295,361,023	₩	223,995,277

20.5 Other expenses

Details of other expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

		2018		2017
Allowance for doubtful accounts - others	₩	4,330,060	₩	83,395
Loss on disposal of trade receivables		529,690		4,837,457
Loss on disposal of property, plant and equipment		11,315,227		8,097,467
Impairment loss on property, plant and equipment		20,500,013		21,983,869
Loss on disposal of intangible assets		1,464,657		1,167,551
Impairment loss on intangible assets		30,544		108,032
Loss on foreign currency transactions		223,164,308		141,096,979
Loss on foreign currency translation		20,725,819		25,323,348
Impairment loss on available-for- sale financial assets, net		-		54,816
Donations		1,632,036		3,158,385
Others		19,191,508		23,648,143
	₩	302,883,862	₩	229,559,442

21. Income tax expenses

The major components of income tax expense for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

		2018		2017
Current income tax	₩	253,377,582	₩	80,845,177
Deferred income tax from temporary differences and tax credits		1,996,873		(4,553,066)
Income tax expense from continuing operations		255,374,455		76,292,111

Details of deferred income taxes charged directly to equity as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

		2018		2017
Deferred income tax:				
Equity adjustments of investment in associates	₩	(521,664)	₩	225,073
Other comprehensive income-equity instrument designated at FV		(620,350)		-
Net losses on valuation of available-for-sale financial assets		-		3,749,967
Exchange differences on translation of foreign operations		(1,480,685)		(5,653,168)
Re-measurement losses (gain) on defined benefit plans		9,274,319		15,312,304
	₩	6,651,620	₩	13,634,176

A reconciliation of profit before tax at the Korea statutory tax rate to income tax expenses at the effective tax rate of the Group are summarized as follows (Korean won in thousands):

		2018		2017
Profit before tax	₩	940,392,970	₩	253,548,106
Tax at the statutory income tax rate		258,608,067		49,249,619
Adjustments:				
Income not taxable for tax purposes		(31,988,490)		(20,051,070)
Expenses not deductible for tax purposes		12,629,068		9,059,469
Effect of deferred income tax arising from temporary difference not recognized		20,737,604		33,986,024
Tax credits		(15,194,499)		(7,926,514)
Others		10,582,705		11,974,583
Income tax expenses	₩	255,374,455	₩	76,292,111
Income tax expense from continuing operations		255,374,455		76,292,111
Taxable income from discontinued operations				
Effective income tax rate		27.16%		30.1%

21. Income tax expenses (cont'd)

Significant changes in tax credit carryforwards, cumulative temporary differences and deferred income tax assets and liabilities for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			
	January 1	Recognized to income	Recognized directly to equity	December 31
Loss on valuation of inventories	₩ 9,062,217	₩ 8,808,655	₩ -	₩ 17,870,872
Property, plant and equipment	46,887,401	5,642,862	-	52,530,263
Defined benefit liabilities	(6,181,592)	(4,309,736)	9,274,319	(1,217,009)
Accurual expenses	30,432,374	15,301,375	-	45,733,749
Investment in subsidiaries	(81,779,874)	(39,504,994)	(1,480,685)	(122,765,553)
Equity adjustments of investment in associates	(552,031)	-	(521,664)	(1,073,695)
Valuation of available-for-sale financial assets	(150,478,499)	144,095,270	(620,350)	(7,003,579)
Unused tax credit carryforwards from prior years	110,272,124	(22,088,675)	-	88,183,449
Deficit carried forward	91,823,978	(91,823,978))	-	-
Others	32,225,986	(24,769,272)	-	7,456,714
	₩ 81,712,084	₩ (8,648,493)	₩ 6,651,620	₩ 79,715,211
Deferred tax assets	82,950,666			80,884,117
Deferred tax liabilities	(1,238,582)			(1,168,906)

