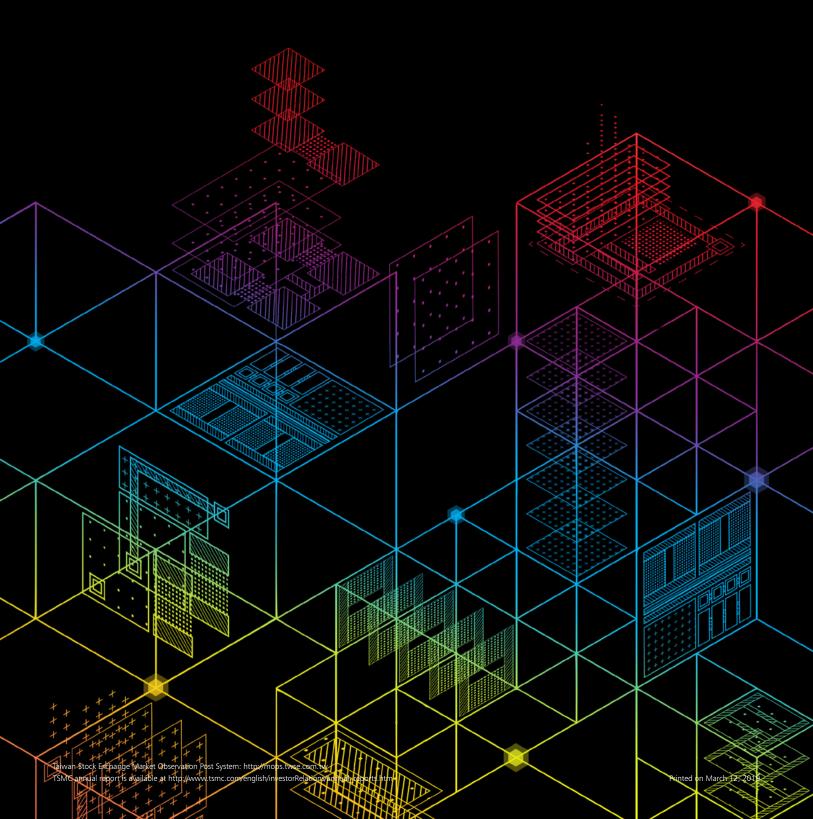


# TSMC Annual Report 2018 (II) Financial Statements



# Contents

Consolidated Financial Statements for the	
Years Ended December 31, 2018 and 2017 and	
Independent Auditors' Report	1
Parent Company Only Financial Statements for the	
Years Ended December 31, 2018 and 2017 and	
Independent Auditors' Report	115

Consolidated Financial Statements for the Years Ended December 31, 2018 and 2017 and Independent Auditors' Report REPRESENTATION LETTER

The entities that are required to be included in the combined financial statements of Taiwan

Semiconductor Manufacturing Company Limited as of and for the year ended December 31, 2018,

under the Criteria Governing the Preparation of Affiliation Reports, Consolidated Business Reports

and Consolidated Financial Statements of Affiliated Enterprises are the same as those included in

the consolidated financial statements prepared in conformity with the International Financial

Reporting Standard 10, "Consolidated Financial Statements." In addition, the information

required to be disclosed in the combined financial statements is included in the consolidated

financial statements. Consequently, Taiwan Semiconductor Manufacturing Company Limited

and Subsidiaries do not prepare a separate set of combined financial statements.

Very truly yours,

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LIMITED

By

MARK LIU

Chairman

February 19, 2019

- 3 -

# Deloitte.

### 勤業眾信

勤業眾信聯合會計師事務所 11073 台北市信義區松仁路100號20樓

Deloitte & Touche 20F, Taipei Nan Shan Plaza No. 100, Songren Rd., Xinyi Dist., Taipei 11073, Taiwan

Tel:+886 (2) 2725-9988 Fax:+886 (2) 4051-6888 www.deloitte.com.tw

#### INDEPENDENT AUDITORS' REPORT

The Board of Directors and Shareholders Taiwan Semiconductor Manufacturing Company Limited

#### **Opinion**

We have audited the accompanying consolidated financial statements of Taiwan Semiconductor Manufacturing Company Limited and subsidiaries (the "Company"), which comprise the consolidated balance sheets as of December 31, 2018 and 2017, and the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and the notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2018 and 2017, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the International Financial Reporting Standards (IFRS), International Accounting Standards (IAS), IFRIC Interpretations (IFRIC), and SIC Interpretations (SIC) endorsed and issued into effect by the Financial Supervisory Commission of the Republic of China.

#### **Basis for Opinion**

We conducted our audits in accordance with the Regulations Governing Auditing and Attestation of Financial Statements by Certified Public Accountants and auditing standards generally accepted in the Republic of China. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Company in accordance with The Norm of Professional Ethics for Certified Public Accountant of the Republic of China 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 for the year ended December 31, 2018. 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.

Key audit matters for the Company's consolidated financial statements for the year ended December 31, 2018 are stated as follows:

#### Estimate for sales returns and allowances

In consideration of business volume and market conditions, the Company provides a variety of business incentives to specific customers or products. The estimate for sales returns and allowance is based on historical experience and the varying contractual terms. Please refer to Notes 4, 5 and 26 to the consolidated financial statements for the details of the information about estimate for sales returns and allowances. Since the estimate for sales returns and allowances is subject to accounting judgment and estimation, and the result could also affect the net revenue in the consolidated financial statements, it has been identified as a key audit matter.

Our key audit procedures performed in respect of the above area included the following:

- 1. Understood and tested the design and operating effectiveness of the key controls over estimate for sales returns and allowances;
- 2. Understood and assessed the reasonableness of assumptions made and methodology used in estimating sales returns and allowances;
- 3. Sampled and inspected the sales contracts of main products by agreeing the contractual terms and performed an analysis to challenge the estimation on possibility that specific products could meet business incentives condition to verify the reasonableness of the accrual of the sales returns and allowances;
- 4. Performed a retrospective review to comparatively analyze the historical accuracy of judgments with reference to actual sales returns and allowance paid.

#### Timing to commence depreciation of property, plant and equipment (PP&E)

The Company continues to invest in capital expenditures to develop and build capacity in leading-edge technologies to meet customers' demand. Please refer to Notes 4, 5 and 17 to the consolidated financial statements for the details of the information and accounting policy about the depreciation of PP&E. According to IAS 16, depreciation of PP&E begins when the assets are available for use, and in the condition necessary for the assets to be capable of operating in the intended manner. Due to the significant capital expenditures of the Company, and the criteria to determine whether such assets are available for their intended use vary within categories of assets as well as involve subjective judgments, the validity of the timing to commence depreciation of PP&E could have a material impact on its financial performance. Consequently, the validity of the timing to commence depreciation of PP&E is identified as a key audit matter.

Our key audit procedures performed in respect of the above area included the following:

- 1. Understood and tested the design and operating effectiveness of the key controls over the timing to commence depreciation of PP&E;
- 2. Understood the criteria the assets are defined as available for their intended use and the corresponding accounting treatments;

- 3. Sampled and reviewed the appropriateness of the timing for commencing depreciation after the assets met the criteria of available for use in current year;
- 4. Performed an observation on the physical count of equipment under installation and construction in progress; sampled and inspected the supporting documentation to verify that the status of equipment under installation and construction in progress are not available for use;
- 5. Sampled equipment under installation and construction in progress which met the criteria of available for use and were transferred in the subsequent period to evaluate the reasonableness of the timing for commencing depreciation;
- 6. Sampled and reviewed the appropriateness of the equipment under installation and construction in progress which are not available for their intended use.

#### Other Matter

We have also audited the parent company only financial statements of Taiwan Semiconductor Manufacturing Company Limited as of and for the years ended December 31, 2018 and 2017 on which we have issued an unmodified opinion.

## Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the IFRS, IAS, IFRIC, and SIC endorsed and issued into effect by the Financial Supervisory Commission of the Republic of China, 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 Company'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 Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance (including members of the Audit Committee) are responsible for overseeing the Company's financial reporting process.

#### Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' 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 the auditing standards generally accepted in the Republic of China 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 the auditing standards generally accepted in the Republic of China, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- 2. 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 Company's internal control.
- 3. Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- 4. 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 Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' 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 auditors' report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- 5. Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- 6. Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company 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 consolidated financial statements for the year ended December 31, 2018 and are therefore the key audit matters. We describe these matters in our auditors' 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 engagement partners on the audit resulting in this independent auditors' report are Mei Yen Chiang and Yu Feng Huang.

yn Jeng Grang

Deloitte & Touche Taipei, Taiwan Republic of China

Meryen Chions

February 19, 2019

#### Notice to Readers

The accompanying consolidated financial statements are intended only to present the consolidated financial position, financial performance and cash flows in accordance with accounting principles and practices generally accepted in the Republic of China and not those of any other jurisdictions. The standards, procedures and practices to audit such consolidated financial statements are those generally applied in the Republic of China.

For the convenience of readers, the independent auditors' report and the accompanying consolidated financial statements have been translated into English from the original Chinese version prepared and used in the Republic of China. If there is any conflict between the English version and the original Chinese version or any difference in the interpretation of the two versions, the Chinese-language independent auditors' report and consolidated financial statements shall prevail.

### CONSOLIDATED BALANCE SHEETS (In Thousands of New Taiwan Dollars)

	December 31, 2		December 31, 2	
ASSETS	Amount	%	Amount	%
CURRENT ASSETS				
Cash and cash equivalents (Note 6)	\$ 577,814,601	28	\$ 553,391,696	28
Financial assets at fair value through profit or loss (Note 7)  Financial assets at fair value through other comprehensive income (Note 8)	3,504,590 99,561,740	5	569,751	-
Available-for-sale financial assets (Note 9)	-	-	93,374,153	5
Held-to-maturity financial assets (Note 10)		-	1,988,385	-
Financial assets at amortized cost (Note 11) Hedging derivative financial assets (Note 13)	14,277,615	1	34,394	-
Hedging financial assets (Note 13)	23,497	-	34,334	-
Notes and accounts receivable, net (Note 14)	128,613,391	6	121,133,248	6
Receivables from related parties (Note 37)	584,412	-	1,184,124	-
Other receivables from related parties (Note 37) Inventories (Notes 5, 15 and 41)	65,028 103,230,976	5	171,058 73,880,747	4
Other financial assets (Note 38)	18,597,448	1	7,253,114	-
Other current assets (Note 19)	5,406,423		4,222,440	
Total current assets	951,679,721	46	857,203,110	43
NONCURRENT ASSETS	2 242 524			
Financial assets at fair value through other comprehensive income (Notes 5 and 8) Held-to-maturity financial assets (Note 10)	3,910,681	-	18,833,329	1
Financial assets at amortized cost (Note 11)	7,528,277	-	10,033,327	-
Financial assets carried at cost (Note 12)	-	-	4,874,257	-
Investments accounted for using equity method (Notes 5 and 16)	17,865,838	1	17,861,488	1
Property, plant and equipment (Notes 5 and 17) Intangible assets (Notes 5 and 18)	1,072,050,279 17,002,137	51 1	1,062,542,322 14,175,140	53 1
Deferred income tax assets (Notes 5 and 31)	16,806,387	1	12,105,463	1
Refundable deposits	1,700,071	-	1,283,414	-
Other noncurrent assets (Note 19)	1,584,647		2,983,120	
Total noncurrent assets	1,138,448,317	54	1,134,658,533	57
TOTAL	\$ 2,090,128,038	100	\$ 1,991,861,643	100
LIABILITIES AND EQUITY				
CURRENT LIABILITIES				
Short-term loans (Notes 20 and 34)	\$ 88,754,640	4	\$ 63,766,850	3
Financial liabilities at fair value through profit or loss (Note 7)	40,825	-	26,709	-
Hedging derivative financial liabilities (Note 13) Hedging financial liabilities (Note 13)	155,832	-	15,562	-
Accounts payable	32,980,933	2	28,412,807	1
Payables to related parties (Note 37)	1,376,499	-	1,656,356	-
Salary and bonus payable Accrued profit sharing bonus to employees and compensation to directors and supervisors (Notes 25 and 33)	14,471,372 23,981,154	1	14,254,871 23,419,135	1 1
Payables to contractors and equipment suppliers	43,133,659	2	55,723,774	3
Income tax payable (Notes 5 and 31)	38,987,053	2	33,479,311	2
Provisions (Notes 5 and 21)	-	-	13,961,787	1
Long-term liabilities - current portion (Note 22) Accrued expenses and other current liabilities (Notes 5, 24, 26 and 34)	34,900,000 61,760,619	2	58,401,122 65,588,396	3
	<del></del>			
Total current liabilities  NONCURRENT LIABILITIES	<u>340,542,586</u>	<u>17</u>	358,706,680	18
Bonds payable (Notes 22 and 34)	56,900,000	3	91,800,000	5
Deferred income tax liabilities (Notes 5 and 31)	233,284	-	302,205	-
Net defined benefit liability (Notes 5 and 23)	9,651,405	-	8,850,704	1
Guarantee deposits (Notes 24 and 34) Others	3,353,378 1,950,989	-	7,586,790 1,855,621	-
Total noncurrent liabilities	72,089,056	3	110,395,320	6
Total liabilities	412,631,642		469,102,000	24
			103,102,000	
EQUITY ATTRIBUTABLE TO SHAREHOLDERS OF THE PARENT Capital stock (Note 25)	259,303,805	12	259,303,805	13
Capital surplus (Note 25)	56.315.932	3	56,309,536	<u>13</u>
Relained earnings (Note 25)				
Appropriated as legal capital reserve	276,033,811	13	241,722,663	12
Appropriated as special capital reserve Unappropriated earnings	26,907,527 1,073,706,503	1 52	991,639,347	49
	1,376,647,841	66	1,233,362,010	61
Others (Note 25)	(15,449,913)	(1)	(26,917,818)	(1)
Equity attributable to shareholders of the parent	1,676,817,665	80	1,522,057,533	76
NON - CONTROLLING INTERESTS	678,731		702,110	<u>-</u>
Total equity	1,677,496,396	80	1,522,759,643	<u>76</u>
TOTAL	\$ 2,090,128,038	100	<u>\$ 1,991,861,643</u>	<u>100</u>

