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

Consolidated financial statements
or the years ended December 31, 2019 and 2018
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, 2019 and 2018, and the consolidated statements of other 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.

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

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] Impairment of Cash-Generating Unit of High Density Interconnection (HDI)

As described in Note 2-15, the Group reviews, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists, the Group conducts an impairment test by estimating recoverable amount, and the Group recognizes the differences between the asset's recoverable amount and carrying amount as an impairment loss.
An asset's recoverable amount is the higher of an asset's or CGU's fair value less costs of disposal and its

value in use. The recoverable amount is determined for an individual asset, but if the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets, the assets is determined by each cash-generating unit to which the individual asset belongs.

As described in Note 3, Impairment losses are generated in Printed Circuit Board Solution Department, and the Department has signs of impairment such as expected future economic performance not meeting expectations for its HDI cash-generating unit. Considering that the importance of amount of the HDI cash-generating unit and the Company's significant judgments and estimates are accompanied in the impairment testing, we determined the impairment assessment of the HDI cash-generating unit as KAM.

The audit procedures, performed on the KAM related to the impairment of the HDI cash-generating unit as of December 31, 2019, are as follows:

- Identification of impairment and evaluation of the internal control design and operational effectiveness related to the impairment testing
- Evaluation of the independence and eligibility of external professionals utilized by management
- Examining the appropriateness of the evaluation method applied for impairment testing
- Assessment of the significant assumptions (discount rates, future cash flows, etc.) used in the impairment testing
- Review of the sensitivity analysis of the impairment testing presented by management
- Verification of the recalculation of the accuracy of the calculation of impairment assessment report

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:

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- 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 *Jae Ick Song.*

Ernst & Young Han Young

February 24, 2020

This audit report is effective as of February 24, 2020, 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 affect the accompanying consolidated financial statements and may result in modifications to this report.

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

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

"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, 2019 and 2018

		Korean won		US dollar (Note 2)	
	Notes	2019	2018	2019	2018
Assets					
Current assets:					
Cash and cash equivalents	4	₩ 803,810,427,528	₩ 1,002,374,471,773	$ 694,256,718	$ 865,757,879
Other current financial assets	5	56,203,252,379	243,542,157,639	48,543,144	210,349,074
Trade and other receivables	6,23	1,095,676,584,666	1,060,910,372,005	946,343,569	916,315,746
Short-term loans		489,790,837	546,593,519	423,036	472,097
Advanced payments		3,846,856,838	35,844,500,364	3,322,557	30,959,147
Prepaid expenses		44,692,658,987	36,396,555,152	38,601,364	31,435,961
Prepaid income tax		20,584,030,122	19,206,307,573	17,778,572	16,588,623
Inventories, net	7	1,271,273,631,462	1,115,565,877,099	1,098,007,973	963,522,091
Right of return assets	14	14,246,213,025	10,906,310,579	12,304,554	9,419,857
Assets held for sale	27	196,701,119,382	-	169,892,140	-
		3,507,524,565,226	3,525,293,145,703	3,029,473,627	3,044,820,475
Non-current assets:					
Investment in associates	8	68,259,879,909	60,213,757,585	58,956,538	52,007,046
Equity instruments designated at fair value	9	173,348,301,305	150,889,138,429	149,722,147	130,324,010
Long-term loans		2,333,652,185	2,197,986,394	2,015,592	1,898,416
Property, plant and equipment	10	4,514,510,148,372	4,558,010,182,821	3,899,214,155	3,936,785,440
Intangible assets, net	11	141,150,901,464	162,460,608,115	121,913,026	140,318,369
Other non-current financial assets	5	14,932,284,711	36,789,814,260	12,897,119	31,775,621
Long-term trade and other receivables	6	5,046,027,000	29,375,843,577	4,358,289	25,372,123
Long-term prepaid expenses		24,565,588,540	38,799,612,190	21,217,472	33,511,498
Right-of-use assets	2	78,741,834,202	-	68,009,876	-
Deferred tax assets	21	143,835,047,029	80,884,116,755	124,231,341	69,860,180
		5,166,723,664,717	5,119,621,060,126	4,462,535,555	4,421,852,703
Total assets		**₩ 8,674,248,229,943**	**₩ 8,644,914,205,829**	**$ 7,492,009,182**	**$ 7,466,673,178**

(Continued)

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

	Notes	Korean won 2019	Korean won 2018	US dollar (Note 2) 2019	US dollar (Note 2) 2018
Liabilities					
Current liabilities:					
Trade and other payables	12,23	₩ 891,582,052,075	₩ 891,417,868,679	$ 770,065,687	$ 769,923,880
Short-term borrowings	13	569,189,647,980	961,955,861,424	491,613,101	830,848,041
Advances received		18,178,518,968	7,247,601,229	15,700,915	6,259,804
Current financial liabilities	5	27,808,494,223	35,569,932,235	24,018,392	30,722,001
Income tax payables		103,820,681,984	156,011,756,482	89,670,653	134,748,451
Current portion of long-term borrowings	13	173,835,740,000	432,049,753,433	150,143,151	373,164,410
Unearned income		5,503,964,510	5,027,369,701	4,753,812	4,342,175
Provisions for product warranties		4,984,208,121	3,408,156,425	4,304,896	2,943,649
Current lease liabilities	2	17,096,171,856	-	14,766,084	-
Refund liabilities	14	19,531,120,647	16,895,712,999	16,869,166	14,592,946
Liabilities directly associated with the assets held for sale	27	18,874,865,868	-	16,302,354	-
		1,850,405,466,232	2,509,584,012,607	1,598,208,211	2,167,545,357
Non-current liabilities:					
Long-term borrowings	13	1,219,727,736,182	1,060,133,398,202	1,053,487,421	915,644,669
Long-term other payables	12	91,209,212,197	86,081,670,197	78,778,038	74,349,344
Long-term unearned income		11,075,315,451	15,306,671,215	9,565,828	13,220,480
Net employee defined benefit liabilities	15	38,962,230,341	26,141,991,061	33,651,952	22,579,021
Long-term lease liabilities	2	31,575,051,752	-	27,271,594	-
Deferred tax liabilities	21	1,196,332,280	1,168,906,288	1,033,281	1,009,593
		1,393,745,878,203	1,188,832,636,963	1,203,788,114	1,026,803,107
Total liabilities		**₩ 3,244,151,344,435**	**₩ 3,698,416,649,570**	**$ 2,801,996,325**	**$ 3,194,348,464**
Equity					
Issued capital	18	₩ 388,003,400,000	₩ 388,003,400,000	$ 335,121,264	$ 335,121,264
Share premium	18	1,045,201,199,091	1,045,201,199,091	902,747,624	902,747,624
Other components of equity	18	(146,701,455,500)	(146,701,455,500)	(126,707,079)	(126,707,079)
Accumulated other comprehensive income	9,18	425,665,287,555	355,200,814,069	367,650,102	306,789,440
Other capital reserves	18	2,158,965,257,472	1,952,365,257,472	1,864,713,472	1,686,271,599
Retained earnings		1,413,912,972,039	1,226,978,445,193	1,221,206,575	1,059,749,909
Equity attributable to owners of the parent		**5,285,046,660,657**	**4,821,047,660,325**	**4,564,731,958**	**4,163,972,757**
Non-controlling interests		145,050,224,851	125,449,895,934	125,280,899	108,351,957
Total equity		**5,430,096,885,508**	**4,946,497,556,259**	**4,690,012,857**	**4,272,324,714**
Total liabilities and equity		**₩ 8,674,248,229,943**	**₩ 8,644,914,205,829**	**$ 7,492,009,182**	**$ 7,466,673,178**

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, 2019 and 2018

		Korean won		US dollar (Note 2)	
	Notes	**2019**	**2018**	**2019**	**2018**
Continuing operations					
Sales	3,23	₩ 8,040,817,645,787	₩ 8,002,008,033,000	$ 6,944,910,732	$ 6,911,390,597
Cost of sales	19,23	(5,989,994,608,971)	(5,514,608,796,509)	(5,173,600,457)	(4,763,006,388)
Gross profit		**2,050,823,036,816**	**2,487,399,236,491**	**1,771,310,275**	**2,148,384,209**
Selling and administrative expenses	19	(1,316,854,194,356)	(1,337,463,001,562)	(1,137,376,226)	(1,155,176,198)
Operating profit		**733,968,842,460**	**1,149,936,234,929**	**633,934,049**	**993,208,011**
Finance income	20	21,702,504,840	12,378,545,815	18,744,606	10,691,437
Finance costs	20	(78,270,093,308)	(76,234,216,968)	(67,602,430)	(65,844,029)
Share of profit of associates	8,20	11,923,012,518	7,208,249,820	10,297,990	6,225,816
Other income	20	193,799,549,750	288,252,192,093	167,386,034	248,965,444
Other expenses	10,20	(192,523,439,481)	(296,307,028,718)	(166,283,848)	(255,922,464)
Profit before tax from continuing operations		**690,600,376,779**	**1,085,233,976,971**	**596,476,401**	**937,324,215**
Income tax expense	21	71,123,442,940	280,374,734,201	61,429,818	242,161,629
Profit for the year from continuing operations		**619,476,933,839**	**804,859,242,770**	**535,046,583**	**695,162,586**
Discontinued operations					
Profit (loss) after tax for the year from discontinued operations		(91,428,382,803)	(119,840,728,568)	(78,967,337)	(103,507,280)
Profit for the year		**₩ 528,048,551,036**	**₩ 685,018,514,202**	**$ 456,079,246**	**$ 591,655,306**
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	21,217,611,286	(467,843,285,755)	18,325,800	(404,079,535)
Net gains (losses) on disposal of equity instruments designated at fair value OCI	9	4,424,547,197	451,339,730,000	3,821,513	389,825,298
Re-measurement gains (losses) on defined benefit plans	15	(44,193,311,937)	(26,951,294,019)	(38,170,074)	(23,278,022)
Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods (net of tax):					
Capital changes in equity method	8	(1,284,726,767)	1,633,971,054	(1,109,628)	1,411,272
Exchange differences on translation of foreign operations		52,410,656,837	16,420,531,624	45,267,453	14,182,529
Other comprehensive loss for the year, net of tax		**32,574,776,616**	**(25,400,347,096)**	**28,135,064**	**(21,938,458)**
Total comprehensive income (loss) for the year, net of tax		**₩ 560,623,327,652**	**₩ 659,618,167,106**	**$ 484,214,310**	**$ 569,716,848**

(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)

		Korean won		US dollar (Note 2)	
	Notes	2019	2018	2019	2018
Profit for the year from continuing operations attributable to:					
Equity holders of the parent		605,724,503,560	776,082,364,447	523,168,512	670,307,794
Non-controlling interests		13,752,430,279	28,776,878,323	11,878,071	24,854,792
		₩ 619,476,933,839	₩ 804,859,242,770	$ 535,046,583	$ 695,162,586
Profit for the year attributable to:					
Equity holders of the parent		514,296,120,757	656,241,635,879	444,201,175	566,800,515
Non-controlling interests		13,752,430,279	28,776,878,323	11,878,071	24,854,791
		₩ 528,048,551,036	₩ 685,018,514,202	$ 456,079,246	$ 591,655,306
Total comprehensive income (loss) for the year attributable to:					
Equity holders of the parent		540,567,282,306	629,826,970,853	466,891,762	543,985,983
Non-controlling interests		20,056,045,346	29,791,196,253	17,322,548	25,730,865
		₩ 560,623,327,652	₩ 659,618,167,106	$ 484,214,310	$ 569,716,848
Earnings per share:	22				
Basic and diluted, profit for the year attributable to ordinary equity holders of the parent		₩ 6,806	₩ 8,685	$ 5.88	$ 7.50
Basic and diluted, profit for the year attributable to preferred shareholders of the parent		₩ 6,856	₩ 8,735	$ 5.92	$ 7.54
Basic and diluted, Profit for the year from continuing operations attributable to ordinary equity holders of the parent		₩ 8,016	₩ 10,271	$ 6.92	$ 8.87
Basic and diluted, Profit for the year from continuing operations attributable to preferred shareholders of the parent		₩ 8,066	₩ 10,321	$ 6.97	$ 8.91