	2017			
	January 1	Recognized to income	Recognized directly to equity	December 31
Loss on valuation of inventories	₩ 13,388,986	₩ (4,326,769)	₩ -	₩ 9,062,217
Property, plant and equipment	37,303,573	9,583,828	-	46,887,401
Defined benefit liabilities	(12,766,093)	(8,727,803)	15,312,304	(6,181,592)
Accurual expenses	17,451,515	12,980,859	-	30,432,374
Investment in subsidiaries	(48,089,828)	(28,036,878)	(5,653,168)	(81,779,874)
Equity adjustments of investment in associates	(817,464)	-	265,433	(552,031)
Valuation of available-for-sale financial assets	(107,486,197)	(46,742,269)	3,749,967	(150,478,499)
Unused tax credit carryforwards from prior years	90,918,755	19,353,369	-	110,272,124
Deficit carried forward	24,194,264	67,629,714	-	91,823,978
Others	51,864,135	(19,638,149)	-	32,225,986
	₩ 65,961,646	₩ 2,075,902	₩ 13,674,536	₩ 81,712,084
Deferred tax assets	68,640,276			82,950,666
Deferred tax liabilities	(2,678,630)			(1,238,582)

Deferred tax assets and liabilities are measured using the enacted tax rates and laws that will be in effect when the temporary differences are expected to reverse.

Based on the Group's assessment of future taxable income, the Group's management concluded that it is probable that the recognized deferred tax assets will be realized in future periods.

22. Earnings per share

Earnings per share was calculated by dividing net profit by the number of ordinary shares, and diluted earnings per share was calculated by dividing net profit by the weighted average number of dilutive potential ordinary shares. Preferred shares are participating preferred shares, having right to participate in division of profits, therefore their earning per share were computed as well. No dilutive features exist for the years ended December 31, 2018 and and 2017 thus basic earnings per share is equivalent to diluted earnings per share.

The Company's basic (diluted) earnings per share for the years ended December 31, 2018 and 2017 are computed as follows (Korean won in thousands, except per share amounts):

	2018	2017
Profit for the year attributable to equity holders of the parent	₩ 656,241,636	₩ 161,739,107
Preferred shares dividend	(24,924,703)	(6,246,462)
Additional dividends attributable to preferred shares		
Profit for the year attributable to ordinary equity holders of the parent	631,316,933	155,492,645
Weighted-average number of shares of ordinary shares outstanding (*)	72,693,696	72,693,696
Basic (diluted) earnings per share	₩ 8,685	₩ 2,139

(*) Weighted-average number of shares of ordinary shares outstanding is calculated as follows:

	2018	2017
Number of ordinary shares as of 1 January	74,693,696	74,693,696
Number of treasury stock	(2,000,000)	(2,000,000)
Weighted average number of ordinary shares	72,693,696	72,693,696

The Company's basic (diluted) earnings per share attributable to preferred shares for the years ended December 31, 2018 and 2017 are computed as follows (Korean won in thousands, except per share amounts):

	2018	2017
Profit for the year attributable to preferred shares holders of the parent	₩ 24,924,703	₩ 6,246,462
Weighted-average number of shares of preferred shares outstanding(*)	2,853,554	2,853,554
Basic (diluted) earnings per share	₩ 8,735	₩ 2,189

22. Earnings per share (cont'd)

(*) Weighted-average number of preferred shares are calculated as follows:

	2018	2017
Number of preferred shares as of 1 January	2,906,984	2,906,984
Number of treasury stock	(53,430)	(53,430)
Weighted average number of preferred shares	2,853,554	2,853,554

23. Related party transactions

Samsung Electronics Co., Ltd. has significant influence on the Company. Related parties of the Company as of December 31, 2018 are as follows:

Related party	Category
Samsung Electronics Co., Ltd.	Company with significant influence
Samsung Economic Research Institute	Associate
Stemco Co., Ltd.	Associate
Samsung SDS Co., Ltd. and other affiliates (*)	Others

(*) Includes subsidiaries and associates of Samsung Electronics Co., Ltd.

Outstanding balances resulted from the transactions among the Company and its related parties as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Receivables	Payables	Receivables	Payables
Company with significant influence:				
Samsung Electronics Co., Ltd.	₩ 118,387,206	₩ 76,180,069	₩ 133,645,134	₩ 41,528,117
Associate:				
Samsung Economic Research Institute	-	1,537,683	-	1,532,635
Others (*)	194,000,405	61,933,528	190,801,546	62,098,291
	₩ 312,387,611	₩ 139,651,280	₩ 324,446,680	₩ 105,159,043

(*) Plan assets deposited with Samsung Life Insurance in addition to receivables from others described above amounts to ₩524,844,341 thousand, ₩472,021,225 thousand as of December 31, 2018 and 2017, respectively (Note 15).