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

# CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (In Thousands of New Taiwan Dollars, Except Earnings Per Share)

	2018		2017	
	Amount	%	Amount	%
NET REVENUE (Notes 5, 26, 37 and 45)	\$1,031,473,557	100	\$ 977,447,241	100
COST OF REVENUE (Notes 5, 15, 33, 37 and 41)	533,487,516	_52	482,616,286	<u>49</u>
GROSS PROFIT BEFORE UNREALIZED GROSS PROFIT ON SALES TO ASSOCIATES	497,986,041	48	494,830,955	51
UNREALIZED GROSS PROFIT ON SALES TO ASSOCIATES	(111,788)		(4,553)	<del>_</del>
GROSS PROFIT	497,874,253	<u>48</u>	494,826,402	51
OPERATING EXPENSES (Notes 5, 33 and 37) Research and development General and administrative Marketing	85,895,569 20,265,883 5,987,828	8 2 1	80,732,463 21,196,717 5,972,488	8 2 1
Total operating expenses	112,149,280	_11	107,901,668	_11
OTHER OPERATING INCOME AND EXPENSES, NET (Notes 17, 18, 27 and 33)	(2,101,449)		(1,365,511)	(1)
INCOME FROM OPERATIONS (Note 45)	383,623,524	<u>37</u>	385,559,223	<u>39</u>
NON-OPERATING INCOME AND EXPENSES Share of profits of associates Other income (Note 28) Foreign exchange gain (loss), net (Note 43) Finance costs (Note 29) Other gains and losses, net (Note 30)	3,057,781 14,852,814 2,438,171 (3,051,223) (3,410,804)	2 - -	2,985,941 9,610,294 (1,509,473) (3,330,313) 2,817,358	1 1 -
Total non-operating income and expenses	13,886,739	2	10,573,807	2
INCOME BEFORE INCOME TAX	397,510,263	39	396,133,030	41
INCOME TAX EXPENSE (Notes 5 and 31)	46,325,857	5	52,986,182	6
NET INCOME	351,184,406	_34	343,146,848 (Cor	35 atinued)

# CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (In Thousands of New Taiwan Dollars, Except Earnings Per Share)

		2018			2017	
		Amount	%	A	Amount	%
OTHER COMPREHENSIVE INCOME (LOSS) (Notes 5, 23, 25 and 31) Items that will not be reclassified subsequently to						
profit or loss: Remeasurement of defined benefit obligation Unrealized loss on investments in equity instruments at fair value through other	\$	(861,162)	-	\$	(254,681)	-
comprehensive income		(3,309,089)	_		-	_
Gain on hedging instruments		40,975	_		_	_
Share of other comprehensive loss of associates Income tax benefit related to items that will not be		(14,217)	-		(20,853)	-
reclassified subsequently		195,729			30,562	
		(3,947,764)			(244,972)	
Items that may be reclassified subsequently to profit or loss:  Exchange differences arising on translation of						
foreign operations		14,562,386	1	(	28,259,627)	(3)
Changes in fair value of available-for-sale financial assets Cash flow hedges		-	-		(218,832) 4,683	-
Unrealized loss on investments in debt instruments at fair value through other comprehensive income  Share of other comprehensive income (loss) of		(870,906)	-		-	-
associates Income tax expense related to items that may be		93,260	-		(99,347)	-
reclassified subsequently		13,784,740	<u></u>		(3,536) 28,576,659)	<u>(3</u> )
Other comprehensive income (loss) for the year, net of income tax		9,836,976	1	(	28,821,631)	<u>(3</u> )
TOTAL COMPREHENSIVE INCOME FOR THE YEAR	<u>\$ 3</u>	361,021,382	<u>35</u>	\$ 3	14,325,217	<u>32</u>
NET INCOME ATTRIBUTABLE TO: Shareholders of the parent Non-controlling interests	\$ 3	351,130,884 53,522	34	\$ 3	43,111,476 35,372	35
	<u>\$ 3</u>	<u>351,184,406</u>	34	\$ 3	43,146,848 (Cor	<u>35</u> ntinued)

# **CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME** (In Thousands of New Taiwan Dollars, Except Earnings Per Share)

	2018		2017	
	Amount	%	Amount	%
TOTAL COMPREHENSIVE INCOME ATTRIBUTABLE TO:				
Shareholders of the parent	\$ 360,965,015	35	\$ 314,294,993	32
Non-controlling interests	56,367		30,224	
	<u>\$ 361,021,382</u>	<u>35</u>	\$ 314,325,217	<u>32</u>
	2018		2017	
	Income Attribut Shareholders the Parent	of	Income Attribut Shareholder the Paren	s of
EARNINGS PER SHARE (NT\$, Note 32) Basic earnings per share Diluted earnings per share	\$ 13.5 \$ 13.5	<u>4</u> <u>4</u>	\$ 13.2 \$ 13.2	1 <u>3</u> 1 <u>3</u>

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

(Concluded)

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries COSSOLIDATED STATEMENTS OF CHANGES IN EQUITY (In Thousands of New Taiwan Dollars, Except Dividends Per Share)

							Equity Attribut	Equity Attributable to Shareholders of the Parent	of the Parent		Othors						
	Capital Stock -	Capital Stock - Common Stock			Retained Earnings	Sarnings	•	Foreign Currency	Unrealized Gain (Loss) from	Unrealized Gain (Loss) on Financial Assets at Fair Value Through Other	Others	Gain (Loss) on	Unearned Stock-Based				
	Shares (In Thousands)	Amount	Capital Surplus	Legal Capital Reserve	Special Capital Reserve	Unappropriated Earnings	Total	Translation Reserve	Available-for-sale Financial Assets	Comprehensive Income	Cash Flow Hedges Reserve	Hedging Instruments	Employee Compensation	Total	Total	Non-controlling Interests	Total Equity
BALANCE, JANUARY 1, 2017	25,930,380	\$ 259,303,805	\$ 56,272,304	\$ 208,297,945	S	\$ 863,710,224	\$ 1,072,008,169	\$ 1,661,237	\$ 2,641		\$ 105			\$ 1,663,983	\$ 1,389,248,261	\$ 802,865	\$ 1,390,051,126
Appropriations of prior year's earnings Legal capital reserve Cash dividends to shareholders - NTS7 per share Total				33,424,718		(33,424,718) (181,512,663) (214,937,381)	(181,512,663) (181,512,663)								(181.512.663) (181.512.663)		(181,512,663)
Net income in 2017	•	•	•			343,111,476	343,111,476		٠						343,111,476	35,372	343,146,848
Other comprehensive income (loss) in 2017, net of income tax						(244.972)	(244,972)	(28,358,917)	(216,715)	1	4,121			(28.571,511)	(28,816,483)	(5,148)	(28,821,631)
Total comprehensive income (loss) in 2017						342,866,504	342,866,504	(28,358,917)	(216,715)		4,121			(28,571,511)	314,294,993	30,224	314,325,217
Adjustments to share of changes in equities of associates	•	•	7,085	,	•	•	•	•	•	•	•	•	(10,290)	(10,290)	(3,205)	,	(3,205)
From share of changes in equities of subsidiaries		•	10,994												10,994	(10,994)	
Donation from shareholders	•	,	19,153		,	•	,	٠		•	,			,	19,153	1,684	20,837
Decrease in non-controlling interests	•	•	•		٠					٠	•		٠	•		(113,675)	(113,675)
Effect of disposal of subsidiary																(7,994)	(7,994)
BALANCE, DECEMBER 31, 2017	25,930,380	259,303,805	56,309,536	241,722,663	٠	991,639,347	1,233,362,010	(26,697,680)	(214,074)	٠	4,226		(10,290)	(26,917,818)	1,522,057,533	702,110	1,522,759,643
Effect of retrospective application						1,556,321	1,556,321		214,074	(524,915)	(4,226)	4,226		(310,841)	1,245,480	342	1,245,822
ADJUSTED BALANCE, JANUARY 1, 2018	25,930,380	259,303,805	56,309,536	241,722,663		993,195,668	1,234,918,331	(26,697,680)		(524,915)		4,226	(10,290)	(27,228,659)	1,523,303,013	702,452	1,524,005,465
Appropriations of prior year's earnings Legal capital reserve Special capital reserve Cash dividends to shareholders - NI'S8 per share Total				34,311,148	26,907,527	(34,311,148) (26,907,527) (207,443,044) (268,661,719)	- (207,443,044) (207,443,044)								(207,443,044)		(207,443,044) (207,443,044)
Net income in 2018		•	•		•	351,130,884	351,130,884			,					351,130,884	53,522	351,184,406
Other comprehensive income (loss) in 2018, net of income tax						(765,274)	(765,274)	14,655,333		(4,097,465)		41,537		10,599,405	9,834,131	2,845	9,836,976
Total comprehensive income (loss) in 2018						350,365,610	350,365,610	14,655,333		(4,097,465)		41,537		10,599,405	360,965,015	56,367	361,021,382
Disposal of investments in equity instruments at fair value through other comprehensive income						(1,193,056)	(1,193,056)	•		1,193,056		•	,	1,193,056			
Bas is adjustment for loss on hedging instruments	•	,	,			•			•			(22,162)		(22,162)	(22,162)	•	(22,162)
Adjustments to share of changes in equities of associates			(6,420)	,									8,447	8,447	2,027		2,027
From share of changes in equities of subsidiaries	•	,	2,681	1	•	•	•	•	i	,	,	i	•	,	2,681	(2,681)	•
Donation from shareholders	•	,	10,135						•						10,135	9	10,141
Decrease in non-controlling interests																(77,413)	(77,413)
BALANCE, DECEMBER 31, 2018	25,930,380	\$ 259,303,805	\$ 56,315,932	\$ 276.033,811	\$ 26,907,527	\$ 1.073,706,503	\$ 1.376,647,841	\$ (12,042,347)	5	\$ (3,429,324)		\$ 23,601	\$ (1.843)	\$ (15,449,913)	\$ 1.676.817,665	\$ 678.731	\$ 1.677.496.396