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, 2019 and 2018

(In 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, 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**
as of January 1, 2019	**₩ 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**
Effect of adoption of new accounting standards (Note2)	-	-	-	-	-	(878,354,274)	(878,354,274)	(20,118,168)	(898,472,442)
Profit for the year	-	-	-	-	-	514,296,120,757	514,296,120,757	13,752,430,279	528,048,551,036
Other comprehensive income:									
Re-measurement gains on defined benefit plans	-	-	-	-	-	(44,193,311,937)	(44,193,311,937)	-	(44,193,311,937)
Capital changes in equity method	-	-	-	(1,284,726,767)	-	-	(1,284,726,767)	-	(1,284,726,767)
Net gains (losses) on valuation of equity instruments designated at fair value OCI	-	-	-	21,217,611,286	-	-	21,217,611,286	-	21,217,611,286
Net gains (losses) on disposal of equity instruments designated at fair value OCI	-	-	-	4,424,547,197	-	-	4,424,547,197	-	4,424,547,197
Foreign currency translation adjustments	-	-	-	46,107,041,770	-	-	46,107,041,770	6,303,615,067	52,410,656,837
Total comprehensive income (loss)	**-**	**-**	**-**	**70,464,473,486**	**-**	**470,102,808,820**	**540,567,282,306**	**20,056,045,346**	**560,623,327,652**
Dividends	-	-	-	-	-	(75,689,927,700)	(75,689,927,700)	(296,214,203)	(75,986,141,903)
Appropriation of retained earnings	-	-	-	-	206,600,000,000	(206,600,000,000)	-	-	-
Others	-	-	-	-	-	-	-	(139,384,058)	(139,384,058)
as of December 31, 2019	**₩ 388,003,400,000**	**₩ 1,045,201,199,091**	**₩ (146,701,455,500)**	**₩ 425,665,287,555**	**₩ 2,158,965,257,472**	**₩ 1,413,912,972,039**	**₩ 5,285,046,660,657**	**₩ 145,050,224,851**	**₩ 5,430,096,885,508**

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, 2019 and 2018

		Korean won		US dollar (Note 2)	
	Notes	2019	2018	2019	2018
Operating activities					
Cash flows from operating activities	24	₩ 1,285,068,685,680	₩ 1,640,496,362,856	$ 1,109,922,859	$ 1,416,908,242
Interest received		21,135,699,942	11,661,145,446	18,255,053	10,071,813
Income tax paid		(284,934,155,494)	(93,488,267,315)	(246,099,633)	(80,746,474)
Net cash flows from operating activities		**1,021,270,230,128**	**1,558,669,240,987**	**882,078,279**	**1,346,233,581**
Investing activities					
Increase (decrease) in other financial assets, net		207,651,947,238	(114,594,405,412)	179,350,447	(98,975,994)
Acquisition of FV-OCI		10,919,488,304	605,759,865,545	9,431,239	523,199,055
Disposal of FV-OCI		(1,109,772,000)	(27,634,521,850)	(958,518)	(23,868,131)
Proceeds from disposal of property, plant and equipment		36,227,293,252	31,547,046,319	31,289,768	27,247,406
Acquisition of property, plant and equipment		(1,547,971,686,748)	(1,195,189,266,500)	(1,336,994,029)	(1,032,293,372)
Proceeds from disposal of intangible assets		15,502,733,255	1,908,498,380	13,389,820	1,648,383
Acquisition of intangible assets		(25,950,644,840)	(12,548,914,843)	(22,413,754)	(10,838,586)
Dividends received		2,687,533,400	12,661,738,200	2,321,241	10,936,032
Disposal of discontinued operations		785,000,000,000	-	678,010,019	-
Net cash flows used in investing activities		**(517,043,108,139)**	**(698,089,960,161)**	**(446,573,767)**	**(602,945,207)**
Financing activities					
Proceeds from short-term borrowings		147,300,644,083	355,811,233,383	127,224,602	307,316,664
Repayment of short-term borrowings		(429,314,170,175)	(534,360,947,257)	(370,801,667)	(461,531,307)
Repayment of current portion of long-term borrowings		(362,490,729,281)	(351,337,600,000)	(313,085,791)	(303,452,755)
Proceeds from long-term borrowings		553,257,197,006	484,187,346,776	477,852,131	418,196,016
Repayment of long-term borrowings		(329,569,783,949)	(40,429,584,000)	(284,651,739)	(34,919,316)
Repayment of lease liabilities		(33,506,787,317)	-	(28,940,048)	-
Others		(139,384,058)	(1,166,792)	(120,387)	(1,008)
Interest paid		(89,095,645,944)	(89,188,397,902)	(76,952,536)	(77,032,646)
Dividends paid		(75,983,779,483)	(60,513,599,007)	(65,627,725)	(52,266,021)
Net cash flows from financing activities		**(619,542,439,118)**	**(235,832,714,799)**	**(535,103,160)**	**(203,690,373)**
Net increase (decrease) in cash and cash equivalents		(115,315,317,129)	624,746,566,027	(99,598,648)	539,598,001
Net foreign exchange difference		(31,570,364,266)	(66,981,424,031)	(27,267,546)	(57,852,327)
Cash and cash equivalents at January 1		1,002,374,471,773	444,609,329,777	865,757,877	384,012,202
Cash and cash equivalents at December 31		**₩ 855,488,790,378**	**₩ 1,002,374,471,773**	**$ 738,891,683**	**$ 865,757,876**

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 and Ulsan. 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, 2019 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)	331,501,389	-	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)	643,181,550	-	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#47) (*1)(*3)	4,000,000	-	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.

(*3) Newly established during the year.

(*4) Kunshan Samsung Electro-Mechanics Co., Ltd. was discontinued during the current period and plans to dispose of the remaining assets and classified them as assets held for sale.

Dongguan Samsung Electro-Mechanics Co., Ltd. is under liquidation as of December 31, 2019.
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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, 2019 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.	₩ 242,412,361	₩ 55,783,481	₩ 366,104,844	₩ 9,475,477
Dongguan Samsung Electro-Mechanics Co., Ltd.	125,389,214	2,594,394	5,000,975	986,026
Tianjin Samsung Electro-Mechanics Co., Ltd.	1,629,719,603	1,107,090,902	1,671,284,600	67,475,404
Samsung Electro-Mechanics Philippines,Corp.	958,277,522	716,348,763	974,104,357	14,092,784
Samsung High-Tech Electro-Mechanics (Tianjin) Co., Ltd.	462,088,425	316,364,508	1,011,851,270	31,032,531
Kunshan Samsung Electro-Mechanics Co., Ltd.	204,800,979	20,100,713	208,589,124	(301,531,094)
Samsung Electro-Mechanics Vietnam Co., Ltd.	1,209,748,659	803,165,756	2,056,838,964	47,346,014
Samsung Electro-Mechanics America, Inc.	83,274,418	65,825,046	382,935,280	4,383,607
Samsung Electro-Mechanics GmbH	93,801,314	61,659,676	323,782,159	7,320,116
Calamba Premier Realty Corporation	8,117,624	6,498,251	-	(6,960)
Samsung Electro-Mechanics Pte Ltd.	79,553,932	53,317,001	253,748,662	2,346,924
Samsung Electro-Mechanics (Shenzhen) Co., Ltd.	446,307,150	342,533,565	1,542,886,946	26,588,316
Samsung Electro-Mechanics Japan Co., Ltd.	23,939,293	19,167,011	96,076,182	116,717
Batino Realty Corporation	4,786,445	3,999,320	-	107,554
Samsung Electro-Mechanics Software India Bangalore Private Limited	3,676,509	2,986,949	5,073,818	631,107
Samsung Venture Investment Co., Ltd. (SVIC#47)	3,721,380	257,379	-	(535,999)
	₩ 5,579,614,828	₩ 3,577,692,715	₩ 8,898,277,181	₩ (90,171,446)

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, 2019 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%	₩ 9,949,808	₩ 2,487,452
Tianjin Samsung Electro-Mechanics Co., Ltd.	18.24%	51,433,234	9,381,422
Samsung High-Tech Electro-Mechanics (Tianjin) Co., Ltd.	5.00%	36,931,570	1,846,579
Calamba Premier Realty Corp.	60.20%	(6,960)	(4,190)
Batino Realty Corporation	60.20%	107,554	64,747
Samsung Venture Investment Co.,Ltd. (SVIC#19)(*)	1.00%	(1,821,971)	(18,220)
Samsung Venture Investment Co.,Ltd. (SVIC#47)	1.00%	(535,999)	(5,360)
		₩ 96,057,236	₩ 13,752,430

(*) Liquidiated during the year

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 2019 and 2018 financial statements are translated to US dollars at US$1:₩1,157.8, the exchange rate in effect on December 31, 2019. 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, 2019. 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 measured at fair value at the acquisition date. Contingent consideration classified as equity is not remeasured and its subsequent settlement is accounted for within equity. Contingent consideration classified as an asset or liability that is a financial instrument and within the scope of KIFRS 1109 *Financial Instruments,* is measured at fair value with the changes in fair value recognized in the statement of profit or loss in accordance with KIFRS 1109. Other contingent consideration that is not within the scope of KIFRS 1109 is measured at fair value at each reporting date with changes in fair value recognized in profit or loss.

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.

In determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which the Group initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, the Group determines the transaction date for each payment or receipt of advance consideration.

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.

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

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 are calculated by 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

The Group assess whether the contract contains lease when the contract is settled, by considering if the right to control the use of the identified asset is transferred in exchange for price.

Group as lessee
The Group applies a single approach on identification and measurement, except for short-term leases and leases of low-value assets. The Group identifies lease liability, as obligation to pay for the lease, and right-of-use asset, as right to control the underlying asset.

Right-of-use asset
At the commencement date, the day that the underlying asset of the lease becomes available, the Group identifies the right-of-use asset. The right-of-use asset is measured as cost initially, and as cost model in subsequent measurements. Besides of accumulated depreciation and impairment loss being deducted, adjustments from remeasurement of lease liability is reflected in the cost model. The cost of right-of-use assets includes the amount of the recognized lease liability, the initial direct cost, and the lease fee paid on lease commencement date or before, less the incentive received. Right-of-use assets are depreciated on a straight-line basis over a short period of the lease term and the estimated useful life of the following assets:

·Right of use on buildings and land: 1~50 years
·Vehicles and transportation equipment: 1~5 years
·Other equipment: 1~3 years

If the ownership on the underlying asset is transferred to the Group when the lease is terminated, or the exercise price of a purchase option is reflected on the cost of right-of-use asset, depreciation will be calculated based on estimated useful life of the underlying asset.

Rights-of-use assets are also susceptible to impairment. Refer to note 2.15, accounting policy on the impairment of non-financial assets.

2.12 Leases (cont'd)

Lease liability
On the commencement date, the Group measures the lease liability with the present value of the lease payments to be made during the lease term. The lease payments consist of fixed payments (including in-substance fixed payments), less lease incentives receivable, variable payments that depend on an index or a rate and amounts expected to be payable under residual value guarantees. Lease payments also contains exercise price, when it is reasonably certain that the purchase option will be exercised, and penalties for terminating lease when the lease term reflects the Group's exercise of an option to terminate the lease.

The variable payments that do not depend on an index or a rate will be recognized as expense in the period in which the event or condition that triggers those payments occurs, unless the payments are accrued in regard of manufacturing the inventory assets.

The Group utilizes incremental borrowing rate on the commencement date as the interest rates implicit in the lease are cannot be readily determined to calculate the present value of the lease payment. After the commencement date, lease liability will be increased by the interests accrued and decreased by payments made. Additionally, book value of lease liability will be remeasured with the change in lease term, lease payments (e.g. fluctuation of unpaid lease payments occurred by an index or a rate) or reassessment on exercise of purchase option on underlying asset.

The Group's lease liabilities are included in interest bearing debts (refer to note 26).

Short-term leases and lease of low-value assets
The Group applies recognition exemption on short-term leases of machineries and equipment. It is same on lease of low-value assets, furniture and fixtures. Lease payments on those leases will be recognized on straight-line basis.

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.

2.14 Intangible assets (cont'd)

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 5 and 4~5 years,, respectively. Memberships for usage rights that are not kept for investment purposes, are regarded to have indefinite useful lives and are not amortized.

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 net fair value 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.

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

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

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 as personnel expense, along 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

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.

2.21 Revenue recognition (cont'd)

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.

2.22 Taxes (cont'd)

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 KIFRS 1116 Leases for the first time as of January 1, 2019. The nature and effect of the changes as a result of adoption of this new accounting standard is described below.