23. Related party transactions (cont'd)

Significant transactions among the Company and its related parties for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			
	Sales	Purchases	Acquisition of tangible assets	Dividends
Company with significant influence:				
Samsung Electronics Co., Ltd.	₩ 988,181,137	₩ 535,923,733	₩ -	₩ -
Associate:				
Samsung Economic Research Institute	-	5,424,947	-	-
Stemco Co., Ltd.	-	-	-	2,435,100
Others	2,846,324,888	317,956,400	171,369,749	-
	₩ 3,834,506,025	₩ 859,305,080	₩ 171,369,749	₩ 2,435,100

	2017			
	Sales	Purchases	Acquisition of tangible assets	Dividends
Company with significant influence:				
Samsung Electronics Co., Ltd.	₩ 879,974,400	₩ 245,614,817	₩ -	₩ -
Associate:				
Samsung Economic Research Institute	-	4,558,273	-	-
Stemco Co., Ltd.	-	-	-	2,103,000
Others	2,535,975,034	336,036,814	144,463,358	-
	₩ 3,415,949,434	₩ 586,209,904	₩ 144,463,358	₩ 2,103,000

The Company has no collateral or guarantees provided to or received from related parties as of December 31, 2018.

23. Related party transactions (cont'd)

In relation to key management compensation of the Group for the year ended December 31, 2018, the Group recognized expenses for short-term benefits, including short-term incentives of ₩ 3,008,123 thousand and long-term benefits, including other long-term employee benefits and pension benefits of ₩ 516,863 thousand. Key management consists of registered executive officers who have authority and responsibility in the planning, operations and control of the business of the Group.

24. Supplementary consolidated cash flow information

Cash flows from operating activities for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Profit for the year	₩ 685,018,514,202	₩ 177,255,994,375
Adjustments to reconcile profit before tax to net cash flows:		
Loss (gain) on valuation of inventories	57,584,682,609	(3,094,263,350)
Loss on scrap of inventories	86,057,961,766	60,003,551,232
Value loss on return assets	1,103,059,066	-
Pension costs	53,487,622,438	46,926,454,408
Long-term employee benefits	29,317,072,455	-
Allowance for doubtful accounts - trade	(1,143,184,527)	(69,902,041)
Depreciation	710,916,932,008	610,937,960,446
Amortization of intangible assets	25,500,577,284	19,669,589,355
Provisions for product warranties	475,125,802	(277,143,003)
Transfer to refund liabilitie	3,261,410,236	-
Allowance (reversal) for doubtful accounts - other receivables	3,439,037,920	(139,027,533)
Gain on foreign exchange translation	(11,894,942,175)	(32,280,694,654)
Gain on disposal of property, plant and equipment	(2,690,693,808)	(4,432,849,619)
Gain on disposal of intangible assets	(4,858,469)	(58,251,478)
Loss on foreign currency translation	20,725,818,751	25,323,348,256
Loss on disposal of trade receivables	529,690,129	4,837,456,922
Loss on disposal of property, plant and equipment	11,315,226,946	8,097,466,694
Loss on disposal of intangible assets	1,464,656,839	1,167,551,127
Impairment loss on property, plant and equipment	20,500,012,527	21,983,868,882
Impairment loss on intangible assets	30,543,575	108,031,774
Finance costs	90,121,880,044	66,063,752,236
Finance income	(12,776,639,298)	(11,007,953,030)
Dividend income	(10,226,638,200)	(3,037,963,400)
Share of profit in associates	(7,208,249,820)	(7,964,641,871)
Gain on disposal of available-for-sale financial assets	-	(15,325,060,528)
Impairment loss on available-for-sale financial assets	-	54,816,372
Income tax expense	255,374,455,447	76,292,111,429
	1,325,260,559,545	863,778,208,626