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

# **CONSOLIDATED STATEMENTS OF CASH FLOWS** (In Thousands of New Taiwan Dollars)

	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES		
Income before income tax	\$ 397,510,263	\$ 396,133,030
Adjustments for:	, , ,	,,,
Depreciation expense	288,124,897	255,795,962
Amortization expense	4,421,405	4,346,736
Reversal of expected credit losses on investments in debt		
instruments	(2,383)	-
Finance costs	3,051,223	3,330,313
Share of profits of associates	(3,057,781)	(2,985,941)
Interest income	(14,694,456)	(9,464,706)
Loss on disposal or retirement of property, plant and equipment, net	1,005,644	1,097,908
Gain on disposal of intangible assets, net	(436)	-
Impairment loss on property, plant and equipment	423,468	-
Impairment loss on intangible assets	-	13,520
Impairment loss on financial assets	-	29,603
Loss on financial instruments at fair value through profit or loss, net	358,156	-
Loss on disposal of investments in debt instruments at fair value		
through other comprehensive income, net	989,138	- (= ( 0.0 ()
Gain on disposal of available-for-sale financial assets, net	-	(76,986)
Gain on disposal of financial assets carried at cost, net	-	(12,809)
Gain from disposal of subsidiaries	-	(17,343)
Unrealized gross profit on sales to associates	111,788	4,553
Loss (gain) on foreign exchange, net	2,916,659	(9,118,580)
Dividend income	(158,358)	(145,588)
Loss arising from fair value hedges, net	2,386	30,293
Changes in operating assets and liabilities:	490 100	5 645 002
Financial instruments at fair value through profit or loss	480,109	5,645,093
Notes and accounts receivable, net Receivables from related parties	(13,271,268) 599,712	1,061,805 (214,565)
Other receivables from related parties	106,030	(13,873)
Inventories	(29,369,975)	(25,229,101)
Other financial assets	(4,601,295)	(502,306)
Other current assets	(513,051)	12,085
Other noncurrent assets	152,555	(1,276,130)
Accounts payable	4,540,583	2,572,072
Payables to related parties	(279,857)	394,182
Salary and bonus payable	216,501	582,054
Accrued profit sharing bonus to employees and compensation to	210,001	002,00
directors and supervisors	562,019	525,129
Accrued expenses and other current liabilities	(20,226,384)	30,435,424
Provisions	-	(4,057,900)
Net defined benefit liability	(60,461)	44,615
Cash generated from operations	619,336,831	648,938,549
Income taxes paid	(45,382,523)	(63,620,382)
•	,	,
Net cash generated by operating activities	573,954,308	585,318,167
		(Continued)

# **CONSOLIDATED STATEMENTS OF CASH FLOWS** (In Thousands of New Taiwan Dollars)

	2018	2017
CASH FLOWS FROM INVESTING ACTIVITIES		
Acquisitions of:		
Financial instruments at fair value through profit or loss - debt		
instruments	\$ (310,478)	\$ -
Financial assets at fair value through other comprehensive income	(96,412,786)	-
Available-for-sale financial assets	-	(100,510,905)
Held-to-maturity financial assets	-	(1,997,076)
Financial assets at amortized cost	(2,294,098)	-
Financial assets carried at cost	-	(1,313,124)
Property, plant and equipment	(315,581,881)	(330,588,188)
Intangible assets	(7,100,306)	(4,480,588)
Land use right	-	(819,694)
Proceeds from disposal or redemption of:		
Financial instruments at fair value through profit or loss - debt		
instruments	487,216	-
Financial assets at fair value through other comprehensive income	86,639,322	-
Available-for-sale financial assets	-	69,480,675
Held-to-maturity financial assets	-	17,980,640
Financial assets at amortized cost	2,032,442	-
Financial assets carried at cost	-	58,237
Property, plant and equipment	181,450	326,232
Intangible assets	492	-
Proceeds from return of capital of investments in equity instruments at		
fair value through other comprehensive income	127,878	-
Proceeds from return of capital of financial assets carried at cost	-	14,828
Derecognition of hedging derivative financial instruments	-	33,008
Derecognition of hedging financial instruments	250,538	-
Interest received	14,660,388	9,526,253
Proceeds from government grants - property, plant and equipment	-	2,629,747
Proceeds from government grants - land use right and others	-	1,811
Cash outflow from disposal of subsidiary	-	(4,080)
Other dividends received	158,358	145,588
Dividends received from investments accounted for using equity	2.262.010	4 2 4 5 7 7 7
method	3,262,910	4,245,772
Refundable deposits paid	(2,227,541)	(1,326,983)
Refundable deposits refunded	1,857,188	432,944
Net cash used in investing activities	(314,268,908)	(336,164,903)
		(Continued)

#### CONSOLIDATED STATEMENTS OF CASH FLOWS

(In Thousands of New Taiwan Dollars)

	2018	2017
CASH FLOWS FROM FINANCING ACTIVITIES		
Increase in short-term loans	\$ 23,922,975	\$ 10,394,290
Repayment of bonds	(58,024,900)	(38,100,000)
Repayment of long-term bank loans	-	(31,460)
Interest paid	(3,233,331)	
Guarantee deposits received	1,668,887	950,928
Guarantee deposits refunded	(1,948,106)	
Cash dividends	(207,443,044)	(181,512,663)
Donation from shareholders	10,141	20,837
Decrease in non-controlling interests	(77,413)	(113,675)
Net cash used in financing activities	(245,124,791)	(215,697,629)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH		
EQUIVALENTS	9,862,296	(21,317,772)
NET INCREASE IN CASH AND CASH EQUIVALENTS	24,422,905	12,137,863
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	553,391,696	541,253,833
CASH AND CASH EQUIVALENTS, END OF YEAR	<u>\$ 577,814,601</u>	<u>\$ 553,391,696</u>

(Concluded)

#### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

#### 1. GENERAL

Taiwan Semiconductor Manufacturing Company Limited (TSMC), a Republic of China (R.O.C.) corporation, was incorporated on February 21, 1987. TSMC is a dedicated foundry in the semiconductor industry which engages mainly in the manufacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing of masks.

On September 5, 1994, TSMC's shares were listed on the Taiwan Stock Exchange (TWSE). On October 8, 1997, TSMC listed some of its shares of stock on the New York Stock Exchange (NYSE) in the form of American Depositary Shares (ADSs).

The address of its registered office and principal place of business is No. 8, Li-Hsin Rd. 6, Hsinchu Science Park, Taiwan. The principal operating activities of TSMC's subsidiaries are described in Note 4.

#### 2. THE AUTHORIZATION OF FINANCIAL STATEMENTS

The accompanying consolidated financial statements were approved and authorized for issue by the Board of Directors on February 19, 2019.

# 3. APPLICATION OF NEW AND REVISED INTERNATIONAL FINANCIAL REPORTING STANDARDS

a. Initial application of the amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the International Financial Reporting Standards (IFRS), International Accounting Standards (IAS), IFRIC Interpretations (IFRIC), and SIC Interpretations (SIC) (collectively, "IFRSs") endorsed and issued into effect by the Financial Supervisory Commission (FSC)

Except for the following, the initial application of the amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the IFRSs endorsed and issued into effect by the FSC did not have a significant effect on TSMC and its subsidiaries' (collectively as the "Company") accounting policies:

#### 1) IFRS 9 "Financial Instruments" and related amendment

IFRS 9 supersedes IAS 39 "Financial Instruments: Recognition and Measurement", with consequential amendments to IFRS 7 "Financial Instruments: Disclosures" and other standards. IFRS 9 sets out the requirements for classification, measurement and impairment of financial assets and hedge accounting. Please refer to Note 4 for information relating to the relevant accounting policies.

#### Classification, measurement and impairment of financial assets and financial liabilities

The Company elects not to restate prior reporting period when applying the requirements for the classification, measurement and impairment of financial assets and financial liabilities under IFRS 9 with the cumulative effect of the initial application recognized at the date of initial application.

The impact on measurement categories, carrying amount and related reconciliation for each class of the Company's financial assets and financial liabilities when retrospectively applying IFRS 9 on January 1, 2018 is detailed below:

			Measureme	ent Cate	gory			Carrying	<u>Am</u> oun	t	
Financial Assets		IAS	S 39		IFRS	9	IA	S 39	IF	RS 9	Note
Cash and cash equivalents	s Loa	ans and re	eceivables	Amort	ized cost		\$ 553.	391,696	\$ 553	,391,696	(1)
Derivatives	Hel	ld for trad	ling	thro	ugh prof	fair value it or loss					
	Нес	dging inst	truments		TPL) ng instrui	nents		569,751 34,394		569,751 34,394	
Equity securities		ailable-fo		Fair va	alue throu	igh other ve income		. ,		- ,	
D.L.		111 6	1	(FV	TOCI)		7,	422,311	8	,389,438	(2)
Debt securities	Ava	ailable-fo	r-sale	Manda FVTO	atorily at CI	FVIPL	90.	826,099	90	779,489 ,046,610	(3)
Notes and accounts receiv (including related parti- other receivables and refundable deposits	able Loa	ld-to-mati ans and re	urity eceivables		ized cost ized cost			821,714 024,958		,813,462 ,269,731	(4) (1)
Financial Liabilities	<b>;</b>										
Derivatives	Hel	ld for trad	ling		or trading			26,709		26,709	
Short-term loans, account payable (including rela parties), payables to contractors and equipm suppliers, accrued expe and other current liabil bonds payable and guarantee deposits	es Am ted nent enses	dging inst nortized co			ng instrui ized cost		340	15,562 501,266	340	15,562 ,501,266	
Financial Assets	Carryir Amount a December 2017 (IAS	as of r 31,	Reclassifi- cations		nea- ments	Carryin Amount as January 1, 2 (IFRS 9	s of 2018	Retained Earnings Effect on January 1, 2018	I	her Equity Effect on anuary 1, 2018	
FVTPL	\$ 569.	,751 \$				•					Note
- Debt instruments			, -	\$	-	\$ 569,	751 <b>\$</b>		- \$	-	Note
Add: From available for			779,489	\$ 	<u>-</u>	\$ 569,779,4		(10,08			Note (3)
sale	569,	<u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>		<u> </u>	- 	, , ,	<u> 189</u>		<u>5</u> )	-	
sale  FVTOCI - Equity instruments Add: From available for	569,	 ,751 _	779,489		- - - - 967,127	779,	489 _ 240 _	(10,08	<u>5</u> )	10,085	
sale  FVTOCI - Equity instruments	569,	 ,751 -	779,489		- - - - 967,127		489	(10,08	5) 5) 8	10,085	(3)
sale  FVTOCI - Equity instruments Add: From available for sale - Debt instruments	569,		779,489 779,489 7,422,311		- - - - 967,127	779,4 1,349,2 8,389,4	489 _ 240 _ 438	(10,08 (10,08 1,294,52	<u>5</u> )	10,085 10,085 (325,858)	(3)
sale  FVTOCI - Equity instruments Add: From available for sale - Debt instruments Add: From available for	569		779,489 779,489 7,422,311 90,046,610		<del>-</del> 967,127	779 1,349./ 8,389,- 90,046,0	489	(10,08 (10,08 1,294,52 (30,65 1,263,87	5)	10,085 10,085 - (325,858) 30,658	(3)
sale  FVTOCI - Equity instruments Add: From available for sale - Debt instruments Add: From available for sale  Amortized cost Add: From held to maturity Add: From loans and	569.		779,489 779,489 7,422,311 90,046,610 97,468,921	9	<u>-</u>	779,- 1,349,- 8,389,- 90,046,6	489 - 240 - 438 510 - 048 - 462	(10,08 (10,08 1,294,52 (30,65	5)	10,085 10,085 - (325,858) 30,658 (295,200)	(3)
sale  FVTOCI - Equity instruments Add: From available for sale - Debt instruments Add: From available for sale  Amortized cost Add: From held to maturity Add: From loans and receivables			779,489  779,489  7,422,311  90,046,610  97,468,921  20,821,714  684,416,654  705,238,368		967,127 (8,252)	779,4 1,349,5 8,389,4 90,046,4 98,436,6 20,813,4 684,661,4 705,474,3	489 - 240 - 438 510 - 5462 4427 - 389 -	(10,08 (10,08 1,294,52 (30,65 1,263,87 (8,25)	5)	10,085 10,085 - (325,858) 30,658 (295,200)	(3) (2) (3)
sale  FVTOCI - Equity instruments Add: From available for sale - Debt instruments Add: From available for sale  Amortized cost Add: From held to maturity Add: From loans and	34.		779,489  779,489  7,422,311  90,046,610  97,468,921  20,821,714  684,416,654	9	- 967,127 - (8,252) 244,773	779,4 1,349,2 8,389,4 90,046,6 98,436,0 20,813,4 684,661,4	240	(10,08 (10,08 1,294,52 (30,65 1,263,87 (8,25,244,77	5)	10,085 10,085 - (325,858) 30,658 (295,200)	(3) (2) (3)
sale  FVTOCI - Equity instruments Add: From available for sale - Debt instruments Add: From available for sale  Amortized cost Add: From held to maturity Add: From loans and receivables  Hedging instruments	34.		779,489 779,489 7,422,311 90,046,610 97,468,921 20,821,714 684,416,654 705,238,368	\$ 1,2  Adjus Arisin	- 967,127 (8,252) 244,773 236,521	779,4 1,349,1 8,389, 90,046,0 98,436,0 20,813,6 684,661,6 705,474,1 34,1	240	(10,08 (10,08 1,294,52 (30,65 1,263,87 (8,25 244,77 236,52	5)	10,085 10,085 (325,858) 30,658 (295,200)	(2) (3)

- (1) Cash and cash equivalents, notes and accounts receivable (including related parties), other receivables and refundable deposits that were classified as loans and receivables under IAS 39 are now classified at amortized cost with assessment of future 12-month or lifetime expected credit loss under IFRS 9. As a result of retrospective application, the adjustments would result in a decrease in loss of allowance for accounts receivable of NT\$244,773 thousand and an increase in retained earnings of NT\$244,773 thousand on January 1, 2018.
- (2) As equity investments that were previously classified as available-for-sale financial assets under IAS 39 are not held for trading, the Company elected to designate all of these investments as at FVTOCI under IFRS 9. As a result, the related other equity-unrealized gain or loss on available-for-sale financial assets of NT\$228,304 thousand is reclassified to increase other equity - unrealized gain or loss on financial assets at FVTOCI.