Several other amendments and interpretations apply for the first time in 2019, but do not have an impact on the consolidated financial statements of the Group.

KIFRS 1116 Leases
KIFRS 1116 supersedes 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. The standard 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.

The Group adopted KIFRS 1116 using the modified retrospective method of adoption with the date of initial application of January 1, 2019. Under this method, the standard is applied retrospectively with the cumulative effect of initially applying the standard recognized at the date of initial application. The Group elected to use the transition practical expedient allowing the standard to be applied only to contracts that were previously identified as leases applying KIFRS 1017 and KIFRS 2104 at the date of initial application. The Group elected to use the recognition exemptions for lease contracts that, at the commencement date, have a lease term of 12 months or less and do not contain a purchase option ("short-term leases"), and lease contracts for which the underlying asset is of low value ("low-value leases").

The effect of adopting KIFRS 1116 is, as follows:
Impact on the consolidated statement of financial position (increase/(decrease)) is as follows (Korean won in millions):

		Increase(decrease)
Assets		
Right-of-use assets	₩	45,728,930
Intangible assets, long-term prepayments		(17,834,313)
Transfer from lease guarantee deposit PV		(573,617)
Total assets		27,321,000
Liabilities		
Lease liabilities		28,219,472
Total liabilities		28,219,472
Equity		
Retained earnings		(878,354)
Non-controlling interests		(20,118)
Total equity	₩	(898,472)

1) Effect of initial application of KIFRS 1116

The Group has signed on lease contracts of various kinds of buildings, vehicles and transportation equipment and software, etc. Before adoption of KIFRS 1116, the Group classified leases which the Group was lessee, as operating leases on the commencement date. Under the operating leases, lease payments were expensed on straight-line basis during the lease term. Prepaid or unpaid lease payments are recognized as prepaid expenses or payables. As the Group applies KIFRS 1116, the Group applies a single approach on recognition and measurement on all leases as lessee, except for short-term leases and leases of low-value assets. The KIFRS 1116 provides practical expedient and detailed requirements on transitional provision.

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

The Group recognized right-of-use asset and lease liability on leases that had been operating leases, except for short-term leases and leases of low-value assets. Unless they have been discounted with incremental burrowing rate of lessee from the commencement date, most of the right-of-use assets has been measured as if KIFRS 1116 have been applied from the commencement date. In some cases, right-of-use assets were recognized by the amount equal to lease liability, and then the amount of prepaid or accrued lease payments were adjusted in the right-of-use asset recognized on consolidated statements of financial position right before the initial application. Lease liabilities were measured as present value of unpaid lease payments discounted by incremental burrowing rate of the Group, on the commencement date.

The practical expedients that the Group applied are follows:

- Applying a single discount rate to a portfolio of leases with reasonably similar characteristics
- Relying on assessment of whether leases are onerous contracts, immediately before the date of initial application as an alternative to performing an impairment review
- Electing to apply short-term lease expedients on the leases that ends within 12 months of the date of initial application
- Excluding initial direct costs from the measurement of the right-of-use asset at the date of initial application.
- Using hindsight, such as in determining the lease term if the contract contains options to extend or terminate the lease.

The Following reconciliation to the opening balance for the lease liabilities as at 1 January 2019 is based upon the operating obligations as at 31 December 2018:

		Amount
Operating lease obligations as at 31 December 2018	₩	47,859,656
The weighted average discount rate as at 1 January 2019		2.67%
Discounted operating lease obligation as at 1 January 2019		46,066,267
Relif option for short-term leases		(14,348,556)
Relif option for leases of low-value assets		(3,498,239)
Lease liabilities at 1 January 2019		**28,219,472**

2) Abstract of new accounting standards

The Group applies following new accounting policies as KIFRS 1116 has been adopted.

- Right-of-use asset

The Group recognizes right-of-use asset on the commencement date (i.e. the day underlying asset becomes available). Right-of-use asset is measured with cost, less accumulated depreciation and accumulated impairment. Reassessment of lease liability will lead to remeasurement of right-of-use asset. The cost of right-of-use asset comprise recognized amount of lease liability and direct initial cost, with adjustment of prepaid lease payments and incentives on or before the commencement date. If it is not reasonably expectable that the Group will get ownership of underlying asset on the termination of lease term, right-of-use asset is depreciated on straight-line basis, over the shorter of its estimated useful life and the lease term. The Group conducts an impairment review of the right-of-use asset

- Lease liability

The Group measures lease liability as present value of unpaid lease payments at commencement date. The lease payments consist of fixed payments (including in-substance fixed payments), less lease incentives receivable, variable payments that depend on an index or a rate and amounts expected to be payable under residual value guarantees. Lease payments also contains exercise price, when it is reasonably certain that the purchase option will be exercised, and penalties for terminating lease when the lease term reflects the Group's exercise of an option to terminate the lease.

The variable payments that do not depend on an index or a rate will be recognized as expense in the period in which the event or condition that triggers those payments occurs, unless the payments are accrued in regard of manufacturing the inventory assets.

The Group utilizes incremental borrowing rate on the commencement date when the interest rates implicit in the lease are cannot be readily determined. After the commencement date, lease liability will be increased by the interests accrued and decreased by payments made. Additionally, the Group remeasures of lease liability if there is a change in lease contract, in-substance fixed payment, lease term or reassessment on exercise of purchase option on underlying asset.

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

- Short-term leases and leases of low-value assets

The Group applies recognition exemption on short-term leases (e.g. leases with lease term shorter than 12 months from the commencement date, without purchase option). Same applies on leases of fixtures and furniture with low value (e.g. lease under US$ 5,000), as low-value assets. Lease payments on those leases are recognized on straight-line basis.

- Significant judgement when deciding lease term of contract with extension option

The Group includes extended period in lease term when it is reasonably certain that extension option will be exercised during non-cancellable period of a lease, and cancellable period when it is reasonably certain that termination option will not be exercised. The Group applies judgement when the exercise of an option is reasonably certain or not. In other words, the Group considers all related variables that makes economic incentive to exercise extension option. If change in situation and significant event, or change in controllable situation affects likelihood to exercise (or not to exercise) the option, the Group reassesses lease term.

3) Amount recognized in consolidated statements of financial position and consolidated statements of income

Changes in book value of right-of-use assets and lease liabilities during the current period are as follows (Korean Won in thousands).

	Rignt of Use Asset				Lease Liability
	Buingdings and Land	Vehicles and transportation equipment	Other equipment	Total	
As of January 1, 2019 (restated)	₩ 33,577,237	₩ 11,760,779	₩ 390,914	₩ 45,728,929	₩ 28,219,471
New and renewal of contract	42,750,251	12,289,955	-	55,040,206	53,905,985
Liquidation, etc.(*)	(1,039,223)	(258,090)	(3,151)	(1,300,463)	(1,058,865)
Depreciation	(9,053,189)	(6,150,768)	(186,033)	(15,389,990)	-
Interest cost	-	-	-	-	1,111,420
Payment	-	-	-	-	(33,506,787)
Transfer to assets held for sale	(5,336,848)	-	-	(5,336,848)	-
As of December 31, 2019	₩ 60,898,228	₩ 17,641,876	₩ 201,730	₩ 78,741,834	₩ 48,671,224

(*) including effect of foreign currency transition and translation.

The Group recognized ₩19,707,201 thousand and ₩1,278,188 thousand from short-term leases and leases of low-value assets, respectively.

During the current period, the amounts recognized in consolidated statements of income are as follows (Korean Won in thousands):

	2019
Depreciation expense of right-of-use assets	₩ 15,389,990
Interest expense on lease liabilities	1,111,420
Total amount recognised in profit or loss	₩ 16,501,410

As of December 31, classification of current and non-current lease liabilities are as follows (Korean Won in thousands):

	Within 3 months	3 months ~ 1 year	1 year ~ 5 years	Total
Lease liabilities	₩ -	₩ 17,096,172	₩ 31,575,052	₩ 48,671,224

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

KIFRS 2123 *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 *Income Taxes*. It 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 determines whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments and uses the approach that better predicts the resolution of the uncertainty. The Group applies significant judgement in identifying uncertainties over income tax treatments. Since the Group operates in a complex multinational environment, it assessed whether the Interpretation had an impact on its consolidated financial statements.

Upon adoption of the Interpretation, the Group considered whether it has any uncertain tax positions, particularly those relating to transfer pricing. The Company's and the subsidiaries' tax filings in different jurisdictions include deductions related to transfer pricing and the taxation authorities may challenge those tax treatments. The Group determined, based on its tax compliance and transfer pricing study, that it is probable that its tax treatments (including those for the subsidiaries) will be accepted by the taxation authorities. The Interpretation did not have an impact on the consolidated financial statements of the Group.

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 an 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. These amendments had no impact on the consolidated financial statements of the Group.

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 the 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. An entity is also required to determine the 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 had no impact on the consolidated financial statements of the Group as it did not have any plan amendments, curtailments, or settlements during the period.

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*. These amendments had no impact on the consolidated financial statements as the Group does not have long-term interests in its associate and joint venture.

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

Annual Improvements 2015-2017 Cycle

- **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 had no impact on the consolidated financial statements of the Group as there is no transaction where joint control is obtained

- **KIFRS 1111 *Joint Arrangements***

An entity 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 had no impact on the consolidated financial statements of the Group as there is no transaction where a joint control is obtained.

- **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.

The entity applies the 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, they had no impact on the consolidated financial statements of 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 25).

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.

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.

2.25 Significant accounting judgments, estimates and assumptions (cont'd)

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, 2019, the amount recognised as refund liabilities for the expected returns and volume rebates was ₩19,531 million.

2.26 Standards issued but not yet effective

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

Amendments to KIFRS 1103: *Definition of a Business*
In October 2018, the IASB issued amendments to the definition of a business in KIFRS 1103 *Business Combinations* to help entities determine whether an acquired set of activities and assets is a business or not. They clarify the minimum requirements for a business, remove the assessment of whether market participants are capable of replacing any missing elements, add guidance to help entities assess whether an acquired process is substantive, narrow the definitions of a business and of outputs, and introduce an optional fair value concentration test. New illustrative examples were provided along with the amendments.

Since the amendments apply prospectively to transactions or other events that occur on or after the date of first application, the Group will not be affected by these amendments on the date of transition.

Amendments to KIFRS 1001 and KIFRS 1008: *Definition of Material*
In October 2018, the IASB issued amendments to KIFRS 1001 *Presentation of Financial Statements* and KIFRS 1008 *Accounting Policies, Changes in Accounting Estimates and Errors* to align the definition of 'material' across the standards and to clarify certain aspects of the definition. The new definition states that, 'Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.'

The amendments to the definition of material is not expected to have a significant impact on the Group's 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, 2019 were approved by the Board of Directors' meeting on January 29, 2020 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

Sales to Samsung Electronics Co., Ltd. & its subsidiaries is more than 10% of its total sales, amounted to ₩3,787 billion for the year ended December 31, 2019.

The following table summarizes the results of financial performance of the Group by operating segment for the years ended December 31, 2019 and 2018 (Korean won in millions):

	2019			
	Component Solution	Module Solution	Printed Circuit Board Solution	Consolidated
Sales	₩ 3,219,758	₩ 3,350,773	₩ 1,470,287	₩ 8,040,818
Operating profit	504,861	214,553	14,555	733,969
Profit for the year	430,429	184,204	4,844	619,477

	2018			
	Component Solution	Module Solution	Printed Circuit Board Solution	Consolidated
Sales	₩ 3,550,146	₩ 3,113,766	₩ 1,338,096	₩ 8,002,008
Operating profit	1,117,076	88,850	(55,990)	1,149,936
Profit for the year	811,202	43,625	(49,968)	804,859

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, SK highnix 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, SOMC and others
America	passive element, semiconductor package substrate	Intel Corporation, Future and others
Europe	passive element and others	Rutronik, Bosch, TTI, 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, 2019 and 2018 (Korean won in millions) are as follows:

2019

	Korea		Overseas						
	Domestic	Export	China	Southeast Asia	America	Europe	Japan	Adjustment	Consolidated
Sales(*)	₩ 710,118	₩ 2,374,649	₩ 2,167,428	₩ 1,995,513	₩ 377,568	₩ 319,466	₩ 96,076	₩ -	₩ 8,040,818
Non-current assets		3,438,163	1,354,710	1,414,093	612	3,099	956	(1,044,909)	5,166,724

2018

	Korea		Overseas						
	Domestic	Export	China	Southeast Asia	America	Europe	Japan	Adjustment	Consolidated
Sales(*)	₩ 638,786	₩ 2,380,279	₩ 2,827,747	₩ 1,632,826	₩ 287,333	₩ 207,930	₩ 27,107	₩ -	₩ 8,002,008
Non-current assets		3,478,014	680,599	1,559,884	447	233	307	(599,863)	5,119,621

(*) This amount excludes internal sales within consolidated company.