24. Supplementary consolidated cash flow information (cont'd)

	2018	2017
Working capital adjustments:		
Other financial assets	₩ (96,852,826)	₩ 1,106,313,741
Trade receivables	(164,455,872,504)	(201,565,314,522)
Other receivables	14,637,942,032	78,936,077,767
Advance payments	(12,829,226,905)	18,785,843,350
Prepaid expenses	(642,485,426)	(2,850,671,062)
Inventories	(275,917,553,056)	(76,281,124,604)
Long-term prepaid expenses	(7,884,255,316)	(1,230,891,272)
Short-term and long-term loans	(699,292,104)	(1,835,232,808)
Trade payables	1,931,621,022	(99,190,528,039)
Other payables	147,664,697,202	75,701,244,168
Advances received	(6,347,971,739)	5,183,417,560
Other financial liabilities	12,038,846,224	5,021,530,521
Unearned income	(9,177,348,306)	10,036,244,160
Long-term trade and other payables	(1,518,519,413)	(1,099,268,498)
Long-term income received in advance	10,648,991,293	-
Retirement benefits paid	(7,083,996,222)	(6,695,306,461)
Contributions by employer	(70,000,000,000)	(70,000,000,000)
Succession of defined benefit liabilities	(51,434,847)	710,131,250
Net cash flows from operating activities	₩ 1,640,496,362,856	₩ 775,766,668,252

Significant transactions not involving cash flows for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Reclassification of construction-in-progress	₩ 1,065,439,175	₩ 793,747,164
Reclassification of machinery-in-transit	137,334,887	456,118,470
Transfer of current portion of long-term borrowings	296,961,965	525,574,000
Transfer of current portion of unearned income	10,292,219	33,862,572
Transfer of current portion of long-term income received in advance	6,434,796	11,153,131
Acquisition of PPE with account payables	16,142,921	7,564,043
Transfer of intangible assets of long-term advance paymnents	8,522,105	7,571,865

24. Supplementary consolidated cash flow information (cont'd)

Changes in debt arising from financial activities as of December 31, 2018 (Korean won in thousands):

	2018				
	January 1	Net cash flows from financing activities	Exchange rate fluctuation	Others(*)	December 31
Short-term borrowings	₩ 1,203,792,484	₩ (178,549,714)	₩ (63,286,909)	₩ -	₩ 961,955,861
Current portion of long-term borrowings	467,529,000	(351,337,600)	18,896,388	296,961,965	432,049,753
Long-term borrowings	897,616,232	443,757,763	15,721,368	(296,961,965)	1,060,133,398
Dividend payables	4,907,282	368,086	(26,604)	-	5,248,764
	₩ 2,573,844,998	₩ (85,761,465)	₩ (28,695,757)	₩ -	₩ 2,459,387,776

(*) Others represent transfer of current portion of long-term borrowings.

Changes in debt arising from financial activities as of December 31, 2017 (Korean won in thousands):

	2017				
	January 1	Net cash flows from financing activities	Exchange rate fluctuation	Others(*)	December 31
Short-term borrowings	₩ 842,296,258	₩ 415,965,898	₩ (54,469,672)	₩ -	₩ 1,203,792,484
Current portion of long-term borrowings	323,626,685	(350,758,602)	(30,913,083)	525,574,000	467,529,000
Long-term borrowings	1,277,706,472	244,557,559	(99,073,799)	(525,574,000)	897,616,232
Dividend payables	6,548,891	(1,641,609)	-	-	4,907,282
	₩ 2,450,178,306	₩ 308,123,246	₩ (184,456,554)	₩ -	₩ 2,573,844,998

(*) Others represent transfer of current portion of long-term borrowings.

25. Financial risk management objectives and policies

The Group's principal financial liabilities, comprise borrowings and trade and other payables. The main purpose of these financial liabilities is to finance the Group's operations and to provide guarantees to support its operations. Also the Group has various financial assets including trade receivables, cash and short-term deposits that arrive directly from its operations.

The Group is exposed to market risk, credit risk and liquidity risk. The Group's senior management oversees the management of these risks. It is the Group's policy that no trading in derivatives for speculative purposes shall be undertaken.