As equity investments previously measured at cost under IAS 39 are remeasured at fair value under IFRS 9, the adjustments would result in an increase in financial assets at FVTOCI of NT\$967,127 thousand, an increase in other equity-unrealized gain or loss on financial assets at FVTOCI of NT\$968,670 thousand and a decrease in non-controlling interests of NT\$1,543 thousand on January 1, 2018.

For those equity investments previously classified as available-for-sale financial assets (including measured at cost financial assets) under IAS 39, the impairment losses that the Company had recognized have been accumulated in retained earnings. Since these investments were designated as at FVTOCI under IFRS 9 and no impairment assessment is required, the adjustments would result in a decrease in other equity - unrealized gain or loss on financial assets at FVTOCI of NT\$1,294,528 thousand and an increase in retained earnings of NT\$1,294,528 thousand on January 1, 2018.

- (3) Debt investments were previously classified as available-for-sale financial assets under IAS 39. Under IFRS 9, except for debt instruments of NT\$779,489 thousand whose contractual cash flows are not solely payments of principal and interest on the principal outstanding and therefore are classified as at FVTPL with the related other equity-unrealized gain or loss on available-for-sale financial assets of NT\$10,085 thousand being consequently reclassified to decrease retained earnings, the remaining debt investments are classified as at FVTOCI with assessment of future 12-month expected credit loss because these investments are held within a business model whose objective is both to collect the contractual cash flows and sell the financial assets. The related other equity-unrealized gain or loss on available-for-sale financial assets of NT\$434,403 thousand is reclassified to decrease other equity-unrealized gain or loss on financial assets at FVTOCI. As a result of retrospective application of future 12-month expected credit loss, the adjustments would result in an increase in other equity unrealized gain or loss on financial assets at FVTOCI of NT\$30,658 thousand and a decrease in retained earnings of NT\$30,658 thousand on January 1, 2018.
- (4) Debt investments previously classified as held-to-maturity financial assets and measured at amortized cost under IAS 39 are classified as measured at amortized cost with assessment of future 12-month expected credit loss under IFRS 9 because the contractual cash flows are solely payments of principal and interest on the principal outstanding and these investments are held within a business model whose objective is to collect the contractual cash flows. As a result of retrospective application of future 12-month expected credit loss, the adjustments would result in an increase in loss allowance of NT\$8,252 thousand and a decrease in retained earnings of NT\$8,252 thousand on January 1, 2018.

(5) With the retrospective adoption of IFRS 9 by associates accounted for using equity method, the corresponding adjustments made by the Company would result in an increase in investments accounted for using equity method of NT\$8,259 thousand, a decrease in other equity-unrealized gain or loss on financial assets at FVTOCI of NT\$23,616 thousand, a decrease in other equity-unrealized gain or loss on available-for-sale financial assets of NT\$2,110 thousand and an increase in retained earnings of NT\$33,985 thousand on January 1, 2018.

#### Hedge accounting

The Company prospectively applies the requirements for hedge accounting upon initial application of IFRS 9. In addition, due to the amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers, all derivative and non-derivative financial assets and financial liabilities which are designated as hedging instruments are presented as financial assets and financial liabilities for hedging starting 2018.

#### 2) IFRS 15 "Revenue from Contracts with Customers" and related amendments

IFRS 15 establishes principles for recognizing revenue that apply to all contracts with customers, and will supersede IAS 18, "Revenue," IAS 11, "Construction Contracts," and a number of revenue-related interpretations. Please refer to Note 4 for information relating to the relevant accounting policies.

The Company elected only to retrospectively apply IFRS 15 to contracts that were not completed on January 1, 2018 and elected not to restate prior reporting period with the cumulative effect of the initial application recognized at the date of initial application.

The impact on assets, liabilities and equity when retrospectively applying IFRS 15 on January 1, 2018 is detailed below:

		Carrying Amount as of December 31, 2017 (IAS 18 and Revenue-related Interpretations)		Adjustments Arising from Initial Application		Carrying Amount as of January 1, 2018 (IFRS 15)	
Inventories Contract assets Investments accounted for using	\$	73,880,747	\$	(19,745) 34,177	\$	73,861,002 34,177	(1) (1)
equity method		17,861,488		19,483		17,880,971	(1)
Total effect on assets			\$	33,915			
Provisions - current Accrued expenses and other		13,961,787	\$	(13,961,787)		-	(2)
current liabilities		65,588,396		13,961,787		79,550,183	(2)
Total effect on liabilities			\$	<u>-</u>			
Retained earnings Non-controlling interests	1	,233,362,010 702,110	\$	32,030 1,885	1	,233,394,040 703,995	(1) (1)
Total effect on equity			\$	33,915			

- (1) Prior to the application of IFRS 15, the Company recognizes revenue based on the accounting treatment of the sales of goods. Under IFRS 15, certain subsidiaries and associates accounted for using equity method will change to recognize revenue over time because customers are deemed to have control over the products when the products are manufactured. As a result, the Company will recognize contract assets (classified under other current assets) and adjust related assets and equity accordingly.
- (2) Prior to the application of IFRS 15, the Company recognized the estimation of sales returns and allowance as provisions. Under IFRS 15, the Company recognizes such estimation as refund liability (classified under accrued expenses and other current liabilities).

The following table shows the amount affected in the current period by the application of IFRS 15 as compared to IAS 18:

#### Impact on Assets, Liabilities and Equity

	December 31, 2018
Decrease in inventories Increase in contract assets Increase in investments accounted for using equity method	\$ (29,610) 52,470 15,163
Total effect on assets	\$ 38,023
Decrease in provisions - current Increase in accrued expenses and other current liabilities Increase in income tax payable	\$ (22,672,634) 22,671,587 4,781
Total effect on liabilities	\$ 3,734
Increase in retained earnings Increase in non-controlling interests	\$ 31,791 2,498
Total effect on equity	\$ 34,289
Impact on Total Comprehensive Income	
	Year Ended December 31, 2018
Increase in net revenue Increase in cost of revenue Increase in share of the profit or loss of associates Increase in income tax expense	\$ 53,517 (29,610) 15,163 (4,781)
Increase in net income for the year	\$ 34,289
Increase in net income/total comprehensive income attributable to: Shareholders of the parent Non-controlling interests	\$ 31,791 
	<u>\$ 34,289</u>

- 3) Please refer to Note 34 for the disclosure of amendment to IAS 7 "Disclosure Initiative"
- b. Amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers for application starting from 2019 and the IFRSs issued by IASB and endorsed by FSC with effective date starting 2019

New, Amended or Revised Standards and Interpretations (the "New IFRSs")	Effective Date Announced by IASB (Note 1)		
Annual Improvements to IFRSs 2015-2017 Cycle	January 1, 2019		
Amendments to IFRS 9 "Prepayment Features with Negative	January 1, 2019 (Note 2)		
Compensation"	1 2010		
IFRS 16 "Leases" Amendments to IAS 19 "Plan Amendment, Curtailment or	January 1, 2019 January 1, 2019 (Note 3)		
Settlement'	January 1, 2017 (Note 3)		
Amendments to IAS 28 "Long-term Interests in Associates and Joint	January 1, 2019		
Ventures"  IEDIC 22 "Un containty even In come Toy Treatments"	January 1, 2010		
IFRIC 23 "Uncertainty over Income Tax Treatments"	January 1, 2019		

- Note 1: Unless stated otherwise, the above New IFRSs are effective for annual periods beginning on or after their respective effective dates.
- Note 2: The FSC permits the election for early adoption of the amendments starting from 2018.
- Note 3: The Company shall apply these amendments to plan amendments, curtailments or settlements occurring on or after January 1, 2019.

Except for the following items, the Company believes that the adoption of aforementioned standards or interpretations will not have a significant effect on the Company's accounting policies.

#### 1) IFRS 16 "Leases"

IFRS 16 sets out the accounting standards for leases that will supersede IAS 17 "Leases", IFRIC 4 "Determining whether an Arrangement contains a Lease", and a number of related interpretations.

#### Definition of a lease

Upon initial application of IFRS 16, the Company will apply the guidance of IFRS 16 in determining whether contracts are, or contain, a lease only to contracts entered into (or changed) on or after January 1, 2019. Contracts identified as containing a lease under IAS 17 and IFRIC 4 will not be reassessed and will be accounted for in accordance with the transitional provisions under IFRS 16.

#### The Company as lessee

Upon initial application of IFRS 16, except for payments for low-value asset and short-term leases which will be recognized as expenses on a straight-line basis, the Company will recognize right-of-use assets and lease liabilities for all leases on the consolidated balance sheets. On the consolidated statements of comprehensive income, the Company will present the depreciation expense charged on right-of-use assets separately from the interest expense accrued on lease liabilities and computed using the effective interest method. On the consolidated statements of cash flows, cash payments for both the principal portion and the interest portion of lease liabilities are classified within financing activities.

Upon initial application of IFRS 16, the Company will apply IFRS 16 retrospectively with the cumulative effect of the initial application recognized at the date of initial application but will not restate comparative information.

Leases agreements classified as operating leases under IAS 17, except for leases of low-value asset and short-term leases, will be measured at the present value of the remaining lease payments, discounted using the lessee's incremental borrowing rate on January 1, 2019. Right-of-use assets are measured at an amount equal to the lease liabilities, adjusted by the amount of any prepaid or accrued lease payments. Right-of-use assets are subject to impairment testing under IAS 36.

The Company will apply the following practical expedients to measure right-of-use assets and lease liabilities on January 1, 2019:

- a) The Company will apply a single discount rate to a portfolio of leases with reasonably similar characteristics to measure lease liabilities.
- b) The Company will account for those leases for which the lease term ends on or before December 31, 2019 as short-term leases.
- c) Except for lease payment, the Company will exclude incremental costs of obtaining the lease from the measurement of right-of-use assets on January 1, 2019.
- d) The Company will determine lease terms (e.g. lease periods) based on the projected status on January 1, 2019, to measure lease liabilities.

The weighted average lessee's incremental borrowing rate used by the Company to calculate lease liabilities recognized on January 1, 2019 is 1.46%. The reconciliation between the lease liabilities recognized and the future minimum lease payments of non-cancellable operating lease on December 31, 2018 is presented as follows:

The future minimum lease payments of non-cancellable operating lease on December 31, 2018	\$ 20,849,585
Less: Recognition exemption for short-term leases	(3,189,821)
Undiscounted gross amounts on January 1, 2019	\$ 17,659,764
Discounted using the incremental borrowing rate on January 1, 2019  Add: Adjustments as a result of a different treatment of extension and	\$ 16,465,599
purchase options	3,438,016
Lease liabilities recognized on January 1, 2019	\$ 19,903,615

#### The Company as lessor

Except for sublease transactions, the Company will not make any adjustments for leases in which it is a lessor, and will account for those leases under IFRS 16 starting from January 1, 2019. On the basis of the remaining contractual terms and conditions on January 1, 2019, all of the Company's subleases will be classified as operating leases.