4. Cash and cash equivalents

Cash and cash equivalents as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Cash at banks and on hand	₩ 15,011	₩ 19,796
Short-term deposits	803,795,417	1,002,354,676
	₩ 803,810,428	₩ 1,002,374,472

Cash and cash equivalents of cash flows from operating activities as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Cash at banks and on hand	₩ 15,011	₩ 19,796
Short-term deposits	803,795,417	1,002,354,676
Short-term operating deposits of discontinued operations	51,678,362	-
	₩ 855,488,790	₩ 1,002,374,472

5. Financial assets and liabilities

Financial assets and liabilities as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Current	Non-current	Current	Non-current
Financial assets:				
Financial instruments	₩ 39,000,000	₩ 20,772	₩ 242,514,928	₩ 22,239
Held-to-maturity investments	3,590	98,385	2,220	93,915
Accrued income	628,014	-	476,372	-
Business guarantee deposits	406,001	-	548,638	-
Lease guarantee deposits	16,165,647	14,813,128	-	36,673,660
	₩ 56,203,252	₩ 14,932,285	₩ 243,542,158	₩ 36,789,814
Financial liabilities:				
Withholdings	₩ 23,076,102	₩ -	₩ 32,663,368	₩ -
Withholding deposits	4,732,392	-	2,906,564	-
	₩ 27,808,494	₩ -	₩ 35,569,932	₩ -

5. Financial assets and liabilities (cont'd)

Restricted deposits as of December 31, 2019 and 2018 consist of the following (Korean won in thousands):

	Financial institution	2019	2018	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	20,772	22,239	Overdraft facilities
		₩ 42,420,772	₩ 42,422,239	

Held-to-maturity investments as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Fair value	Book value	Fair value	Book value
Within 1 year	₩ 3,590	₩ 3,590	₩ 2,220	₩ 2,220
After 1 year but less than 5 years	98,385	98,385	93,915	93,915
	₩ 101,975	₩ 101,975	₩ 96,135	₩ 96,135

Financial assets measured at amortized cost using the effective interest rate method as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Effective interest rate (%)	Book value	Effective interest rate (%)	Book value
Long-term guarantee deposits	2.22 ~ 3.73	₩ 30,978,774	2.22 ~ 2.67	₩ 36,673,660

6. Trade and other receivables

Trade and other receivables as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Current	Non-current	Current	Non-current
Trade receivables	₩ 976,076,541	₩ -	₩ 984,737,784	₩ -
Allowance for doubtful accounts	(27,685)	-	(80,476)	-
Other receivables	124,446,697	5,661,445	81,911,072	30,246,327
Allowance for doubtful accounts	(4,818,968)	(615,418)	(5,658,008)	(870,483)
	₩ 1,095,676,585	₩ 5,046,027	₩ 1,060,910,372	₩ 29,375,844

The changes in allowance for doubtful accounts for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
As of January 1	₩ 6,608,967	₩ 2,864,597
Effect of adoption of new accounting standards	-	1,471,064
Allowance (reversal) for doubtful accounts - trade	3,650	(1,143,185)
Allowance (reversal) for doubtful accounts - others	61,392	3,439,038
Write-off	(1,211,938)	(22,547)
As of December 31	₩ 5,462,071	₩ 6,608,967

6. Trade and other receivables (Cont'd)

As of December 31, 2019 and 2018, the aging analysis of trade and other receivables are as follows (Korean won in thousands):

	2019	2018
Neither past due nor impaired	₩ 1,057,482,674	₩ 1,065,675,834
Past due but not impaired:		
< 30 days	25,302,938	20,612,274
30 ~ 180 days	15,172,632	2,513,203
181 ~ 365 days	1,381,048	1,335,386
> 365 days	1,383,320	129,519
	43,239,938	24,610,382
	₩ 1,100,722,612	₩ 1,090,286,216

The Group disposed of its trade receivables in 2019 and 2018 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, 2019 and 2018 (Note 13).

Trade receivables factored with recourse as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Book value of trade receivables disposed	₩ 305,749,589	₩ 258,469,204
Book value of related borrowings	305,749,589	258,469,204

7. Inventories

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

	2019			2018		
	Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Merchandise	₩ 151,256,459	₩ (11,168,501)	₩ 140,087,958	₩ 206,923,276	₩ (26,580,893)	₩ 180,342,383
Finished goods	435,286,803	(51,480,841)	383,805,962	401,226,928	(42,399,767)	358,827,161
Work-in-process	352,162,663	(16,844,214)	335,318,449	228,654,710	(26,583,240)	260,071,470
Components	75,771,888	-	75,771,888	25,797,867	-	25,797,867
Raw materials	252,667,504	(11,890,273)	240,777,231	190,340,328	(12,282,248)	178,058,080
Supplies	59,860,084	-	59,860,084	71,514,286	-	71,514,286
Materials in-transit	35,652,060	-	35,652,060	40,954,630	-	40,954,630
	₩ 1,362,657,461	₩ (91,383,829)	₩ 1,271,273,632	₩ 1,223,412,025	₩ (107,846,148)	₩ 1,115,565,877

The reversal of inventories write-down amounting to ₩16,462,317 thousand was recognized for the year ended December 31, 2019 and write-down amounting to ₩57,584,683 thousand was recognized for the year ended December 31, 2018. Scrapped inventories amounted to ₩138,598,864 thousand and ₩86,057,962 thousand for the years ended December 31, 2019 and 2018, 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 ₩1,124,610,074 thousand as of December 31, 2019.

8. Investment in associates

Investment in associates as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	Stemco Co., Ltd. 2019	Stemco Co., Ltd. 2018	Samsung Economic Research Institute 2019	Samsung Economic Research Institute 2018
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	₩ 49,089,141	₩ 39,592,269	₩ 19,170,739	₩ 20,621,489
Book value	₩ 49,089,141	₩ 39,592,269	₩ 19,170,739	₩ 20,621,489
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, 2019 and 2018, and the results of their financial performance for the years then ended (Korean won in thousands):

	Stemco Co., Ltd. 2019	Stemco Co., Ltd. 2018	Samsung Economic Research Institute 2019	Samsung Economic Research Institute 2018
Current assets	₩ 118,540,930	₩ 85,484,627	₩ 75,570,478	₩ 78,123,701
Non-current assets	166,652,007	174,079,055	52,702,631	59,720,494
Total assets	₩ 285,192,937	₩ 259,563,682	₩ 128,273,109	₩ 137,844,195
Current liabilities	₩ 95,307,117	₩ 87,869,192	₩ 33,855,945	₩ 32,168,367
Non-current liabilities	26,255,017	39,720,259	13,867,841	19,030,918
Total liabilities	₩ 121,562,134	₩ 127,589,451	₩ 47,723,786	₩ 51,199,285
Total equity	₩ 163,630,803	₩ 131,974,231	₩ 80,549,323	₩ 86,644,910
Sales	₩ 326,450,134	₩ 258,614,429	₩ 176,004,388	₩ 175,168,616
Profit for the year	39,325,792	23,482,065	526,366	687,523
Other comprehensive income (expense)	(396,219)	986,975	(6,621,952)	7,813,202
Total comprehensive income (expense)	38,929,573	24,469,040	(6,095,586)	8,500,725

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

	Jan. 1, 2019	Share of profit or loss in investee	Equity adjustments of investment in associates	Dividends income	Dec. 31, 2019
Stemco Co., Ltd.	₩ 39,592,269	₩ 11,797,738	₩ (118,866)	₩ (2,182,000)	₩ 49,089,141
Samsung Economic Research Institute	20,621,489	125,275	(1,576,025)	-	19,170,739
	₩ 60,213,758	₩ 11,923,013	₩ (1,694,891)	₩ (2,182,000)	₩ 68,259,880

	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

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, 2019 and 2018 are as follows (Korean won in thousands):

	2019			
	Net assets (A)	Ownership (B)	Shareholder portion (A*B)	Book value
Stemco Co., Ltd.	₩ 163,630,803	30.00%	₩ 49,089,141	₩ 49,089,141
Samsung Economic Research Institute	80,549,323	23.80%	19,170,739	19,170,739
	₩ 244,180,126		₩ 68,259,880	₩ 68,259,880

	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

9. Financial instruments designated at fair value

Details of equity instruments designated at fair value and available for saleas of December 31, 2019 and 2018 are as follows (Korea won in thousands):

	2019						2018
					Net losses on valuation		
	Acquisition cost	Fair value	Book value	Unrealized gain	Before 2018	2018	Book value
Marketable securities	₩ 88,617,199	₩ 105,515,627	₩ 105,515,627	₩ 16,898,428	₩ -	₩ -	₩ 105,290,628
Non-marketable securities	25,010,060	68,669,439	67,832,674	50,886,713	(7,937,148)	(170,741)	45,598,510
	₩ 113,627,259	₩ 174,185,066	₩ 173,348,301	₩ 67,785,141	₩ (7,937,148)	₩ (170,741)	₩ 150,889,138

9-1 Marketable securities

Marketable securities as of December 31, 2019 and 2018 are as follows (Korea won in thousands):

	2019						2018
	Number of shares	Equity interest	Acquisition cost	Fair value	Book value	Unrealized gain	Book value
Samsung Heavy Industries Co., Ltd.	₩ 13,636,562	₩ 2.16%	₩ 88,310,573	₩ 99,137,806	₩ 99,137,806	₩ 10,827,233	₩ 101,046,924
iMarketkorea Inc.	613,252	1.71%	306,626	6,377,821	6,377,821	6,071,195	4,243,704
			₩ 88,617,199	₩ 105,515,627	₩ 105,515,627	₩ 16,898,428	₩ 105,290,628

9. Financial instruments designated at fair value (cont'd)

9-2 Non-marketable securities

Non-marketable securities as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019					2018
	Number of shares	Equity interest (%)	Acquisition cost	Proportionate net asset value	Book value	Book value
Financial assets designated at fair value through OCI						
Samsung Venture Investment Co., Ltd. (*1)	1,020,000	17.00	₩ 5,100,000	₩13,274,280	₩13,274,280	₩ 7,495,980
SOLUM Co., Ltd.(*1)	4,650,000	12.18	2,325,000	40,389,900	40,389,900	15,331,050
KMAC fund	8,000	1.00	40.000	569,561	40,000	40,000
IMA(*1)	347,696	8.69	4.028.477	8,804,010	8,804,010	9,569,985
Inkel Co., Ltd.	40	0.00	200	265	200	200
Posco Social Corporation Fund	4	1.67	40,000	-	40,000	73,334
SEMCNS Co., Ltd.(*1)	4,000,000	10.00	2,000,000	1,872,000	1,872,000	4,188,000
			13,533,677	64,910,016	64,420,390	42,882,094
Financial assets at fair value through profit or loss						
Intellectual Discovery	7,212	0.22	250,004	21,389	-	-
Korea Orbcom Ltd.	16,000	3.42	600,000	-	-	-
DTI Inc.	333,333	2.77	564,799	-	-	-
Cosmolink Co.,Ltd.	58,067	2.18	6,451,253	325,7509	-	-
Optis Co., Ltd.	10,963	0.05	54,816	-	-	-
DS Asia Holdings	3,208,399	1.80	16,276	-	-	-
The others	-	-	3,539,235	3,412,284	3,412,284	2,716,416
			11,496,383	3,759,423	3,412,284	2,716,416
			₩ 25,010,060	₩68,669,439	₩67,832,674	₩ 45,598,510

(*) Valuations on the non-marketable securities 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 and risk free interest rate used for calculating fair value are as follows:

	Discount rate	Risk free interest rate
Samsung Venture Investment Co., Ltd.	17.56%	1.77%
SemCNS Co., Ltd.	10.84%	1.77%
Solu-M Co., Ltd.	10.17%	1.77%
IMA	13.04%	3.22%

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.