25.1 Market risk

Market risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices comprise three types of risk: interest rate risk, currency risk and other price risk, such as equity price risk.

The sensitivity analyses in the following sections relate to the position as of December 31, 2018 and 2017.

25.1.1 Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group's exposure to the risk of changes in market interest rates relates primarily to the Group's long-term debt obligations with floating interest rates. The Group manages its interest rate risk by having a balanced portfolio of fixed and variable rate loans and borrowings.

Borrowings with floating interest rates amounts to ₩1,568,576,535 thousand and ₩1,703,897,701 thousand as of December 31, 2018 and 2017, respectively. The following table demonstrates a sensitivity analysis to a reasonably possible change in interest rates on that portion of borrowings. With all other variables held constant, the effect of changes in interest rates of floating rate borrowings on profit before tax is as follows (Korean won in thousands):

	2018		2017	
	100bp increase	100bp decrease	100bp increase	100bp decrease
Impact on interest costs	₩ (15,685,765)	₩ 15,685,765	₩ (17,038,977)	₩ 17,038,977

25.1.2 Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Group's exposure to the risk of changes in foreign exchange rates relates primarily to the Group's operating activities and the Group's net investments in foreign subsidiaries. The book values of monetary assets and liabilities which are not presented in functional currency as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Assets	Liabilities	Assets	Liabilities
USD	₩ 1,001,783,753	₩ 1,276,915,879	₩ 1,226,922,577	₩ 1,455,626,477
EUR	54,884,044	4,651,147	11,147,772	1,974,693
JPY	4,301,205	41,308,631	409,708	44,969,095
PHP	10,010,519	21,997,693	10,286,074	18,812,397
VND	2,217,582	16,713,394	2,304,508	23,868,464
SGD	486,726	1,099,259	594,774	829,721
Others	350,504	389,474	247,766	249,908
	₩ 1,074,034,333	₩ 1,363,075,477	₩ 1,251,913,179	₩ 1,546,330,755

The Group manages its foreign currency risk periodically. The following table demonstrates a sensitivity analysis of a reasonably possible change in the foreign currency exchange rates, with all other variables held constant, on the Group's profit before tax as of December 31, 2018 and 2017. (Korean won in thousands):

	2018		2017	
	5% increase	5% decrease	5% increase	5% decrease
USD	₩ (13,756,606)	₩ 13,756,606	₩ (11,435,195)	₩ 11,435,195
EUR	2,511,645	(2,511,645)	458,654	(458,654)
JPY	(1,850,371)	1,850,371	(2,227,970)	2,227,970
PHP	(599,359)	599,359	(426,316)	426,316
VND	(724,791)	724,791	(1,078,198)	1,078,198
SGD	(30,627)	30,627	(11,747)	11,747
Others	(1,949)	1,949	(107)	107
	₩ (14,452,058)	₩ 14,452,058	₩ (14,720,879)	₩ 14,720,879

The sensitivity analyses were conducted on monetary assets and liabilities which are presented in foreign currency other than functional currency as of the reporting date.

25.1.3 Other price risk

The Group's marketable available-for-sale equity securities are susceptible to market price risk arising from the fluctuation in the price of the securities. The following table demonstrates a sensitivity analysis of a reasonably possible change in the price of marketable equity securities on the financial statements of the Group as of December 31, 2018 (Korean won in thousands):

	5% increase	5% decrease
Other comprehensive income before tax	₩ 5,264,531	₩ (5,264,531)
Income tax effect	(1,274,017)	1,274,017
Other comprehensive income after tax	₩ 3,990,514	₩ (3,990,514)

25.2 Credit risk

Credit risk is the risk that a counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss of the Group. The Group is exposed to credit risk from its operating activities (primarily for trade receivables) and from its financing activities.

25.2.1 Trade receivables and other receivables

Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and control relating to customer credit risk management. Credit quality of the customer is assessed based on an extensive credit rating scorecard and individual credit limits are defined in accordance with this assessment. Outstanding customer receivables are regularly monitored. The maximum exposure to credit risk at the reporting date is as follows (Korean won in thousands):

	2018	2017
Trade receivables	₩ 984,657,308	₩ 828,687,653
Other receivables	76,253,064	84,209,787
Long-term other receivables	29,375,844	39,388,967

The Group evaluates the impairment of trade receivables and other receivables at every reporting date. In addition, the Group entered into guarantee insurance contracts with Korea Trade Insurance Corporation and other insurance corporations for the credit risk of foreign customers.