#### Impact on assets, liabilities and equity on January 1, 2019

	Carrying Amount as of December 31, 2018	Adjustments Arising from Initial Application	Adjusted Carrying Amount as of January 1, 2019	
Other current assets Right-of-use assets Other noncurrent assets	\$ 5,406,423 1,584,647	\$ (118,242) 20,082,875 (77,171)	\$ 5,288,181 20,082,875 1,507,476	
Total effect on assets		<u>\$ 19,887,462</u>		
Accrued expenses and other current liabilities Lease liabilities - noncurrent Other noncurrent liabilities	61,760,619 - 1,950,989	\$ 2,627,334 17,269,317 (9,189)	64,387,953 17,269,317 1,941,800	
Total effect on liabilities		<u>\$ 19,887,462</u>		
Total effect on equity		<u>\$</u>		

c. The IFRSs issued by IASB but not yet endorsed and issued into effect by FSC

New, Revised or Amended Standards and Interpretations	Effective Date Issued by IASB		
Amendments to IFRS 3 "Definition of a Business"	January 1, 2020 (Note 1)		
Amendments to IFRS 10 and IAS 28 "Sale or Contribution of Assets	To be determined by IASB		
between an Investor and its Associate or Joint Venture"			
Amendments to IAS 1 and IAS 8 "Definition of Material"	January 1, 2020 (Note 2)		

Note 1: The Company shall apply these 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, 2020 and to asset acquisitions that occur on or after the beginning of that period.

Note 2: The Company shall apply these amendments prospectively for annual reporting periods beginning on or after January 1, 2020.

As of the date the accompanying consolidated financial statements were issued, the Company continues in evaluating the impact on its financial position and financial performance as a result of the initial adoption of the aforementioned standards or interpretations. The related impact will be disclosed when the Company completes the evaluation.

#### 4. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

For the convenience of readers, the accompanying consolidated financial statements have been translated into English from the original Chinese version prepared and used in the R.O.C. If there is any conflict between the English version and the original Chinese version or any difference in the interpretation of the two versions, the Chinese-language consolidated financial statements shall prevail.

#### **Statement of Compliance**

The accompanying consolidated financial statements have been prepared in conformity with the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the IFRSs endorsed by the FSC with the effective dates (collectively, "Taiwan-IFRSs").

#### **Basis of Preparation**

The accompanying consolidated financial statements have been prepared on the historical cost basis except for financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is generally based on the fair value of the consideration given in exchange for the assets.

#### **Basis of Consolidation**

#### The basis for the consolidated financial statements

The consolidated financial statements incorporate the financial statements of TSMC and entities controlled by TSMC (its subsidiaries).

Income and expenses of subsidiaries acquired or disposed of are included in the consolidated statement of comprehensive income from the effective date of acquisition and up to the effective date of disposal, as appropriate. Total comprehensive income of subsidiaries is attributed to the shareholders of the parent 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 those used by the Company.

All intra-group transactions, balances, income and expenses are eliminated in full on consolidation.

Changes in the Company's ownership interests in subsidiaries that do not result in the Company losing control over the subsidiaries are accounted for as equity transactions. The carrying amounts of the Company's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity and attributed to shareholders of the parent.

When the Company loses control of a subsidiary, a gain or loss is recognized in profit or loss and is calculated as the difference between:

- a. the aggregate of the fair value of consideration received and the fair value of any retained interest at the date when control is lost; and
- b. the previous carrying amount of the assets (including goodwill), and liabilities of the subsidiary and any non-controlling interest.

The Company shall account for all amounts recognized in other comprehensive income in relation to the subsidiary on the same basis as would be required if the Company had directly disposed of the related assets and liabilities.

The fair value of any investment retained in the former subsidiary at the date when control is lost is regarded as the cost on initial recognition of an investment in an associate.

#### The subsidiaries in the consolidated financial statements

The detail information of the subsidiaries at the end of reporting period was as follows:

			Establishment	Percentage of Ownership		
Name of Investor	Name of Investee	Main Businesses and Products	and Operating Location	December 31, 2018	December 31, 2017	Note
TSMC	TSMC North America	Selling and marketing of integrated circuits and other semiconductor devices	San Jose, California, U.S.A.	100%	100%	-
	TSMC Europe B.V. (TSMC Europe)	Customer service and supporting activities	Amsterdam, the Netherlands	100%	100%	a)
	TSMC Japan Limited (TSMC Japan)	Customer service and supporting activities	Yokohama, Japan	100%	100%	a)
	TSMC Korea Limited (TSMC Korea)	Customer service and supporting activities	Seoul, Korea	100%	100%	a)
	TSMC Partners, Ltd. (TSMC Partners)	Investing in companies involved in the design, manufacture, and other related business in the semiconductor industry and other investment activities	Tortola, British Virgin Islands	100%	100%	a)
	TSMC Global, Ltd. (TSMC Global)	Investment activities	Tortola, British Virgin Islands	100%	100%	-
	TSMC China Company Limited (TSMC China)	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices	Shanghai, China	100%	100%	-
TSMC Nanjing Company Limited (TSMC Nanjing)		Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices	Nanjing, China	100%	100%	b)
	VisEra Technologies Company Ltd. (VisEra Tech)	Engaged in manufacturing electronic spare parts and in researching, developing, designing, manufacturing, selling, packaging and testing of color filter	Hsin-Chu, Taiwan	87%	87%	-
	VentureTech Alliance Fund II, L.P. (VTAF II)	Investing in new start-up technology companies	Cayman Islands	98%	98%	a)
	VentureTech Alliance Fund III, L.P. (VTAF III)	Investing in new start-up technology companies	Cayman Islands	98%	98%	a)
	TSMC Solar Europe GmbH	Selling of solar related products and providing customer service	Hamburg, Germany	100%	100%	a), c)
TSMC Partners	TSMC Development, Inc. (TSMC Development)	Investing in companies involved in the manufacturing related business in the semiconductor industry	Delaware, U.S.A.	100%	100%	-
	TSMC Technology, Inc. (TSMC Technology)	Engineering support activities	Delaware, U.S.A.	100%	100%	a)
	TSMC Design Technology Canada Inc. (TSMC Canada)	Engineering support activities	Ontario, Canada	100%	100%	a)
	InveStar Semiconductor Development Fund, Inc. (ISDF)	Investing in new start-up technology companies	Cayman Islands	97%	97%	a), c)
	InveStar Semiconductor Development Fund, Inc. (II) LDC. (ISDF II)	Investing in new start-up technology companies	Cayman Islands	97%	97%	a), c)
TSMC Development	WaferTech, LLC (WaferTech)	Manufacturing, selling and testing of integrated circuits and other semiconductor devices	Washington, U.S.A.	100%	100%	-
VTAF III	Growth Fund Limited (Growth Fund)	Investing in new start-up technology companies	Cayman Islands	100%	100%	a)

Note a: This is an immaterial subsidiary for which the consolidated financial statements are not audited by the Company's independent auditors.

Note b: Under the investment agreement entered into with the municipal government of Nanjing, China, the Company will make an investment in Nanjing in the amount of approximately US\$3 billion to establish a subsidiary operating a 300mm wafer fab with the capacity of 20,000 12-inch wafers per month, and a design service center.

Note c: The subsidiary is under liquidation procedures.

#### **Foreign Currencies**

The financial statements of each individual consolidated entity were expressed in the currency which reflected its primary economic environment (functional currency). The functional currency of TSMC and presentation currency of the consolidated financial statements are both New Taiwan Dollars (NT\$). In preparing the consolidated financial statements, the operating results and financial positions of each consolidated entity are translated into NT\$.

In preparing the financial statements of each individual consolidated entity, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Such exchange differences are recognized in profit or loss in the year in which they arise. Non-monetary items measured at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Exchange differences arising on the retranslation of non-monetary items are

included in profit or loss for the year except for exchange differences arising on the retranslation of non-monetary items in respect of which gains and losses are recognized directly in other comprehensive income, in which case, the exchange differences are also recognized directly in other comprehensive income. Non-monetary items that are measured in terms of historical cost in foreign currencies are not retranslated.

For the purposes of presenting consolidated financial statements, the assets and liabilities of the Company's foreign operations are translated into NT\$ using exchange rates prevailing at the end of each reporting period. Income and expense items are translated at the average exchange rates for the period. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

#### Classification of Current and Noncurrent Assets and Liabilities

Current assets are assets held for trading purposes and assets expected to be converted to cash, sold or consumed within one year from the end of the reporting period. Current liabilities are obligations incurred for trading purposes and obligations expected to be settled within one year from the end of the reporting period. Assets and liabilities that are not classified as current are noncurrent assets and liabilities, respectively.

#### **Cash Equivalents**

Cash equivalents, for the purpose of meeting short-term cash commitments, consist of highly liquid time deposits and investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

#### **Financial Instruments**

Financial assets and liabilities shall be recognized when the Company becomes a party to the contractual provisions of the instruments.

Financial assets and liabilities are initially recognized at fair values. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognized immediately in profit or loss.

#### **Financial Assets**

The classification of financial assets depends on the nature and purpose of the financial assets and is determined at the time of initial recognition. Regular way purchases or sales of financial assets are recognized and derecognized on a trade date or settlement date basis for which financial assets were classified in the same way, respectively. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

#### a. Category of financial assets and measurement

#### 2018

Financial assets are classified into the following categories: financial assets at FVTPL, investments in debt instruments and equity instruments at FVTOCI, and financial assets at amortized cost.

#### 1) Financial asset at FVTPL

For certain financial assets which include debt instruments that do not meet the criteria of amortized cost or FVTOCI, it is mandatorily required to measure them at FVTPL. Any gain or loss arising from remeasurement is recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest earned on the financial asset.

#### 2) Investments in debt instruments at FVTOCI

Debt instruments with contractual terms specifying that cash flows are solely payments of principal and interest on the principal amount outstanding, together with objective of collecting contractual cash flows and selling the financial assets, are measured at FVTOCI.

Interest income calculated using the effective interest method, foreign exchange gains and losses and impairment gains or losses on investments in debt instruments at FVTOCI are recognized in profit or loss. Other changes in the carrying amount of these debt instruments are recognized in other comprehensive income and will be reclassified to profit or loss when these debt instruments are disposed.

#### 3) Investments in equity instruments at FVTOCI

On initial recognition, the Company may irrevocably designate investments in equity investments that is not held for trading as at FVTOCI.

Investments in equity instruments at FVTOCI are subsequently measured at fair value with gains and losses arising from changes in fair value recognized in other comprehensive income and accumulated in other equity.

Dividends on these investments in equity instruments at FVTOCI are recognized in profit or loss when the Company's right to receive the dividends is established, unless the Company's rights clearly represent a recovery of part of the cost of the investment.

#### 4) Measured at amortized cost

Cash and cash equivalents, debt instrument investments, notes and accounts receivable (including related parties), other receivables and refundable deposits are measured at amortized cost.

Debt instruments with contractual terms specifying that cash flows are solely payments of principal and interest on the principal amount outstanding, together with objective of holding financial assets in order to collect contractual cash flows, are measured at amortized cost.

Subsequent to initial recognition, financial assets measured at amortized cost are measured at amortized cost, which equals to carrying amount determined by the effective interest method less any impairment loss.

#### 2017

Financial assets are classified into the following specified categories: Financial assets at FVTPL, available-for-sale financial assets, held-to-maturity financial assets and loans and receivables.

#### 1) Financial asset at FVTPL

Financial assets are classified as at fair value through profit or loss when the financial asset is either held for trading or it is designated as at fair value through profit or loss.

Financial assets at fair value through profit or loss are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss.

#### 2) Available-for-sale financial assets

Available-for-sale financial assets are non-derivative financial assets that are either designated as available-for-sale or are not classified as (a) loans and receivables, (b) held-to-maturity financial assets or (c) financial assets at fair value through profit or loss.

Available-for-sale financial assets are measured at fair value. Interest income from available-for-sale monetary financial assets and dividends on available-for-sale equity investments are recognized in profit or loss. Other changes in the carrying amount of available-for-sale financial assets are recognized in other comprehensive income. When the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously recognized in other comprehensive income is reclassified to profit or loss.

Dividends on available-for-sale equity instruments are recognized in profit or loss when the Company's right to receive the dividends is established.

Available-for-sale equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured are measured at cost less any identified impairment losses at the end of each reporting period. Such equity instruments are subsequently remeasured at fair value when their fair value can be reliably measured, and the difference between the carrying amount and fair value is recognized in profit or loss or other comprehensive income.

#### 3) Held-to-maturity financial assets

Held-to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the Company has the positive intent and ability to hold to maturity. Subsequent to initial recognition, held-to-maturity financial assets are measured at amortized cost using the effective interest method less any impairment.