9. Financial instruments designated at fair value (cont'd)

Details of changes in accumulated other comprehensive income arising from valuation of financial instruments designated at fair value for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019				
	January 1	Increase (decrease)	Disposal	Current year tax effect	December 31
Marketable securities:	12,638,459	224,998	-	(54,449)	12,809,008
Non-marketable securities:	18,719,070	27,755,176	-	(6,708,113)	39,766,133
	₩ 31,357,529	₩ 27,980,174	₩ -	₩ (6,762,562)	₩ 52,575,141

	2018				
	January 1	Increase (decrease)	Disposal	Current year tax effect	December 31
Marketable securities:	477,533,086	6,682,550	(620,000,000)	148,422,823	12,638,459
Non-marketable securities:	2,313,241	21,353,731	-	(4,947,902)	18,919,070
	₩ 479,846,327	₩ 28,036,281	₩ (620,000,000)	₩ 143,474,921	₩ 31,357,529

10. Property, plant and equipment

Changes in the book value of property, plant and equipment for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands): classified them as held for sale

	2019								
	January 1	Additions	Disposals	Disposals by business transfer	Transfers	Depreciation	Others (*)	Classified as held for sale	December 31
Acquisition cost:									
Land	₩ 209,466,811	₩ -	₩ -	-	₩ -	₩ -	₩ 1,303,872		₩ 210,770,683
Buildings	2,121,706,900	1,260,667	(3,461,916)	-	47,492,619	-	32,355,612	(274,605,191)	1,924,748,691
Structures	144,253,403	307,137	(63,982)	(15,286,073)	5,059,981	-	1,785,226	(6,414,335)	129,641,357
Machinery	6,214,373,272	41,601,824	(220,283,841)	(395,190,209)	760,513,432	-	82,561,979	11,085,514	6,494,661,971
Vehicles	4,484,576	561,818	(381,175)	-	120,076	-	96,518	(143,425)	4,738,388
Equipment	327,419,650	22,125,085	(31,933,491)	(2,324,781)	21,503,082	-	18,962,610	(22,923,454)	332,828,701
Construction-in-progress	469,114,927	1,109,547,494	(7,069,840)	-	(577,770,742)	-	(68,483,252)		925,338,587
Machinery-in-transit	32,095,255	338,447,135	(871,533)	-	(256,918,448)	-	(74,844,368)		37,908,041
	₩ 9,522,914,794	₩ 1,513,851,160	₩ (264,065,778)	(412,801,063)	₩ -	₩ -	₩ (6,261,803)	(293,000,891)	₩ 10,060,636,419
Accumulated depreciation and impairment:									
Land	₩ -	₩ -	₩ -		₩ -	₩ -	₩ -		₩ -
Buildings	(588,945,528)	-	2,258,034		-	(65,729,849)	(60,341,168)	143,484,602	(569,273,909)
Structures	(60,609,863)	-	51,029	700,612	-	(6,170,699)	(759,810)	2,887,162	(63,901,569)
Machinery	(4,073,787,892)	-	192,942,094	80,929,328	-	(716,582,510)	(140,400,139)	(7,555,433)	(4,664,454,552)
Vehicles	(2,982,317)	-	358,405	-	-	(758,471)	(58,011)	125,696	(3,314,698)
Equipment	(238,579,011)	-	32,440,681	1,241,587	-	(39,865,300)	(17,713,712)	17,294,212	(245,181,543)
Construction-in-progress	-	-	-	-	-	-	-		-
Machinery-in-transit	-	-	-	-	-	-	-		-
	₩ (4,964,904,611)	₩ -	₩ 228,050,243	82,871,527	₩ -	₩ (829,106,829)	₩ (219,272,840)	156,236,239	₩ (5,546,126,271)
Net book value:									
Land	₩ 209,466,811	₩ -	₩ -		₩ -	₩ -	₩ 1,303,872		₩ 210,770,683
Buildings	1,532,761,372	1,260,667	(1,203,882)		47,492,619	(65,729,849)	(27,985,556)	(131,120,589)	1,355,474,782
Structures	83,643,540	307,137	(12,953)	(14,585,461)	5,059,981	(6,170,699)	1,025,416	(3,527,173)	65,739,788
Machinery	2,140,585,380	41,601,824	(27,341,747)	(314,260,881)	760,513,432	(716,582,510)	(57,838,160)	3,530,081	1,830,207,419
Vehicles	1,502,259	561,818	(22,770)	-	120,076	(758,471)	38,507	(17,729)	1,423,690
Equipment	88,840,639	22,125,085	507,190	(1,083,194)	21,503,082	(39,865,300)	1,248,898	(5,629,242)	87,647,158
Construction-in-progress	469,114,927	1,109,547,494	(7,069,840)	-	(577,770,742)	-	(68,483,252)		925,338,587
Machinery-in-transit	32,095,255	338,447,135	(871,533)	-	(256,918,448)	-	(74,844,368)		37,908,041
	₩ 4,558,010,183	₩ 1,513,851,160	₩ (36,015,535)	(329,929,536)	₩ -	₩ (829,106,829)	₩ (225,534,643)	(136,764,652)	₩ 4,514,510,148

	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

(*) 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 ₩22,081 thousand.

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

Borrowing costs incurred amounting to ₩4,326,702 thousand for the years ended December 31, 2019, 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, 2019 and 2018 are as follows (Korean won in thousands):

	2019				
	January 1	Increase (decrease)	Disposal	Classified as held for sale	December 31
Buildings	₩ 5,614,878	₩ 55,239,876	₩ -	₩ (53,889,197)	₩ 6,965,557
Machinery	145,900,010	99,474,028	(13,313,023)	(99,170,028)	132,890,987
Equipment	1,636,426	-	(76,023)	-	1,560,403
	₩ 153,151,314	₩ 154,713,904	₩ (13,389,046)	₩ (153,059,225)	₩ 141,416,947

The Group has reviewed the recoverable value of assets in the cash flow generating unit because the expected future economic performance of the cash flow generating unit may not be as expected due to changes in the market and technology of HDI cash flow generating unit products. As a result, there was no recognition of impairment above the carrying amount.

The recoverable amount of the HDI cash flow generating unit has been estimated based on value in use. The discount rate used in calculating value in use is as follows.(Korean won in million, %)

Segment	CGU	Impairment	Recoverable value	Discount rate
Printed Circuit Board Solution	HDI	-	₩ 549,156	11.05%

	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 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 ₩8,734,743,165 thousand and ₩9,460,696,938 thousand as of December 31, 2019 and 2018, respectively.

11. Intangible assets

Changes in the book value of intangible assets for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

2019	January 1	Additions	Disposals	Disposals by business transfer	Amortization	Others (*)	Classified as held for sale	December 31
Acquisition cost:								
Patent/industrial proprietary rights	135,340,178	14,356,252	(5,601,329)	(3,972,996)	-	-,	-	140,122,105
Land usage rights	7,613,509	-	-	-	-	(7,613,509)	-	-
Software	154,973,745	24,592,902	(14,394,078)	(21,477,921)	-	60,427,645	(2,114,233)	202,008,060
Development cost	70,423,960	1,357,742	-	(71,781,702)	-	-	-	-
Goodwill	64,162,099	-	-	-		-	-	64,162,099
Others	30,283,712	-	(775,375)	-	-	(258,293)	-	29,250,044
	462,797,203	40,306,896	(20,770,782)	(97,232,619)	-	52,555,843	(2,114,233)	435,542,308
Accumulated amortization and impairment:								
Patent/industrial proprietary rights	(112,506,766)	-	1,210,325	104,912	(4,875,063)	-	-	(116,066,592)
Land usage rights	(1,757,750)	-	-	-	-	1,757,750	-	-
Software	(117,012,570)	-	14,289,771	4,548,490	(16,620,439)	(352,167)	2,114,233	(113,032,682)
Development cost	(3,724,287)	-	-	7,758,806	(4,034,519)	-	-	-
Goodwill	(64,162,099)	-	-	-	-	-	-	(64,162,099)
Others	(1,173,123)	-	44,709	-	-	(1,620)	-	(1,130,034)
	(300,336,595)	-	15,544,805	12,412,208	(25,530,021)	1,403,963	2,114,233	(294,391,407)
Net book value:								
Patent/industrial proprietary rights	22,833,412	14,356,252	(4,391,004)	(3,868,084)	(4,875,063)	-	-	24,055,513
Land usage rights	5,855,759	-	-	-	-	(5,855,759)	-	-
Software	37,961,175	24,592,902	(104,307)	(16,929,431)	(16,620,439)	60,075,478	-	88,975,378
Development cost	66,699,673	1,357,742	-	(64,022,896)	(4,034,519)	-	-	-
Goodwill	-	-	-	-	-	-	-	-
Others	29,110,589	-	(730,666)	-	-	(259,913)	-	28,120,010
	162,460,608	40,306,896	(5,225,977)	(84,820,411)	(25,530,021)	53,959,806	-	141,150,901

2018	January 1	Additions	Disposals	Amortization	Others (*)	December 31
Acquisition cost:						
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	-	-	-	-	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)	-	-	-	-	(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

(*)Others represent transfer to another account foreign exchange rate adjustments and others.

11. Intangible assets (cont'd)

11-2 The details of expensed research and development costs incurred in 2019, 2018 are as follows (Korean won in thousands):

	2019	2018
Cost of Sales	₩ 61,594,386	₩ 54,907,652
Selling and administrative expenses	484,194,642	454,039,974
Total amount	₩ 545,789,028	₩ 508,947,626

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 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, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Current	Non-current	Current	Non-current
Trade payables	₩ 263,006,724	₩ -	₩ 276,666,924	₩ -
Other payables	242,476,159	2,036,929	300,701,306	1,860,074
Accrued expenses	386,088,786	89,172,283	308,800,875	84,221,596
Dividends payables	10,383	-	5,248,764	-
	₩ 891,582,052	₩ 91,209,212	₩ 891,417,869	₩ 86,081,670

Trade and other payables measured at amortized cost using the effective interest rate method as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Effective interest rate (%)	Book value	Effective interest rate (%)	Book value
Long-term other payables	2.22 ~ 6.49	₩ 2,036,959	2.22 ~ 6.49	₩ 1,860,074

13. Borrowings and leases

Short-term borrowings as of December 31, 2019 and 2018 consist of the following (Korean won in thousands):

Financial institution	Description	Annual interest rate (%) as of Dec. 31, 2019	2019	2018
Woori Bank and 5 other banks	Discount of commercial paper	LIBOR + 0.45 ~ 0.55	₩ 305,749,589	₩ 258,469,204
Citibank and 8 other banks	Subsidiaries' borrowings	2.54 ~ 3.78	263,440,059	703,486,657
			₩ 569,189,648	₩ 961,955,861

The Group entered into factoring agreements with recourse for its trade receivables with Woori Bank, Shinhan Bank, KEB Hana Bank, Kookmin Bank, Nonghyup Bank and BOA. Factored receivables not overdue as of December 31, 2019 are accounted for as short-term borrowings (Note 6).

Long-term borrowings denominated in Korean won and in foreign currency as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

Financial institution	Description	Annual interest rate (%) as of Dec. 31, 2019	2019	2018
Korea Development Bank	Facility borrowings	-	₩ -	₩ 100,000,000
Korea Development Bank	Facility borrowings	-	-	200,000,000
Mizuho Bank and 8 other banks	Subsidiaries' borrowings	3.00 ~ 5.13	1,393,563,476	1,192,183,151
			1,393,563,476	1,492,183,151
Less current portion of borrowings			(173,835,740)	(432,049,753)
			₩ 1,219,727,736	₩ 1,060,133,398

14. Refund liabilities and Right of return assets

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

		2019	2018
Refund liabilities	₩	19,531,121	16,895,713
Right of return assets	₩	14,246,213	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, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Changes in defined benefit liabilities(assets):				
At January 1	₩	26,141,991	₩	13,511,149
Contributions by employer		(90,058,224)		(70,000,000)
Retirement benefits paid		(9,084,370)		(7,086,996)
Pension cost charged to profit or loss		57,116,100		53,487,622
Succession of defined benefit liabilities		(2,520,588)		(51,435)
Re-measurement losses (gains) in OCI		56,757,434		36,225,613
Exchange differences		609,887		53,038
At December 31		38,962,230		26,141,991
Defined benefit liabilities (assets) in the statement of financial position:				
Present value of defined benefit obligation		619,283,872		551,262,563
Fair value of plan assets		(580,321,642)		(525,120,572)
	₩	38,962,230	₩	26,141,991

Re-measurement gains on defined benefit plans (net of tax) of ₩ 44,193,312 thousand (2018: ₩ 26,951,294 thousand) was recognized as other comprehensive income.