25.2.2 Other assets

Credit risks associated with the Group's other assets which consist of cash, short-term deposits and short-term and long-term loans arise from the default by the counterparties. Maximum exposure to credit risks will be the book value of the related assets. The Group deposits its surplus funds in Woori Bank and other financial institutions whose credit ratings are high, therefore credit risk related to financial institutions is considered limited.

25.3 Liquidity risk

Liquidity risk refers to the risk that the Group may default on the contractual obligations that become due. The Group manages its risk to a shortage of funds using a recurring liquidity planning tool. The Group matches the financial liabilities with the financial assets taking into account the maturity dates and cash flow from operating activities of those financial assets.

The table below summarises the maturity profile of the Group's financial liabilities based on contractual undiscounted payments (Korean won in thousands):

25.3 Liquidity risk (cont'd)

The financial liabilities is undiscounted nominal amount. The remaining maturities indicate the earliest timing when the creditors can request repayments.

	2018			
	Less than 3 months	3 to 12 months	1 to 5 years	Total
Trade and other payables	₩ 891,417,869	₩ -	₩ 86,081,670	₩ 977,499,539
Short-term borrowings	657,860,487	304,095,374	-	961,955,861
Current portion of long-term borrowings	17,889,600	414,160,153	-	432,049,753
Long-term borrowings	-	-	1,060,133,398	1,060,133,398
Other financial liabilites	32,663,368	2,906,564	-	35,569,932
	₩ 1,599,831,324	₩ 721,162,091	₩ 1,146,215,068	₩ 3,467,208,483

	2017			
	Less than 3 months	3 to 12 months	1 to 5 years	Total
Trade and other payables	₩ 728,590,027	₩ -	₩ 58,283,365	₩ 786,873,392
Short-term borrowings	916,423,817	287,368,667	-	1,203,792,484
Current portion of long-term borrowings	-	467,529,000	-	467,529,000
Long-term borrowings	-	-	897,616,232	897,616,232
Other financial liabilites	20,858,569	2,675,417	-	23,533,986
	₩ 1,665,872,413	₩ 757,573,084	₩ 955,899,597	₩ 3,379,345,094

25.4 Capital management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder value.

The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions. To maintain the sound capital structure, the Group may adjust the dividend payment to shareholders, reduce capital stock, or issue new shares.

No changes were made in the objectives, policies or processes for managing capital during the years ended December 31, 2018 and 2017.

The Group monitors a gearing ratio, which is net debt divided by total capital, which is equity plus total equity and net debt. Net debt refers to interest bearing borrowings, less cash and cash equivalents.

The gearing ratios as of the reporting date are computed as follows (Korean won in thousands):

	2018	2017
Trade and other payables	₩ 977,499,539	₩ 786,873,392
Borrowings	2,454,139,012	2,568,937,716
Other financial liabilities	35,569,932	23,533,986
Less: Cash and cash equivalent	(1,002,374,472)	(444,609,330)
Net debt	2,464,834,011	2,934,735,764
Total equity	4,946,497,556	4,331,491,386
Total capital (Net debt and shareholder's equity)	₩ 7,411,331,567	₩ 7,266,227,150
Gearing ratio	33.26%	40.39%