#### 4) Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables including cash and cash equivalents, notes and accounts receivable and other receivables are measured at amortized cost using the effective interest method, less any impairment, except for those loans and receivables with immaterial discounted effect.

#### b. Impairment of financial assets

#### 2018

At the end of each reporting period, a loss allowance for expected credit loss is recognized for financial assets at amortized cost (including accounts receivable) and for investments in debt instruments that are measured at FVTOCI.

The loss allowance for accounts receivable is measured at an amount equal to lifetime expected credit losses. For financial assets at amortized cost and investments in debt instruments that are measured at FVTOCI, when the credit risk on the financial instrument has not increased significantly since initial recognition, a loss allowance is recognized at an amount equal to expected credit loss resulting from possible default events of a financial instrument within 12 months after the reporting date. If, on the other hand, there has been a significant increase in credit risk since initial recognition, a loss allowance is recognized at an amount equal to expected credit loss resulting from all possible default events over the expected life of a financial instrument.

The Company recognizes an impairment loss in profit or loss for all financial instruments with a corresponding adjustment to their carrying amount through a loss allowance account, except for investments in debt instruments that are measured at FVTOCI, for which the loss allowance is recognized in other comprehensive income and does not reduce the carrying amount of the financial asset.

#### 2017

Financial assets, other than those carried at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Those financial assets are considered to be impaired when there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial assets, their estimated future cash flows have been affected.

For financial assets carried at amortized cost, such as trade receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. The Company assesses the collectability of receivables by performing the account aging analysis and examining current trends in the credit quality of its customers.

For financial assets carried at amortized cost, the amount of the impairment loss is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment loss was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the financial assets at the date the impairment loss is reversed does not exceed what the amortized cost would have been had the impairment loss not been recognized.

When an available-for-sale financial asset is considered to be impaired, cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss in the year.

In respect of available-for-sale equity instruments, impairment losses previously recognized in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to the recognition of an impairment loss is recognized in other comprehensive income and accumulated under the heading of unrealized gains or losses from available-for-sale financial assets.

For financial assets carried at cost, the amount of the impairment loss is measured as the difference between the asset's carrying amount and the present value of the estimated future cash flows discounted at the current market rate of return for a similar financial asset. Such impairment loss will not be reversed in subsequent periods.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade receivables, where the carrying amount is reduced through the use of an allowance account. When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account.

#### c. Derecognition of financial assets

#### <u>2018</u>

The Company derecognizes a financial asset only when the contractual rights to the cash flows from the financial asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the financial asset to another entity.

On derecognition of a financial asset at amortized cost in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable is recognized in profit or loss. On derecognition of an investment in a debt instrument at FVTOCI, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income is recognized in profit or loss. However, on derecognizion of an investment in an equity instrument at FVTOCI, the cumulative gain or loss that had been recognized in other comprehensive income is transferred directly to retained earnings, without recycling through profit or loss.

#### 2017

The Company derecognizes a financial asset only when the contractual rights to the cash flows from the financial asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the financial asset to another entity.

On derecognition of a financial asset in its entirety, the difference between the financial asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

#### **Financial Liabilities and Equity Instruments**

#### Classification as debt or equity

Debt and equity instruments issued by the Company are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument.

#### Equity instruments

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Company are recognized at the proceeds received, net of direct issue costs.

#### Financial liabilities

Financial liabilities are subsequently measured either at amortized cost using effective interest method or at FVTPL.

Financial liabilities are classified as at fair value through profit or loss when the financial liability is either held for trading or is designated as at fair value through profit or loss.

Financial liabilities at fair value through profit or loss are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss.

Financial liabilities other than those held for trading purposes and designated as at FVTPL are subsequently measured at amortized cost at the end of each reporting period.

#### Derecognition of financial liabilities

The Company derecognizes financial liabilities when, and only when, the Company's obligations are discharged, cancelled or they expire. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

#### **Derivative Financial Instruments**

Derivative financial instruments are initially recognized at fair value at the date the derivative contracts are entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is recognized in profit or loss immediately unless the derivative financial instrument is designated and effective as a hedging instrument, in which event the timing of the recognition in profit or loss depends on the nature of the hedge relationship.

#### Financial Instruments Designated as at Fair Value through Profit or Loss

A financial instrument may be designated as at FVTPL upon initial recognition. The financial instrument forms part of a group of financial assets or financial liabilities or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Company's documented risk management or investment strategy, and information about the grouping is provided internally on that basis.

#### **Hedge Accounting**

#### a. Fair value hedge

The Company designates certain hedging instruments, such as interest rate futures contracts, to partially hedge against the price risk caused by changes in interest rates in the Company's investments in fixed income securities as fair value hedge. Changes in the fair value of hedging instrument that are designated and qualify as fair value hedges are recognized in profit or loss immediately, together with any changes in the fair value of the hedged asset that are attributable to the hedged risk.

#### b. Cash flow hedge

The Company designates certain hedging instruments, such as forward exchange contracts and foreign currency deposits, to partially hedge its foreign exchange rate risks associated with certain highly probable forecast transactions (capital expenditures). The effective portion of changes in the fair value of hedging instruments is recognized in other comprehensive income. When the forecast transactions actually take place, the associated gains or losses that were recognized in other comprehensive income are removed from equity and included in the initial cost of the hedged items. The gains or losses from hedging instruments relating to the ineffective portion are recognized immediately in profit or loss.

#### 2018

The Company prospectively discontinues hedge accounting only when the hedging relationship ceases to meet the qualifying criteria; for instance when the hedging instrument expires or is sold, terminated or exercised.

#### 2017

Hedge accounting was discontinued prospectively when the Company revoked the designated hedging relationship, when the hedging instrument expired or was sold, terminated, or exercised; or no longer met the criteria for hedge accounting.

#### **Inventories**

Inventories are stated at the lower of cost or net realizable value. Inventories are recorded at standard cost and adjusted to approximate weighted-average cost at the end of the reporting period. Net realizable value represents the estimated selling price of inventories less all estimated costs of completion and costs necessary to make the sale.

## **Investments Accounted for Using Equity Method**

Investments accounted for using the equity method are investments in associates.

An associate is an entity over which the Company has significant influence and that is neither a subsidiary nor a joint venture. 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 operating results and assets and liabilities of associates are incorporated in these consolidated financial statements using the equity method of accounting. Under the equity method, an investment in an associate is initially recognized in the consolidated statement of financial position at cost and adjusted thereafter to recognize the Company's share of profit or loss and other comprehensive income of the associate as well as the distribution received. The Company also recognizes its share in the changes in the equities of associates.

Any excess of the cost of acquisition over the Company's share of the net fair value of the identifiable assets, liabilities and contingent liabilities of an associate recognized at the date of acquisition is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Company's share of the net fair value of the identifiable assets, liabilities and contingent liabilities over the cost of acquisition, after reassessment, is recognized immediately in profit or loss.

When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment as a single asset by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its carrying amount. Any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized to the extent that the recoverable amount of the investment subsequently increases.

The Company discontinues the use of the equity method from the date when the Company ceases to have significant influence over an associate. When the Company retains an interest in the former associate, the Company measures the retained interest at fair value at that date. The difference between the carrying amount of the associate at the date the equity method was discontinued, and the fair value of any retained interest and any proceeds from disposing of a part interest in the associate is included in the determination of the gain or loss on disposal of the associate. In addition, the Company shall account for all amounts recognized in other comprehensive income in relation to that associate on the same basis as would be required if the associate had directly disposed of the related assets or liabilities. If the Company's ownership interest in an associate is reduced as a result of disposal, but the investment continues to be an associate, the Company should reclassify to profit or loss only a proportionate amount of the gain or loss previously recognized in other comprehensive income.

When the Company subscribes to additional shares in an associate at a percentage different from its existing ownership percentage, the resulting carrying amount of the investment differs from the amount of the Company's proportionate interest in the net assets of the associate. The Company records such a difference as an adjustment to investments with the corresponding amount charged or credited to capital surplus. If the Company's ownership interest is reduced due to the additional subscription to the shares of associate by other investors, the proportionate amount of the gains or losses previously recognized in other comprehensive income in relation to that associate shall be reclassified to profit or loss on the same basis as would be required if the associate had directly disposed of the related assets or liabilities.

When a consolidated entity transacts with an associate, profits and losses resulting from the transactions with the associate are recognized in the Company's consolidated financial statements only to the extent of interests in the associate that are not owned by the Company.

## Property, Plant and Equipment

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment. Costs include any incremental costs that are directly attributable to the construction or acquisition of the item of property, plant and equipment.

Property, plant and equipment in the course of construction for production, supply or administrative purposes are carried at cost, less any recognized impairment loss. Such assets are classified to the appropriate categories of property, plant and equipment when completed and ready for intended use. Depreciation of these assets, on the same basis as other identical categories of property, plant and equipment, commences when the assets are available for their intended use.

Depreciation is recognized so as to write off the cost of the assets less their residual values over their useful lives, and it is computed using the straight-line method over the following estimated useful lives: land improvements - 20 years; buildings - 10 to 20 years; machinery and equipment - 2 to 5 years; and office equipment - 3 to 5 years. The estimated useful lives, residual values and depreciation method are reviewed at the end of each reporting period, with the effect of any changes in estimates accounted for on a prospective basis. Land is not depreciated.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the assets. Any gain or loss arising on the disposal or retirement of an item of property, plant and equipment is determined as the difference between the sales proceeds and the carrying amount of the asset and is recognized in profit or loss.

#### Leases

Leases are classified as finance lease whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

#### The Company as lessor

Rental income from operating leases is recognized on a straight-line basis over the term of the relevant lease.

#### The Company as lessee

Operating lease payments are recognized as an expense on a straight-line basis over the lease term.

#### **Intangible Assets**

#### Goodwill

Goodwill arising on an acquisition of a business is carried at cost as established at the date of acquisition of the business less accumulated impairment losses, if any.

## Other intangible assets

Other separately acquired intangible assets with finite useful lives are carried at cost less accumulated amortization and accumulated impairment losses. Amortization is recognized using the straight-line method over the following estimated useful lives: Technology license fees - the estimated life of the technology or the term of the technology transfer contract; software and system design costs - 3 years or contract period; patent and others - the economic life or contract period. The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis.

## **Impairment of Tangible and Intangible Assets**

#### Goodwill

Goodwill is not amortized and instead is tested for impairment annually, or more frequently when there is an indication that the cash generating unit may be impaired. For the purpose of impairment testing, goodwill is allocated to each of the Company's cash-generating units or groups of cash-generating units that are expected to benefit from the synergies of the combination. If the recoverable amount of a cash-generating unit is less than its carrying amount, the difference is allocated first to reduce the carrying amount of any goodwill allocated to such cash generating unit and then to the other assets of the cash generating unit pro rata based on the carrying amount of each asset in the cash generating unit. Any impairment loss for goodwill is recognized directly in profit or loss. An impairment loss recognized for goodwill is not reversed in subsequent periods.

## Other tangible and intangible assets

At the end of each reporting period, the Company reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss. When it is not possible to estimate the recoverable amount of an individual asset, the Company estimates the recoverable amount of the cash-generating unit to which the asset belongs. When a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units, or otherwise they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

Recoverable amount is the higher of fair value less costs to sell and value in use. 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 for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset or cash-generating unit is estimated to be less than its carrying amount, the carrying amount of the asset or cash-generating unit is reduced to its recoverable amount. An impairment loss is recognized immediately in profit or loss.

When an impairment loss subsequently reverses, the carrying amount of the asset or a cash-generating unit is increased to the revised estimate of its recoverable amount, but the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset or cash-generating unit in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

#### **Provision**

Provisions are recognized when the Company has a present obligation (legal or constructive) as a result of a past event, it is probable that the Company will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows.

## **Guarantee Deposit**

Guarantee deposit mainly consists of cash received under deposit agreements with customers to ensure they have access to the Company's specified capacity; and as guarantee of accounts receivable to ensure payment from customers. Cash received from customers is recorded as guarantee deposit upon receipt. Guarantee deposits are refunded to customers when terms and conditions set forth in the deposit agreements have been satisfied.

## **Revenue Recognition**

#### 2018

The Company recognizes revenue when performance obligations are satisfied. The performance obligations are satisfied when customers obtain control of the promised goods which is generally when the goods are delivered to the customers' specified locations.