Expenses recorded in relation to the defined benefit pension plan for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Current service cost	₩	54,567,362	₩	52,082,722
Past service cost		796,346		-
Interest cost on benefit obligation		16,580,415		18,945,708
Expected return on plan assets		(14,828,023)		(17,540,808)
	₩	57,116,100	₩	53,487,622

15. Defined benefit liabilities(cont'd)

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

	2019	2018
At January 1	₩ 551,262,563	₩ 486,201,168
Benefits paid	(31,150,712)	(32,762,045)
Current service cost	54,567,362	52,082,722
Interest cost	16,580,415	18,945,708
Succession of defined benefit obligation	(24,996,915)	(51,435)
Past service cost	796,346	-
Re-measurement losses based on changes of demographic assumptions	26,129,869	4,571,397
Re-measurement losses (gains) based on changes of financial assumptions	(1,753)	16,978,623
Re-measurement gains based on changes of experience adjustments	25,473,473	5,221,307
Exchange differences	623,224	75,118
At December 31	₩ 619,283,872	₩ 551,262,563

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

	2019	2018
At January 1	₩ 525,120,572	₩ 472,690,019
Contributions by employer	90,058,224	70,000,000
Benefits paid	(22,066,342)	(25,678,049)
Succession of defined benefit obligation	(22,476,327)	-
Expected return on plan assets	14,828,023	17,540,808
Re-measurement losses	(5,155,845)	(9,454,286)
Exchange differences	13,337	22,080
At December 31	₩ 580,321,642	₩ 525,120,572

The Group has funded 95% of its defined benefit obligation with Samsung Life Insurance Co., Ltd as of Dec.31.2019. 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 ₩90,000 million for the next fiscal year.

The major categories of the fair value of total plan assets as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Cash and cash equivalents	₩ 579,675,698	₩ 524,537,501
Others	645,944	583,071
	₩ 580,321,642	₩ 525,120,572

The principal assumptions used in actuarial calculation as of December 31, 2019 and 2018 are as follows:

	2019	2018
Discount rate	2.40%	3.10%
Future salary increases	2.81%	2.99%

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, 2019 and 2018, respectively (Korean won in thousands):

15. Defined benefit liabilities(cont'd)

Effect of changes in the discount rate (Korean won in thousands):

	2019		2018	
	1% point decrease	1% point increase	1% point decrease	1% point increase
Impact on defined benefit liabilities	₩ 45,223,592	₩ (39,752,924)	₩ 40,802,118	₩ (35,875,382)

Effect of changes in future salary increses. (Korean won in thousands):

	2019		2018	
	1% point decrease	1% point increase	1% point decrease	1% point increase
Impact on defined benefit liabilities	₩ (39,969,050)	₩ 44,568,432	₩ (37,266,358)	₩ 41,708,950

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, 2019 and 2018, defined contribution pension plan expenses amounted to ₩8,193,548 thousand and ₩6,683,918 thousand, respectively.

16. Provisions

16.1 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. (Korean won in thousands):

	2019	2018
Provisions for product warranties	₩ 3,083,208	₩ 3,408,156

16.2 Emission rights and emission liabilities

1) Details of annual quantity of allocated emission allowances as of December 31, 2019 are as follows (KAU):

	2018	2019	2020	2018-2020 Total
Allocated emission allowance	411,477	394,344	394,344	1,200,165

2) Changes in emission liabilties during the current reporting period are as follows:

(KAU and Korean won in thousands)

	2019
Beginning	₩ -
Purchase(*)	1,901,000
Ending	1,901,000

(*)A liability (emission obligation) is recognized only where actual emissions exceed the allocated emission allowances, and the cost of emissions is recognized as debt. Estimated emissions of the Group during 2019 are expected as 466,710KAU.

17. Commitments and contingencies

17.1 Significant lines of credit

Significant lines of credit with financial institutions as of December 31, 2019 are as follows (Korean won in thousands and US dollar):

	Credit line (US$)	Credit line (₩)	Description
Woori Bank and 5 other banks	US$ 595,975,000 (Equivalent to ₩ 690,019,855)	₩ 80,000,000	Overdraft
Woori Bank and 1 other banks	US$ 7,000,000 (Equivalent to ₩8,104,600)	-	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 ₩775,726,000)	₩ 150,000,000	Receivables factoring

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

17.2 Litigation

As of December 31, 2019, 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, 2019, 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, 2019, 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, 2019.

18. Issued capital (cont'd)

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 would be convertible to ordinary shares and the remaining ₩300,000 million would be convertible to preferred shares. Bonds with warrants amounting to ₩450,000 million would entitle the bondholders to purchase ordinary shares and the remaining ₩250,000 million would entitle the bondholders to purchase preferred shares. No such convertible bonds or bonds with warrants have been issued as of December 31, 2019.

The Company has a stock option plan under which options to purchase 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, 2019, there is no stock option granted to the employees exercisable into ordinary shares.

Company's share premium of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
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, 2019 and 2018 consist solely of treasury stock.

As of December 31, 2019, the Group's treasury stock comprising 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, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Equity adjustments of investment in associates	₩ 1,087,645	₩ 2,372,371
Fair value loss and gain on equity instruments designated at FVOCI	52,575,141	31,357,529
Disposal loss and gain on equity instruments designated at FVOCI	455,764,277	451,339,730
Exchange differences on translations of foreign operations	(83,761,775)	(129,868,816)
	₩ 425,665,288	₩ 355,200,814

Other capital reserves of the Company as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Legal reserve (*)	₩ 103,620,491	₩ 96,020,491
Business rationalization reserve	31,537,766	31,537,766
Capital expenditure reserve	7,895,000	7,895,000
Others	2,015,912,000	1,816,912,000
	₩ 2,158,965,257	₩ 1,952,365,257

(*) 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 Issued 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, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Attributable to ordinary shares (2019: ₩1,100 per share, 2018: ₩1,000 per share)	₩ 79,963,066	₩ 72,693,696
Attributable to preferred shares (2019: ₩1,150 per share, 2018: ₩1,050 per share)	3,281,587	2,996,232
	₩ 83,244,653	₩ 75,689,928

19. Operating profit

19-1 revenue from contracts with customers

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

	2019			
	Component Soultion	Module Solution	Printed Circuit Board Solution	Total
Sales of Goods	₩ 3,156,649	₩ 3,252,668	₩ 1,426,474	₩ 7,835,791
Loyalty revenue	63,109	98,105	43,813	205,027
Totally revenue from contracts with customers	₩ 3,219,758	₩ 3,350,773	₩ 1,470,287	₩ 8,040,818

	2018			
	Component Soultion	Module Solution	Printed Circuit Board Solution	Total
Sales of Goods	₩ 3,527,107	₩ 3,069,011	₩ 1,283,080	₩ 7,879,198
Loyalty revenue	23,039	44,755	55,016	122,810
Totally revenue from contracts with customers	₩ 3,550,146	₩ 3,113,766	₩ 1,338,096	₩ 8,002,008

Details of cost of sales and operating expenses for the years ended December 31, 2019 and 2018 by nature of expense are as follows (Korean won in thousands):

	2019	2018
Changes in inventories, etc.	₩ (59,971,355)	₩ (176,525,438)
Use of raw materials and supplies	3,146,732,867	3,063,530,317
Employee benefit expense	1,613,612,092	1,516,080,742
Depreciation and amortization(*)	763,199,363	625,444,420
Outsourcing expenses	209,378,448	199,346,469
Commissions	146,847,731	136,948,080
Other expenses	1,487,049,657	1,487,247,208
	₩ 7,306,848,803	₩ 6,852,071,798

(*) Includes Right-of-use assets depreciation

Details of employee benefit expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Salaries expenses	₩ 1,122,558,621	₩ 1,042,375,484
Pension costs	71,471,052	74,559,178
Employee welfare benefits	419,582,419	399,146,080
	₩ 1,613,612,092	₩ 1,516,080,742

19. Operating profit (cont'd)

Depreciation of property, plant and equipment and amortization of intangible assets for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Depreciation	₩ 730,115,694	₩ 606,420,678
Amortization	18,887,366	19,023,742
Right-of-use assets Depreciation	14,196,303	-
	₩ 763,199,363	₩ 625,444,420

Details of selling and administrative expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Salaries and payroll expenses	₩ 237,409,665	₩ 239,683,309
Bonuses and other benefits	37,069,375	53,122,691
Pension costs	27,511,044	34,236,871
Employee welfare benefits	121,727,971	151,452,066
Commissions	49,441,556	62,870,292
Supplies expenses	48,613,067	44,529,640
Repairs expenses	51,495,111	39,836,457
Allowance (reversal) for doubtful accounts - trade	3,650	(1,143,185)
Depreciation	61,544,269	60,116,894
Sample expenses	5,124,515	4,326,085
Freight expenses	1,068,421	617,645
Travel expenses	13,322,024	10,932,546
Research and development expense	484,194,642	454,039,974
IT expenses	55,465,710	58,328,075
Other expenses	122,863,174	124,513,640
	₩ 1,316,854,194	₩ 1,337,463,000

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, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Loans and receivables:				
Cash and cash equivalents	₩	18,666,521	₩	10,032,905
Other financial assets		3,035,984		2,345,641
	₩	21,702,505	₩	12,378,546

20.2 Finance costs

Finance costs consist solely of interest costs and details for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Financial liabilities carried at amortized cost:				
Borrowings	₩	76,884,104	₩	75,948,400
Other financial liabilities		114,063		285,817
Lease liabilities		1,271,926		-
	₩	78,270,093	₩	76,234,217

20.3 Share of profit in associates

Details of share of profit in associates for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Share of profit in associates	₩	11,923,013	₩	7,208,250

20.4 Other income

Details of other income for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Dividend income	₩	505,533	₩	10,226,638
Gain on disposal of financial assets at fair value through PL		23,232		-
Gain on disposal if other investments		11,667		-
Commission income		52,024		1,362
Gain on disposal of property, plant and equipment		5,060,116		2,499,405
Gain on disposal of intangible assets		10,169,352		4,858
Gain on foreign currency transactions		140,170,804		210,778,806
Gain on foreign currency translation		9,378,404		12,326,931
Reversal of allowance for other doubtful accounts		859,126		891,022
Others		27,569,292		51,523,170
	₩	193,799,550	₩	288,252,192

20. Non-operating profit and expenses (cont'd)

20.5 Other expenses

Details of other expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Allowance for doubtful accounts - others	₩ 920,518	₩ 4,330,060
Loss on disposal of trade receivables	696,259	529,690
Loss on disposal of property, plant and equipment	4,907,050	11,313,692
Impairment loss on property, plant and equipment	239,047	20,480,000
Loss on disposal of intangible assets	620,307	1,494,245
Loss on valuation of financial assets at fair value through PL	170,741	-
Loss on foreign currency translation	20,617,264	18,172,679
Donations	2,793,759	1,632,036
Loss on foreign currency transaction	145,778,035	219,220,677
Others	15,780,459	19,133,950
	₩ 192,523,439	₩ 296,307,029

21. Income tax expenses

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

	2019	2018
Current income tax	₩ 167,984,924	₩ 253,377,582
Deferred income tax from temporary differences and tax credits	(62,924)	1,996,873
Income tax expense from continuing operations	71,123,443	280,374,734
Income tax expense from discontinued operations	96,798,557	(25,000,279)

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

	2019	2018
Deferred income tax:		
Equity adjustments of investment in associates	₩ 410,163	₩ (521,664)
Gain or loss on valuation of financial asset at fair value through OCI	(6,762,563)	143,474,920
Gain or loss on disposal of financial asset at fair value through OCI	-	(144,095,270)
Exchange differences on translation of foreign operations	(8,239,472)	(1,480,685)
Re-measurement losses (gain) on net defined benefit plans	12,564,122	9,274,319
	₩ (2,027,750)	₩ 6,651,620

21. Income tax expenses (cont'd)

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):