26. Fair value

26.1 Fair value of financial instruments

Details of book values and fair values of financial assets and liabilities as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018		2017	
	Book value	Fair value	Book value	Fair value
Fanancial assets:				
Loans and receivables				
Trade and other receivables	₩ 1,090,286,216	₩ 1,090,286,216	₩ 952,286,407	₩ 952,286,407
Short-term and long-term loans	2,744,580	2,744,580	2,461,948	2,461,948
Other financial assets	280,331,972	280,331,972	165,496,141	165,496,141
Equity instruments designated at FVOCI				
Listed equity investments	105,290,628	105,290,628	-	-
Non-listed equity investments	45,598,510	45,598,510	-	-
Available for sale				
Listed equity investments	-	-	700,973,555	700,973,555
Non-listed equity investments	-	-	24,557,281	24,557,281
Total financial assets	₩ 1,524,251,906	₩ 1,524,251,906	₩ 1,845,906,212	₩ 1,845,906,212
Financial liabilities:				
Financial liabilities carried at amortized cost:				
Trade and other payables	₩ (977,499,539)	₩ (977,499,539)	₩ (786,873,392)	₩ (786,873,392)
Other financial liabilities	(35,569,932)	(35,569,932)	(23,533,986)	(23,533,986)
Short-term borrowings	(961,955,861)	(961,955,861)	(1,203,792,484)	(1,203,792,484)
Current portion of long-term borrowings	(432,049,753)	(432,049,753)	(467,529,000)	(467,529,000)
Long-term borrowings	(1,060,133,398)	(1,060,133,398)	(897,616,232)	(897,616,232)
Total financial liabilities	₩ (3,467,208,483)	₩ (3,467,208,483)	₩ (3,379,345,094)	₩ (3,379,345,094)

26.2 Fair value measurement

The Group has measured and disclosed the fair value measurement hierarchy of the Group's assets and liabilities as Level 1, Level 2 and Level 3 as below table. There has been no transfers between Level 1, Level 2 and Level 3.

26. Fair value (cont'd)

26.3 Fair value on the statement of financial position:

As of December 31, 2018 and 2017, the Group held the following assets and liabilities carried at fair value on the statement of financial position (Korean won in thousands):

	2018			
	Level 1	Level 2	Level 3	Total
Assets that are measured at fair value:				
Trade and other receivables	₩ -	₩ -	₩ 1,090,286,216	₩ 1,090,286,216
Short-term and long-term loans	-	-	2,744,580	2,744,580
Other financial assets	-	-	280,331,972	280,331,972
Equity instruments designated at FVOCI				
Listed equity investment	105,290,628		-	105,290,628
Non-listed equity investment	-	-	45,598,510	45,598,510
Liabilities for which the fair value have been disclosed:				
Trade and other payables	-	-	(977,499,539)	(977,499,539)
Other financial liabilities	-	-	(35,569,932)	(35,569,932)
Short-term borrowings	-	(961,955,861)	-	(961,955,861)
Current portion of long-term borrowings	-	(432,049,753)	-	(432,049,753)
Long-term borrowings	-	(1,060,133,398)	-	(1,060,133,398)

	2017			
	Level 1	Level 2	Level 3	Total
Assets for which the fair value have been disclosed:				
Trade and other receivables	₩ -	₩ -	₩ 952,286,407	₩ 952,286,407
Short-term and long-term loans	-	-	2,461,948	2,461,948
Other financial assets	-	80,000,000	85,627,281	165,627,021
Available for sale				
Listed equity investment	700,973,555	-	-	700.973,555
Non-listed equity investment	-	-	24,557,281	24,557,281
Liabilities for which the fair value have been disclosed:				
Trade and other payables	-	-	(786,873,392)	(786,873,392)
Other financial liabilities	-	-	(23,533,986)	(23,533,986)
Short-term borrowings	-	(1,203,792,484)	-	(1,203,792,484)
Current portion of long-term borrowings	-	(467,529,000)	-	(467,529,000)
Long-term borrowings	-	(897,616,232)	-	(897,616,232)

26. Fair value (cont'd)

26.4 Disclosure of assets and liabilities classified as level 3 of the fair value hierarchy

(1) The Group is using Cash flow discount model as valuation methods for the assets and liabilities classified as level 2.