Revenue from sale of goods is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances. Estimated sales returns and other allowances is generally made and adjusted based on historical experience and the consideration of varying contractual terms to recognize refund liabilities, which is classified under accrued expenses and other current liabilities.

In principle, payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month of when the invoice is issued. Due to the short term nature of the receivables from sale of goods with the immaterial discounted effect, the Company measures them at the original invoice amounts without discounting.

#### 2017

Revenue is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances.

## Sale of goods

Revenue from the sale of goods is recognized when the goods are delivered and titles have passed, at which time all the following conditions are satisfied:

- The Company has transferred to the buyer the significant risks and rewards of ownership of the goods;
- The Company retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- The amount of revenue can be measured reliably;
- It is probable that the economic benefits associated with the transaction will flow to the Company; and
- The costs incurred or to be incurred in respect of the transaction can be measured reliably.

In principle, payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month of when the invoice is issued. Due to the short term nature of the receivables from sale of goods with the immaterial discounted effect, the Company measures them at the original invoice amounts without discounting.

#### Dividend and interest income

Dividend income from investments is recognized when the shareholder's right to receive payment has been established, provided that it is probable that the economic benefits will flow to the Company and the amount of income can be measured reliably.

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Company and the amount of income can be measured reliably. Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable.

#### **Employee Benefits**

#### Short-term employee benefits

Liabilities recognized in respect of short-term employee benefits are measured at the undiscounted amount of the benefits expected to be paid in exchange for service rendered by employees.

## Retirement benefits

For defined contribution retirement benefit plans, payments to the benefit plan are recognized as an expense when the employees have rendered service entitling them to the contribution. For defined benefit retirement benefit plans, the cost of providing benefit is recognized based on actuarial calculations.

Defined benefit costs (including service cost, net interest and remeasurement) under the defined benefit retirement benefit plans are determined using the Projected Unit Credit Method. Service cost (including current service cost), and net interest on the net defined benefit liability (asset) are recognized as employee benefits expense in the period they occur. Remeasurement, comprising actuarial gains and losses and the return on plan assets (excluding interest), is recognized in other comprehensive income in the period in which they occur. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not be reclassified to profit or loss.

Net defined benefit liability represents the actual deficit in the Company's defined benefit plan.

#### **Taxation**

Income tax expense represents the sum of the tax currently payable and deferred tax.

## Current tax

Income tax on unappropriated earnings (excluding earnings from foreign consolidated subsidiaries) is expensed in the year the shareholders approved the appropriation of earnings which is the year subsequent to the year the earnings are generated.

Adjustments of prior years' tax liabilities are added to or deducted from the current year's tax provision.

## Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the consolidated financial statements and the corresponding tax bases used in the computation of taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences, net operating loss carryforwards and tax credits for research and development expenses to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates, except where the Company is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments are only recognized to the extent that it is probable that there will be sufficient taxable profits against which to utilize the benefits of the temporary differences and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the deferred tax asset to be recovered. The deferred tax assets which originally not recognized is also reviewed at the end of each reporting period and recognized to the extent that it is probable that sufficient taxable profits will be available to allow all or part of the deferred tax asset to be recovered.

Deferred tax liabilities and assets are measured at the tax rates that are expected to apply in the year in which the liability is settled or the asset is realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Company expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

## Current and deferred tax for the year

Current and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case, the current and deferred tax are also recognized in other comprehensive income or directly in equity, respectively.

#### **Government Grants**

Government grants are not recognized until there is reasonable assurance that the Company will comply with the conditions attaching to them and that the grants will be received.

Government grants whose primary condition is that the Company should purchase, construct or otherwise acquire noncurrent assets (mainly including land use right and depreciable assets) are recognized as a deduction from the carrying amount of the related assets and recognized as a reduced depreciation or amortization charge in profit or loss over the contract period or useful lives of the related assets. Government grants that are receivables as compensation for expenses already incurred are deducted from incurred expenses in the period in which they become receivables.

# 5. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION AND UNCERTAINTY

In the application of the aforementioned Company's accounting policies, the Company is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

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

## **Revenue Recognition**

The Company recognizes revenue when the conditions described in Note 4 are satisfied. The Company also records estimated future returns and other allowances in the same period the related revenue is recorded. Estimated sales returns and other allowances is generally made and adjusted based on historical experience and the consideration of varying contractual terms, and the Company periodically reviews the adequacy of the estimation used.

## Timing to commence depreciation of property, plant and equipment

As described in Note 4, depreciation of property, plant and equipment begins when the assets are available for use, and in the condition necessary for the assets to be capable of operating in the intended manner. The criteria to determine whether assets are available for their intended use vary within categories of assets as well as involve subjective judgments, thus validity of the timing to commence depreciation of property, plant and equipment could have a material impact on the Company's financial performance.

## Impairment of Tangible and Intangible Assets Other than Goodwill

In the process of evaluating the potential impairment of tangible and intangible assets other than goodwill, the Company is required to make subjective judgments in determining the independent cash flows, useful lives, expected future revenue and expenses related to the specific asset groups with the consideration of the nature of semiconductor industry. Any changes in these estimates based on changed economic conditions or business strategies could result in significant impairment charges or reversal in future years.

## **Impairment of Goodwill**

The assessment of impairment of goodwill requires the Company to make subjective judgment to determine the identified cash-generating units, allocate the goodwill to relevant cash-generating units and estimate the recoverable amount of relevant cash-generating units.

#### **Impairment Assessment on Investment Using Equity Method**

The Company assesses the impairment of investments accounted for using the equity method whenever triggering events or changes in circumstances indicate that an investment may be impaired and carrying value may not be recoverable. The Company measures the impairment based on a projected future cash flow of the investees, including the underlying assumptions of sales growth rate and capacity utilization rate formulated by such investees' internal management team. The Company also takes into account market conditions and the relevant industry trends to ensure the reasonableness of such assumptions.

#### Realization of Deferred Income Tax Assets

Deferred tax assets are recognized to the extent that it is probable that future taxable profits will be available against which those deferred tax assets can be utilized. Assessment of the realization of the deferred tax assets requires subjective judgment and estimate, including the future revenue growth and profitability, tax holidays, the amount of tax credits can be utilized and feasible tax planning strategies. Any changes in the global economic environment, the industry trends and relevant laws and regulations could result in significant adjustments to the deferred tax assets.

#### Fair Value Measurement of Non-publicly Traded Equity Investments

The fair value measurement for non-publicly traded equity investments is determined by the estimated fair value under appropriate valuation methods primarily based on investees' financial positions, operation results and recent financing activities, the market transaction prices of similar investments, market conditions and the required discount factors. As such, the estimated fair value may be different from the actual disposal price in the future. The Company assesses the fair value quarterly based on market

conditions to ensure the appropriateness of fair value measurement of non-publicly traded equity investments.

#### **Valuation of Inventory**

Inventories are stated at the lower of cost or net realizable value, and the Company uses judgment and estimate to determine the net realizable value of inventory at the end of each reporting period.

The Company estimates the net realizable value of inventory for obsolescence and unmarketable items at the end of reporting period and then writes down the cost of inventories to net realizable value. The net realizable value of the inventory is mainly determined based on assumptions of future demand within a specific time horizon.

## **Recognition and Measurement of Defined Benefit Plans**

Net defined benefit liability and the resulting defined benefit costs under defined benefit pension plans are calculated using the Projected Unit Credit Method. Actuarial assumptions comprise the discount rate, rate of employee turnover, and future salary increase rate. Changes in economic circumstances and market conditions will affect these assumptions and may have a material impact on the amount of the expense and the liability.

## 6. CASH AND CASH EQUIVALENTS

	December 31, 2018	December 31, 2017
Cash and deposits in banks	\$ 575,825,502	\$ 551,919,770
Repurchase agreements collateralized by corporate bonds	1,229,600	-
Commercial paper	759,499	695,901
Agency bonds		776,025
	<u>\$ 577,814,601</u>	<u>\$ 553,391,696</u>

Deposits in banks consisted of highly liquid time deposits that were readily convertible to known amounts of cash and were subject to an insignificant risk of changes in value.

## 7. FINANCIAL ASSETS AND LIABILITIES AT FAIR VALUE THROUGH PROFIT OR LOSS

	December 31, 2018	December 31, 2017
Financial assets		
Mandatorily measured at FVTPL Agency mortgage-backed securities Forward exchange contracts  Held for trading	\$ 3,419,287 <u>85,303</u> 3,504,590	\$ - - -
Forward exchange contracts	<u> </u>	569,751 \$ 569,751
Financial liabilities		
Held for trading Forward exchange contracts	<u>\$ 40,825</u>	<u>\$ 26,709</u>

The Company entered into derivative contracts to manage exposures due to fluctuations of foreign exchange rates. These derivative contracts did not meet the criteria for hedge accounting. Therefore, the Company did not apply hedge accounting treatment for these derivative contracts.

Outstanding forward exchange contracts consisted of the following:

	Maturity Date	Contract Amount (In Thousands)
<u>December 31, 2018</u>		
Sell NT\$/Buy EUR Sell NT\$/Buy JPY Sell US\$/Buy EUR Sell US\$/Buy JPY Sell US\$/Buy RMB Sell US\$/Buy NT\$ Sell RMB/Buy US\$ December 31, 2017	January 2019 to March 2019 January 2019 to March 2019 January 2019 January 2019 January 2019 January 2019 January 2019	NT\$18,545,854/EUR527,000 NT\$4,757,858/JPY17,200,000 US\$495/EUR434 US\$175,591/JPY19,389,014 US\$318,000/RMB2,188,747 US\$127,000/NT\$3,908,635 RMB667,539/US\$97,000
Sell NT\$/Buy EUR Sell NT\$/Buy JPY Sell US\$/Buy JPY Sell US\$/Buy RMB Sell US\$/Buy NT\$ Sell RMB /Buy EUR Sell RMB/Buy JPY Sell RMB/Buy GBP	January 2018 to February 2018 February 2018 January 2018	NT\$6,002,786/EUR169,000 NT\$996,294/JPY3,800,000 US\$2,191/JPY246,724 US\$558,000/RMB3,679,575 US\$1,661,500/NT\$49,673,320 RMB38,967/EUR4,994 RMB409,744/JPY7,062,536 RMB3,637/GBP413

Investments in debt instruments at FVTOCI were classified as available-for-sale financial assets under IAS 39. Refer to Notes 3 and 9 for information relating to their reclassification and comparative information for 2017.

## 8. FINANCIAL ASSETS AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME-2018

	December 31, 2018
Investments in debt instruments at FVTOCI	
Corporate bonds	\$ 40,753,582
Agency bonds/Agency mortgage-backed securities	31,288,762
Asset-backed securities	15,670,295
Government bonds	11,151,359
Commercial paper	107,590
• •	<u>98,971,588</u>
Investments in equity instruments at FVTOCI	
Non-publicly traded equity investments	3,910,681
Publicly traded stocks	590,152
	4,500,833
	\$ 103,472,421
	(Continued)

	December 31, 2018
Current Noncurrent	\$ 99,561,740 3,910,681
	\$\frac{103,472,421}{(Concluded)}

These investments in equity instruments are held for medium to long-term purposes and therefore are accounted for as FVTOCI.

For the year ended December 31, 2018, the Company sold shares of stocks for NT\$840,605 thousand mainly because the strategic purpose no longer exists and the non-publicly traded investee has been merged. The related other equity-unrealized gain or loss on financial assets at FVTOCI of NT\$1,193,056 thousand was transferred to decrease retained earnings.

For dividends from equity investments designated as at FVTOCI recognized during the year ended December 31, 2018, please refer to Note 28. All the dividends are from investments held at the end of the reporting period.

As of December 31, 2018, the cumulative loss allowance for expected credit loss of NT\$29,723 thousand is recognized under investments in debt instruments at FVTOCI. Refer to Note 36 for information relating to their credit risk management and expected credit loss.

Investments in equity and debt instruments at FVTOCI were classified as available-for-sale financial assets and cost methods (only for equity instruments) under IAS 39. Refer to Notes 3, 9 and 12 (only for equity instruments) for information relating to their reclassification and comparative information for 2017.