	2019	2018
Profit before tax	₩ 695,970,551	₩ 940,392,970
Profit before tax from continuing operations	690,600,377	1,085,233,977
Profit before tax from discontinued operations	5,370,174	(144,841,007)
Tax at the statutory income tax rate	191,391,902	258,608,067
Adjustments:		
Income not taxable for tax purposes	(13,920,125)	(31,988,490)
Expenses not deductible for tax purposes	27,484,564	12,629,068
Effect of deferred income tax arising from temporary difference not recognized	26,805,773	20,737,604
Tax credits	(75,649,258)	(15,194,499)
Others	11,809,144	10,582,705
Income tax expenses	₩ 167,922,000	₩ 255,374,455
Income tax expense from continuing operations	71,123,443	280,374,734
Income tax expense from discontinued operations	96,798,557	(25,000,279)
Effective income tax rate	24.13%	27.16%

Significant changes in tax credit carryforwards, cumulative temporary differences and deferred income tax assets and liabilities for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019			
	January 1	Recognized to income	Recognized directly to equity	December 31
Loss on valuation of inventories	₩ 17,870,872	₩ 10,648,779	₩ -	₩ 28,519,651
Property, plant and equipment	52,530,263	(32,893,254)	-	19,637,009
Defined benefit liabilities	(1,217,009)	(7,829,758)	12,564,122	3,517,355
Accurual expenses	45,733,749	(5,887,683)	-	39,846,066
Investment in subsidiaries	(122,765,553)	(6,866,257)	(8,239,472)	(137,871,282)
Equity adjustments of investment in associates	(1,073,695)	-	410,163	(663,532)
Gain or loss on valuation of financial assets measured at FV through PL	(7,003,579)	(353,133)	(6,762,563)	(14,119,275)
Unused tax credit carryforwards from prior years	88,183,449	(12,656,021)	-	75,527,428
Others	7,456,714	120,788,581	-	128,245,295
	₩ 79,715,211	₩ 64,951,254	₩ (2,027,750)	₩ 142,638,715
Deferred tax assets	80,884,117	-	-	143,835,047
Deferred tax liabilities	(1,168,906)	-	-	(1,196,332)

21. Income tax expenses (cont'd)

	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 financial instruments designated at fair value	(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)

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, 2019 and and 2018 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, 2019 and 2018 are computed as follows (Korean won in thousands, except per share amounts):

(Net Profit for the year)

	2019	2018
Profit for the year attributable to equity holders of the parent	₩ 514,296,121	₩ 656,241,636
Preferred shares dividend	(3,281,587)	(2,996,232)
Additional dividends attributable to preferred shares	(16,281,581)	(21,928,471)
Profit for the year attributable to ordinary equity holders of the parent	494,732,953	631,316,934
Weighted-average number of shares of ordinary shares outstanding (*)	72,693,696	72,693,696
Basic (diluted) earnings per share	₩ 6,806	₩ 8,685

(Profit for the year from continuing operations)

	2019	2018
Profit for the year attributable to equity holders of the parent	₩ 605,724,504	₩ 776,082,364
Preferred shares dividend	(3,281,587)	(2,996,232)
Additional dividends attributable to preferred shares	(19,734,993)	(26,455,068)
Profit for the year attributable to ordinary equity holders of the parent	582,707,923	746,631,065
Weighted-average number of shares of ordinary shares outstanding (*)	72,693,696	72,693,696
Basic (diluted) earnings per share	₩ 8,016	₩ 10,271

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

	2019	2018
Number of ordinary shares as of 1st 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

22. **Earnings per share (cont'd)**

The Company's basic (diluted) earnings per share attributable to preferred shares for the years ended December 31, 2019 and 2018 are computed as follows (Korean won in thousands, except per share amounts):

(Profit for the year)

	2019	2018
Profit for the year attributable to preferred shares holders of the parent	₩ 19,563,168	₩ 24,924,702
Weighted-average number of shares of preferred shares outstanding(*)	2,853,554	2,853,554
Basic (diluted) earnings per share	₩ 6,856	₩ 8,735

(Profit for the year from continuing operations)

	2019	2018
Profit for the year attributable to preferred shares holders of the parent	₩ 23,016,580	₩ 29,451,300
Weighted-average number of shares of preferred shares outstanding(*)	2,853,554	2,853,554
Basic (diluted) earnings per share	₩ 8,066	₩ 10,321

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

	2019	2018
Number of preferred shares as of 1st 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, 2019 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, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Receivables	Payables	Receivables	Payables
Company with significant influence:				
Samsung Electronics Co., Ltd.	₩ 160,313,380	₩ 27,460,996	₩ 118,387,206	₩ 76,180,069
Associate:				
Samsung Economic Research Institute	-	1,957,434	-	1,537,683
Others (*)	150,846,304	57,778,322	194,000,405	61,933,528
	₩ 311,159,684	₩ 87,196,752	₩ 312,387,611	₩ 139,651,280

(*) Plan assets deposited with Samsung Life Insurance in addition to receivables from others described above amounts to ₩345,122,292 thousand, ₩524,844,341 thousand as of December 31, 2019 and 2018, respectively (Note 15).

23. Related party transactions (cont'd)

Significant transactions among the Company and its related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019			
	Sales	Purchases	Acquisition of tangible assets	Dividends
Company with significant influence:				
Samsung Electronics Co., Ltd.	₩ 2,172,532,194	₩ 434,369,979	₩ -	₩ -
Associate:				
Samsung Economic Research Institute	-	6,799,506	-	-
Stemco Co., Ltd.	-	-	-	2,182,000
Others	2,607,726,304	487,504,525	340,301,477	-
	₩ 4,780,258,498	₩ 928,674,010	₩ 340,301,477	₩ 2,182,000

	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

The Company has no collateral or guarantees provided to or received from related parties as of December 31, 2019.

23. Related party transactions (cont'd)

In relation to key management compensation of the Group for the year ended December 31, 2019, the Group recognized expenses for short-term benefits, including short-term incentives of ₩ 3,510,833 thousand and long-term benefits, including other long-term employee benefits and pension benefits of ₩ 2,275,533 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, 2019 and 2018 are as follows (Korean won):

	2019	2018
Profit for the year	₩ 528,048,551,036	₩ 685,018,514,202
Adjustments to reconcile profit before tax to net cash flows:		
Loss (gain) on valuation of inventories	(16,462,317,019)	57,584,682,609
Loss on scrap of inventories	138,598,863,565	86,057,961,766
Value loss(gain) on return assets	(704,494,798)	1,103,059,066
Pension costs	57,116,100,311	53,487,622,438
Long-term employee benefits	8,469,512,167	29,317,072,455
Allowance(reversal) for doubtful accounts - trade	3,649,865	(1,143,184,527)
Depreciation	829,106,829,248	710,916,932,008
Depreciation of Right-of-use asset	15,389,989,818	-
Amortization of intangible assets	25,530,021,262	25,500,577,284
Transfer to refund liabilitie	(464,407,444)	3,261,410,236
Allowance (reversal) for doubtful accounts - other receivables	61,391,733	3,439,037,920
Gain on foreign exchange translation	(9,390,486,221)	(11,894,942,175)
Gain on disposal of property, plant and equipment	(5,146,062,413)	(2,690,693,808)
Gain on disposal of intangible assets	(10,169,352,378)	(4,858,469)
Gain on disposal of other investmensts	(11,666,667)	-
Loss on disposal of other investments	118,121	-
Loss on foreign currency translation	20,649,172,206	20,725,818,751
Loss on disposal of trade receivables	696,259,436	529,690,129
Loss on disposal of property, plant and equipment	4,934,305,221	11,315,226,946
Loss on disposal of intangible assets	623,145,322	1,464,656,839
Impairment loss on property, plant and equipment	154,713,904,460	20,500,012,527
Impairment loss on intangible assets	508,810,363	30,543,575
Gain on disposal of financial asset at FV through PL	(23,232,300)	-
Loss on disposal of financial asset at FV through PL	170,740,976	-
Finance costs	89,055,761,041	90,121,880,044
Finance income	(22,065,399,965)	(12,776,639,298)
Dividend income	(505,533,400)	(10,226,638,200)
Share of profit in associates	(11,923,012,518)	(7,208,249,820)
Greenhouse gas emission cost	1,901,000,000	-
Gain on disposal of discontinued operations	(362,489,357,249)	-
Income tax expense	167,922,000,071	255,374,455,447
	1,076,096,252,814	1,325,260,559,545

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

		2019		2018
Working capital adjustments:				
Other financial assets	₩	59,554,149	₩	(96,852,826)
Trade receivables		(1,753,305,673)		(164,455,872,504)
Other receivables		(19,585,594,018)		14,637,942,032
Advance payments		27,707,296,971		(12,829,226,905)
Prepaid expenses		(8,432,256,328)		(642,485,426)
Inventories		(260,676,820,912)		(275,917,553,056)
Long-term prepaid expenses		(11,056,236,861)		(7,884,255,316)
Short-term and long-term loans		(4,979,931,387)		(699,292,104)
Trade payables		(7,633,477,744)		1,931,621,022
Other payables		71,153,415,697		147,664,697,202
Advances received		11,926,537,701		(6,347,971,739)
Other financial liabilities		(6,666,222,496)		12,038,846,224
Unearned income		(4,133,800,623)		(9,177,348,306)
Long-term trade and other payables		(3,342,095,583)		(1,518,519,413)
Long-term income received in advance		-		10,648,991,293
Retirement benefits paid		(9,084,369,229)		(7,083,996,222)
Contributions by employer		(90,058,223,695)		(70,000,000,000)
Succession of defined benefit liabilities		(2,520,588,139)		(51,434,847)
Net cash flows from operating activities	₩	1,285,068,685,680	₩	1,640,496,362,856

Significant transactions not involving cash flows for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

		2019		2018
Reclassification of construction-in-progress	₩	577,770,742	₩	1,065,439,174
Reclassification of machinery-in-transit		256,918,448		137,334,887
Transfer of current portion of long-term borrowings		92,789,740		296,961,965
Transfer of current portion of long-term income received in advance		29,667,256		10,292,219
Transfer of current portion of unearned income		4,511,608		6,434,796
Acquisition of PPE with account payables		34,120,526		16,142,921
Transfer of intangible assets of long-term advance paymnents		14,356,252		8,522,105

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

Changes in liability arising from financial activities as of December 31, 2019 (Korean won in thousands):

	2019			
	January 1	Net cash flows from financing activities	Others(*1)	December 31
Short-term borrowings	₩ 961,955,861	₩ (282,013,526)	₩ (110,752,687)	₩ 569,189,648
Current portion of long-term borrowings	432,049,753	(362,490,729)	104,276,716	173,835,740
Long-term borrowings	1,060,133,398	223,687,413	(64,093,075)	1,219,727,736
Dividend payables	5,248,764	(75,983,779)	70,745,398	10,383
Lease liablity(*2)	28,219,472	(33,506,787)	53,958,539	48,671,224
	₩ 2,487,607,248	₩ (530,307,408)	₩ 54,134,890	₩ 2,011,434,731

(*1) Others represent the effects of foreign exchange rate and non-cash transactions.
(*2) Lease liability at Jan 1, 2019 includes the effect of amendment of relevant accounting standards.

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	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)	315,858,353	432,049,753
Long-term borrowings	897,616,232	443,757,763	(281,240,597)	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 the effects of foreign exchange rate and non-cash transactions.

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 are related to the position as of December 31, 2019 and 2018.

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 ₩1,346,601,038 thousand and ₩1,568,576,535 thousand as of December 31, 2019 and 2018, 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):

	2019		2018	
	100bp increase	100bp decrease	100bp increase	100bp decrease
Impact on interest costs	₩ (13,466,010)	₩ 13,466,010	₩ (15,685,765)	₩ 15,685,765

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, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Assets	Liabilities	Assets	Liabilities
USD	₩ 931,361,631	₩ 1,195,047,272	₩ 1,001,783,753	₩ 1,276,915,879
EUR	47,278,885	18,479,410	54,884,044	4,651,147
JPY	893,113	30,774,508	4,301,205	41,308,631
PHP	11,033,533	26,661,721	10,010,519	21,997,693
VND	1,466,335	17,428,552	2,217,582	16,713,394
SGD	555,744	1,070,846	486,726	1,099,259
Others	271,171	244,166	350,504	389,474
	₩ 992,860,412	₩ 1,289,706,475	₩ 1,074,034,333	₩ 1,363,075,477

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, 2019 and 2018. (Korean won in thousands):

	2019		2018	
	5% increase	5% decrease	5% increase	5% decrease
USD	₩ (13,184,282)	₩ 13,184,282	₩ (13,756,606)	₩ 13,756,606
EUR	1,439,973	(1,439,973)	2,511,645	(2,511,645)
JPY	(1,494,069)	1,494,069	(1,850,371)	1,850,371
PHP	(781,409)	781,409	(599,359)	599,359
VND	(798,111)	798,111	(724,791)	724,791
SGD	(25,755)	25,755	(30,627)	30,627
Others	1,351	(1,351)	(1,949)	1,949
	₩ (14,842,302)	₩ 14,842,302	₩ (14,452,058)	₩ 14,452,058

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 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, 2019 (Korean won in thousands):

	5% increase	5% decrease
Other comprehensive income before tax	₩ 5,275,781	₩ (5,275,781)
Income tax effect	(1,276,739)	1,276,739
Other comprehensive income after tax	₩ 3,999,042	₩ (3,999,042)

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 related 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):

	2019	2018
Trade receivables	₩ 976,048,856	₩ 984,657,308
Other receivables	119,627,729	76,253,064
Long-term other receivables	5,046,027	29,375,844

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.