(2) The valuation method, input variables in assets and liabilities classified as level 3 are as follows (Korean won in thousands)

Classification	Fair value	Valuation method	Input variables	Range of Input variables (weighted average)
Equity instruments designated at FV				
Samsung Venture Investment Co., Ltd.	7,495,980	Discounted Cash flow model	Growth rate	-1.00%~1.00%(0%)
			Discount rate	21.57%~23.57%(22.57%)
Solu-M Co., Ltd	15,331,050	Discounted Cash flow model	Growth rate	-1.00%~1.00%(0%)
			Discount rate	10.25%~12.25%(11.25%)
IMA	9,569,985	Discounted Cash flow model	Growth rate	-1.00%~1.00%(0%)
			Discount rate	13.84%~15.84%(14.84%)
SemCNS Co.,Ltd	4,188,000	Discounted Cash flow model	Growth rate	-1.00%~1.00%(0%)
			Discount rate	10.50%~12.50%(11.50%)
Financial assets at amortised cost (debt instrument)				
Acoount receivable	51,265,089	Discounted Cash flow model	Discount rate	2.22%~2.50%(2.39%)

26-5 Sensitivity analysis of fair value measurement classified as level 3 of the fair value hierarchy

Sensitivity analysis of financial instrument is based on changes in financial instrument's value accordance with changes in unobservable input variables derived from statistical method

Impact of chnages in unobservable input variables are as follows (Korean won in thousands):

	Favorable changes		Unfavorable changes	
	gain and loss	Equity	gain and loss	Equity
Equity intsruments designated at FV(*1)	₩ -	₩ 588,716	₩ -	₩ (8,240,115)
Acoount receivable(*2)	21,150	-	(20,335)	-
Total	21,150	588,716	(20,335)	(8,240,115)

(*1) Fair value changes were measured by increasing or decreasing of correlation between two main unobservable input variables, growth rate and interest rate.
(*2) Receivable was measured by increasing or decreasing 10% of main unobservable input variable interest

26. Fair value (cont'd)

26-6 Detals of gain and losses by categories

Details of gains and losses arising from financial insturments by categories for the years ended December 31, 2018

	Debt instrument at amortised cost	Equity instruments designated at FVOCI	Liabilties at amortised cost	Total
Interest income	₩ 2,345,641	₩ -	₩ -	₩ 2,345,641
Dividend income	-	10,226,638	-	10,226,638
Gain on foreign currency transaction	115,597,302	-	100,625,075	216,222,377
Gain on foreign currency translation	1,620,924	-	10,274,018	11,894,942
Interest expenses	-	-	(90,121,880)	(90,121,880)
Loss on foreign currency transactions	(72,496,984)	-	(150,667,324)	(223,164,308)
Loss on foreign currency translation	(10,091,331)	-	(10,634,488)	(20,725,819)
Loss on disposal of trade receivables	(529,690)	-	-	(529,690)
Allowance for doubtful accounts - trade	(3,439,038)	-	-	(3,439,038)
Release of allowance balances	1,143,185	-	-	1,143,185
Gain/loss on equity instruments designated at fair value through OCI	-	(467,843,286)	-	(467,843,286)
Gain/loss on disposal of equity instruments designated at FVOCI	-	451,339,730	-	451,339,730
Total	₩ 34,150,009	₩ (6,276,918)	₩ (140,524,599)	₩ (112,651,508)

	Debt Instrument at amortised cost	Equity instruments designated at FVOCI	Liabilties at amortised cost	Total
Interest income	₩ 6,619,887	₩ -	₩ -	₩ 6,619,887
Dividend income	-	3,037,963	-	3,037,963
Gain on foreign currency transaction	30,589,128	-	106,326,149	136,915,277
Gain on foreign currency translation	1,419,118	-	30,861,577	32,280,695
Interest expenses	-	15,325,061	-	15,325,061
Interest income	-	-	(66,063,752)	(66,063,752)
Loss on foreign currency transactions	(80,636,075)	-	(60,460,904)	(141,096,979)
Loss on foreign currency translation	(20,346,654)	-	(4,976,694)	(25,323,348)
Loss on disposal of trade receivables	(4,837,457)	-	-	(4,837,457)
Allowance for doubtful accounts - trade	69,902	-	-	69,902
Release of allowance balances	174,162	-	-	174,162
Gain/loss on equity instruments designated at fair value through OCI	-	(54,816)	-	(54,816)
Gain/loss on disposal of equity instruments designated at FVOCI	-	(14,470,223)	-	(14,470,223)
Total	₩ (66,947,989)	₩ 3,837,985	₩ 5,686,376	₩ (57,423,628)