	2019			
	Less than 3 months	3 to 12 months	1 to 5 years	Total
Trade and other payables	₩ 891,582,052	₩ -	₩ 91,209,212	₩ 982,791,264
Short-term borrowings	464,987,648	104,202,000	-	569,189,648
Current portion of long-term borrowings	81,046,000	92,789,740	-	173,835,740
Long-term borrowings	-	-	1,219,727,736	1,219,727,736
Other financial liabilites	23,076,102	4,732,392	-	27,808,494
Lease liablity	-	17,096,172	31,575,052	48,671,224
	₩ 1,460,691,802	₩ 218,820,304	₩ 1,342,512,000	₩ 3,022,024,106

	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

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, 2019 and 2018.

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):

	2019	2018
Trade and other payables	₩ 982,791,264	₩ 977,499,539
Borrowings	1,962,753,124	2,454,139,012
Other financial liabilities	27,808,494	35,569,932
Less: Cash and cash equivalent	(803,810,428)	(1,002,374,472)
Net debt	2,169,542,454	2,464,834,011
Total equity	5,430,096,886	4,946,497,556
Total capital (Net debt and shareholder's equity)	₩ 7,599,639,340	₩ 7,411,331,567
Gearing ratio	28,55%	33.26%

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, 2019 and 2018 are as follows (Korean won in thousands):

	2019		2018	
	Book value	Fair value	Book value	Fair value
Fanancial assets:				
Loans and receivables carried at AC				
Trade and other receivables	₩ 1,100,722,612	₩ 1,100,722,612	₩ 1,090,286,216	₩ 1,090,286,216
Short-term and long-term loans	2,823,443	2,823,443	2,744,580	2,744,580
Other financial assets	71,135,537	71,135,537	280,331,972	280,331,972
Equity instruments designated at FVOCI				
Listed equity investments	105,515,627	105,515,627	105,290,628	105,290,628
Non-listed equity investments	64,420,390	64,420,390	45,598,510	45,598,510
Equity instruments designated at FVPL				
Loan asset	3,412,284	3,412,284	-	-
Total financial assets	₩ 1,348,029,893	₩ 1,348,029,893	₩ 1,524,251,906	₩ 1,524,251,906
Financial liabilities:				
Financial liabilities carried at amortized cost:				
Trade and other payables	₩ (982,791,264)	₩ (982,791,264)	₩ (977,499,539)	₩ (977,499,539)
Other financial liabilities	(27,808,494)	(27,808,494)	(35,569,932)	(35,569,932)
Short-term borrowings	(569,189,648)	(569,189,648)	(961,955,861)	(961,955,861)
Current portion of long-term borrowings	(173,835,740)	(173,835,740)	(432,049,753)	(432,049,753)
Long-term borrowings	(1,219,727,736)	(1,219,727,736)	(1,060,133,398)	(1,060,133,398)
Lease liability	(48,671,224)	(48,671,224)	-	-
Total financial liabilities	₩ (3,022,024,106)	₩ (3,022,024,106)	₩ (3,467,208,483)	₩ (3,467,208,483)

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 significant 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, 2019 and 2018, the Group held the following assets and liabilities carried at fair value on the statement of financial position (Korean won in thousands):

	2019			
	Level 1	Level 2	Level 3	Total
Assets that are measured at AC :				
Trade and other receivables	₩ -	₩ -	₩ 1,100,722,612	₩ 1,100,722,612
Short-term and long-term loans	-	-	2,823,443	2,823,443
Other financial assets	-	-	71,135,537	71,135,537
Equity instruments designated at FVOCI				
Listed equity investment	105,515,627	-	-	105,515,627
Non-listed equity investment	-	-	64,420,390	64,420,390
Equity instruments designated at FVPL				
Loan asset			3,412,284	3,412,284
Liabilities for carried with AC				
Trade and other payables	-	-	(982,791,264)	(982,791,264)
Other financial liabilities	-	-	(27,808,494)	(27,808,494)
Short-term borrowings	-	(569,189,648)	-	(569,189,648)
Current portion of long-term borrowings	-	(173,835,740)	-	(173,835,740)
Long-term borrowings	-	(1,219,727,736)	-	(1,219,727,736)
Lease liability	-	-	(48,671,224)	(48,671,224)

	2018			
	Level 1	Level 2	Level 3	Total
Assets that are measured at AC :				
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 carried with AC				
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)

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 FVOCI				
Samsung Venture Investment Co., Ltd.	13,274,280	Discounted Cash flow model	Growth rate Discount rate(WACC)	-1.00%~1.00%(0%) 16.56%~18.56%(17.56%)
Solu-M Co., Ltd	40,389,900	Discounted Cash flow model	Growth rate Discount rate(WACC)	-1.00%~1.00%(0%) 9.17%~11.17%(10.17%)
IMA	8,804,010	Discounted Cash flow model	Growth rate Discount rate(WACC)	-1.00%~1.00%(0%) 12.04%~14.04%(13.04%)
SemCNS Co.,Ltd	1,872,000	Discounted Cash flow model	Growth rate Discount rate(WACC)	-1.00%~1.00%(0%) 9.84%~11.84%(10.84%)
Financial assets at amortised cost (debt instrument)				
Acoount receivable	35,073,968	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 changes 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 FVOCI(*1)	₩ -	₩ 5,711,773	₩ -	₩ (18,107,560)
Acoount receivable(*2)	-	-	-	-
Total	-	5,711,773	-	(18,107,560)

(*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, the interest rate.

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, 2019(Korean Won in thousands)

	Debt instrument at amortised cost	Equity instruments designated at FVOCI	Liabilties at amortised cost	Financial assets at FV through PL	Total
Interest income	₩ 3,035,984	₩ -	₩ -	₩ -	₩ 3,035,984
Dividend income	-	505,533	-	-	505,533
Gain on foreign currency transaction	66,674,337	-	73,496,467	-	140,170,804
Gain on foreign currency translation	1,362,495	-	8,015,909	-	9,378,404
Interest expenses	-	-	(78,270,093)	-	(78,270,093)
Loss on foreign currency transactions	(57,889,687)	-	(87,888,348)	-	(145,778,035)
Loss on foreign currency translation	(14,682,421)	-	(5,934,843)	-	(20,617,264)
Loss on disposal of trade receivables	(696,259)	-	-	-	(696,259)
Allowance for doubtful accounts - trade	(3,650)	-	-	-	(3,650)
Release of allowance balances	(61,392)	-	-	-	(61,392)
Gain/loss on equity instruments designated at fair value through OCI	-	21,217,611	-	-	21,217,611
Gain/loss on disposal of equity instruments designated at FVOCI	-	4,424,547	-	-	4,424,547
Gain or loss on valuation of FVPL	-	-	-	(170,741)	(170,741)
Gain or loss on disposal of FVPL	-	-	-	23,232	23,232
Total	₩ (2,130,509)	₩ 26,147,691	₩ (90,580,908)	₩ (147,509)	₩ (66,711,235)

26. Fair value (cont'd)

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	112,964,875	-	97,813,931	210,778,806
Gain on foreign currency translation	1,619,858	-	10,707,073	12,326,931
Interest expenses	-	-	76,234,217	76,234,217
Loss on foreign currency transactions	(71,581,126)	-	(147,639,551)	(219,220,677)
Loss on foreign currency translation	(9,988,575)	-	(8,184,104)	(18,172,679)
Loss on disposal of trade receivables	(529,690)	-	-	(529,690)
Allowance for doubtful accounts - trade	1,143,185	-	-	1,143,185
Release of allowance balances	(3,439,038)	-	-	(3,439,038)
Gain/loss on equity instruments designated at fair value through OCI	-	(467,843,286)	-	(467,843,286)
Gain/loss on valuation of equity instruments designated at FVOCI	-	451,339,730	-	451,339,730
Total	₩ 32,535,130	₩ (6,276,918)	₩ 28,931,566	₩ 55,189,778

27. Discontinued operations

27.1 The board of directors of the parent company decided to dispose of the assets of the PLP business on April 30, 2019. On December 12, 2019, Kunshan Samsung Electro-Mechanics Co., Ltd. concluded the suspension of business, and the comparative statement of comprehensive income was rewritten to show the discontinued operations from continuing operations.

27.2 The consolidated statements of profit or loss for the year ended December 31, 2019 and 2018, included in the comprehensive income statement, are as follows (Korean won):

	2019	2018
Sales	₩ 189,461,834,271	₩ 191,015,219,994
Cost of sales	(320,202,261,477)	(290,922,241,758)
Gross loss	(130,740,427,206)	(99,907,021,764)
Selling and administrative expenses	(49,527,026,632)	(31,976,413,579)
Salaries and payroll expenses	6,213,337,655	2,650,163,587
Bonuses and other benefits	79,664,245	193,533,314
Pension costs	967,797,827	4,688,820
Employee welfare benefits	3,747,521,032	4,865,157,364
Commissions	16,251,251,495	6,546,437,240
Supplies expenses	220,028,141	241,525,670
Repairs expenses	370,000	(8,003,111)
Depreciation	1,223,549,593	1,004,136,553
Freight expenses	131,151,873	136,204,479
Travel expenses	92,279,731	80,253,297
Research and development expense	8,560,521,768	6,429,943,259
Other expenses	12,039,553,272	9,832,373,107
Operating loss	(180,267,453,838)	(131,883,435,343)
Finance income	362,895,125	398,093,483
Finance costs	(10,785,667,733)	(13,887,663,076)
Other income	5,330,489,437	7,108,830,715
Other expenses	(171,759,445,912)	(6,576,833,101)
Gains on disposal of discontinued operations	362,489,357,249	-
Profit(loss) before tax	5,370,174,328	(144,841,007,322)
Income tax gain(expense)	(96,798,557,131)	25,000,278,754
Profit(loss) for the year from discontinued operation after tax	₩ (91,428,382,803)	₩ (119,840,728,568)

27. Discontinued operations (cont'd)

27.3 Assets held for sale and liabilities directly associated with the assets held for sale are as follows (Korean won):

		2019
Current assets		
Cash and cash equivalents	₩	51,678,362,850
Trade and other receivables		1,391,362,896
Other current assets		1,573,276,708
Inventories, net		(337,856,505)
Non-current assets		
Property, plant and equipment		136,764,652,826
Other non-current assets		5,615,073,064
Deferred tax assets		16,247,543
Assets held for sale	₩	196,701,119,382
Current liabilities		
Other current liabilities	₩	18,874,865,868
Liabilities directly associated with the assets held for sale	₩	177,826,253,514

27.4 Cashflows from discontinued operations are as follows (Korean won):

		2019		2018
Net cash flows from operating activities	₩	(152,203,272,300)	₩	(36,849,848,786)
Net cash flows from investing activities		771,631,524,752		(199,510,303,003)
Net cash flows from financing activities		(544,684,581,670)		206,842,981,268
Net foreign exchange difference		(37,604,726,929)		2,789,789,341
Net increase (decrease) in cash and cash equivalents		37,138,943,853		(26,727,381,180)

27-5 In accordance with the decision to liquidate all remaining assets of Kunshan Samsung Electro-Mechanics Co., Ltd., the Company recognized impairment of inventory and tangible and intangible assets during the current period, and its recoverable amount is the fair value less disposal costs. (Korean won in millions)

		Impairment loss
Printed Circuit Board Solution	₩	203,817