#### 9. AVAILABLE-FOR-SALE FINANCIAL ASSETS-2017

	December 31, 2017
Corporate bonds	\$ 40,165,148
Agency bonds/Agency mortgage-backed securities	29,235,388
Asset-backed securities	13,459,545
Government bonds	7,817,723
Publicly traded stocks	2,548,054
Commercial paper	148,295
	\$ 93.374.153

## 10. HELD-TO-MATURITY FINANCIAL ASSETS-2017

	December 31, 2017
Corporate bonds Structured product	\$ 19,338,764 
	<u>\$ 20,821,714</u>
Current portion Noncurrent portion	\$ 1,988,385 
	<u>\$ 20,821,714</u>

## 11. FINANCIAL ASSETS AT AMORTIZED COST-2018

	December 31, 2018
Corporate bonds Commercial paper Less: Allowance for impairment loss	\$ 19,519,941 2,294,098 (8,147)
	<u>\$ 21,805,892</u>
Current portion Noncurrent portion	\$ 14,277,615 
	\$ 21,805,892

Financial assets at amortized cost were classified as held-to-maturity financial assets under IAS 39. Refer to Notes 3 and 10 for information relating to their reclassification and comparative information for 2017. Refer to Note 36 for information relating to credit risk management and expected credit loss for financial assets at amortized cost.

## 12. FINANCIAL ASSETS CARRIED AT COST-2017

The Company's investment classified as financial assets carried at cost primarily consists of non-publicly traded equity investments. Since there is a wide range of estimated fair values of the Company's investments in non-publicly traded equity investments, the Company concludes that the fair value cannot be reliably measured and therefore should be measured at the cost less any impairment.

The stock of Aquantia was listed in November 2017. Accordingly, the Company reclassified the aforementioned investment from financial assets carried at cost to available-for-sale financial assets.

## 13. HEDGING FINANCIAL INSTRUMENTS

## 2018

	December 31, 2018
Financial assets- current	
Cash flow hedges Forward exchange contracts  Financial liabilities- current	<u>\$ 23,497</u>
Fair value hedges	
Interest rate futures contracts Cash flow hedges	\$ 153,891
Forward exchange contracts	1,941
	<u>\$ 155,832</u>

## Fair value hedge

The Company entered into interest rate futures contracts, which are used to partially hedge against the price risk caused by changes in interest rates in the Company's investments in fixed income securities. The hedge ratio is adjusted in response to the changes in the financial market and capped at 100%.

On the basis of economic relationships, the Company expects that the value of the interest rate futures contracts and the value of the hedged financial assets will change in opposite directions in response to movements in interest rates.

The main source of hedge ineffectiveness in these hedging relationships is the credit risk of the hedged financial assets, which is not reflected in the fair value of the interest rate future contracts. No other sources of ineffectiveness emerged from these hedging relationships. Amount of hedge ineffectiveness recognized in profit or loss is classified under other gains and losses.

The following tables summarize the information relating to the hedges of interest rate risk as of December 31, 2018.

Hedging Instruments	Contract Amount (US\$ in Thousands)	Maturity
US treasury bonds interest rate futures contracts	US\$330,300	March 2019
Hedged Items	Asset Carrying Amount as of December 31, 2018	Asset Accumulated Amount of Fair Value Hedge Adjustments
Financial assets at FVTOCI	\$ 23,229,530	\$ (13,508)

The effect for the year ended December 31, 2018 is detailed below:

Hedging Instruments/Hedged Items	Increase (Decrease) in Value Used for Calculating Hedge Ineffectiveness
Hedging Instruments	
US treasury bonds interest rate futures contracts	\$ 11,460
Hedged Items	
Financial assets at FVTOCI	(13,846)
	\$ (2.386)

## Cash flow hedge

The Company entered into forward exchange contracts and foreign currency deposits to partially hedge foreign exchange rate risks associated with certain highly probable forecast transactions (capital expenditures). The hedge ratio is adjusted in response to the changes in the financial market and capped at 100%. The forward exchange contracts have maturities of 12 months or less.

On the basis of economic relationships, the Company expects that the value of forward exchange contracts and foreign currency deposits and the value of hedged transactions will change in opposite directions in response to movements in foreign exchange rates.

The main source of hedge ineffectiveness in these hedging relationships is driven by the effect of the counterparty's own credit risk on the fair value of forward exchange contracts and foreign currency deposits. No other sources of ineffectiveness emerged from these hedging relationships. For the year ended December 31, 2018, refer to Note 25(d) for gain or loss arising from changes in the fair value of hedging instruments and the amount transferred to initial carrying amount of hedged items.

The following tables summarize the information relating to the hedges for foreign currency risk as of December 31, 2018.

Hedging Instruments	Contract Amount (in Thousands)	Maturity	Balance in Other Equity (Continuing Hedges)
Forward exchange contracts	NT\$ 3,917,657 /EUR 112,000	February 2019 to April 2019	\$ 23,601

The effect for the year ended December 31, 2018 is detailed below:

Hedged Items	Increase (Decrease) in Value Used for Calculating Hedge Ineffectiveness
Hedging Instruments Forward exchange contracts Foreign currency deposits	\$ 34,563 6,412 \$ 40,975
Hedged Items Forecast transaction (capital expenditures)	<u>\$ (40,975)</u>

## 2017

The Company's hedging policies for 2017 are the same as those mentioned previously in 2018, the instruments employed are as follows:

	December 31, 2017
Financial assets- current	
Fair value hedges Interest rate futures contracts Cash flow hedges Forward exchange contracts	\$ 27,016
Financial liabilities- current	
Cash flow hedges Forward exchange contracts	<u>\$ 15,562</u>

The Company entered into interest rate futures contracts, which are used to partially hedge against the price risk caused by changes in interest rates in the Company's investments in fixed income securities.

The outstanding interest rate futures contracts consisted of the following:

	Contract Amount
Maturity Period	(US\$ in Thousands)

#### December 31, 2017

March 2018 US\$ 169,400

The Company entered into forward exchange contracts to partially hedge foreign exchange rate risks associated with certain highly probable forecast transactions (capital expenditures). These contracts have maturities of 12 months or less.

Outstanding forward exchange contracts consisted of the following:

	Maturity Date	Contract Amount (In Thousands)	
December 31, 2017			
Sell NT\$/Buy EUR	February 2018 to May 2018	NT\$2,649,104/EUR75,000	

## 14. NOTES AND ACCOUNTS RECEIVABLE, NET

	December 31, 2018	December 31, 2017
At amortized cost Notes and accounts receivable Less: Loss allowance	\$ 125,025,575 (7,253) 125,018,322	\$ 121,604,989 (471,741) 121,133,248
At FVTOCI	3,595,069 \$ 128,613,391	\$ 121,133,248

The Company signed a contract with the bank to sell certain accounts receivable without recourse and transaction cost required. These accounts receivable are classified as at FVTOCI because they are held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets.

## 2018

In principle, the payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month when the invoice is issued. Aside from recognizing impairment losses on credit-impaired accounts receivable, the Company recognizes loss allowance based on the expected credit loss ratio of customers by different risk levels. Such risk levels are determined with factors of historical loss ratios and customers' financial conditions, competitiveness and business outlook. For accounts receivable past due over 90 days without collaterals or guarantees, the Company recognizes loss allowance at full amount.

## Aging analysis of notes and accounts receivable, net

	December 31, 2018
Not past due	\$ 113,126,484
Past due	
Past due within 30 days	15,006,461
Past due 31-60 days	472,833
Past due 61-120 days	4,654
Past due over 121 days	2,959
	<u>\$ 128,613,391</u>

## Movements of the loss allowance for accounts receivable

Balance at January 1, 2018 (IAS 39)	\$ 471,741
Effect of retrospective application of IFRS 9	(244,773)
Balance at January 1, 2018 (IFRS 9)	226,968
Provision (Reversal)	(219,714)
Effect of exchange rate changes	(1)
Balance at December 31, 2018	<u>\$ 7,253</u>

For the year ended December 31, 2018, the decrease in loss allowance was mainly due to the variations from accounts receivable balance of different risk levels.

#### 2017

In principle, the payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month of when the invoice is issued. The allowance for doubtful receivables is assessed by reference to the collectability of receivables by performing the account aging analysis, historical experience and current financial condition of customers.

Except for those impaired, for the rest of the notes and accounts receivable, the account aging analysis at the end of the reporting period is summarized in the following table. There was no impairment concern for the accounts receivable that were past due without recognizing a specific allowance for doubtful receivables since there was no significant change in the credit quality of its customers after the assessment and the Company has obtained guarantee against certain receivables.

## Aging analysis of notes and accounts receivable, net

	December 31, 2017
Neither past due nor impaired	\$ 105,295,219
Past due but not impaired	
Past due within 30 days	13,984,125
Past due 31-60 days	929,672
Past due 61-120 days	582,821
Past due over 121 days	341,411
	<u>\$ 121,133,248</u>

#### Movements of the allowance for doubtful receivables

	Individually Assessed for Impairment	Collectively Assessed for Impairment	Total
Balance at January 1, 2017 Reversal/Write-off Effect of exchange rate changes	\$ 1,848 (1,848)	\$ 478,270 (6,305) (224)	\$ 480,118 (8,153) (224)
Balance at December 31, 2017	<u>\$ -</u>	<u>\$ 471,741</u>	<u>\$ 471,741</u>

## 15. INVENTORIES

	December 31, 2018	December 31, 2017
Finished goods Work in process Raw materials Supplies and spare parts	\$ 11,329,802 72,071,861 15,233,877 4,595,436	\$ 9,923,338 53,362,160 7,143,806 3,451,443
	<u>\$ 103,230,976</u>	\$ 73,880,747

Write-down of inventories to net realizable value (excluding computer virus outbreak losses) and reversal of write-down of inventories resulting from the increase in net realizable value in the amount of NT\$1,259,472 thousand and NT\$840,861 thousand, respectively, were included in the cost of revenue for the years ended December 31, 2018 and 2017. Please refer to computer virus outbreak losses in Note 41.

## 16. INVESTMENTS ACCOUNTED FOR USING EQUITY METHOD

Associates consisted of the following:

		Place of	Carryin	g Amount		d Voting Rights Held Company
Name of Associate	Principal Activities	Incorporation and Operation	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017
Vanguard International Semiconductor Corporation (VIS)	Manufacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing and design service of masks	Hsinchu, Taiwan	\$ 9,006,126	\$ 8,568,344	28%	28%
Systems on Silicon Manufacturing Company Pte Ltd. (SSMC)	Manufacturing and selling of integrated circuits and other semiconductor devices	Singapore	5,772,815	5,677,640	39%	39%
Xintec Inc. (Xintec)	Wafer level chip size packaging and wafer level post passivation interconnection service	Taoyuan, Taiwan	1,764,607	2,292,100	41%	41%
Global Unichip Corporation (GUC)	Researching, developing, manufacturing, testing and marketing of integrated circuits	Hsinchu, Taiwan	1,299,423	1,300,194	35%	35%
Mutual-Pak	Manufacturing of electronic parts, wholesaling and retailing of electronic materials, and researching, developing and testing of RFID	New Taipei, Taiwan	22,867	23,210	39%	39%
			<u>\$ 17,865,838</u>	<u>\$ 17,861,488</u>		

Starting December 2017, the Company no longer had the majority of voting power and control over Mutual-Pak. As a result, Mutual-Pak is no longer consolidated and is accounted for using the equity method.

As of December 31, 2018 and 2017, no investments in associates are individually material to the Company. Please refer to the consolidated statements of comprehensive income for recognition of share of both profit (loss) and other comprehensive income (loss) of associates that are not individually material.

The market prices of the investments accounted for using the equity method in publicly traded stocks calculated by the closing price at the end of the reporting period are summarized as follows. The closing price represents the quoted price in active markets, the level 1 fair value measurement.

Name of Associate	December 31, 2018	December 31, 2017
VIS	\$ 27,621,298	\$ 30,638,751
GUC	<u>\$ 9,617,699</u>	<u>\$ 11,905,404</u>
Xintec	\$ 3,783,585	\$ 9,180,759

## 17. PROPERTY, PLANT AND EQUIPMENT

	Land and Land Improvements	Buildings	Machinery and Equipment	Office Equipment	Equipment under Installation and Construction in Progress	Total
Cost						
Balance at January 1, 2018 Additions (Deductions) Disposals or retirements Effect of exchange rate changes	\$ 3,983,243 - - - - - 28,110	\$ 379,134,613 40,396,404 (410,891) (405,841)	\$ 2,487,752,265 247,042,281 (5,972,482) (61,937)	\$ 42,391,516 6,773,376 (790,793) 	\$ 167,353,490 5,812,340 - (254,841)	\$ 3,080,615,127 300,024,401 (7,174,166) (686,329)
Balance at December 31, 2018	<u>\$ 4,011,353</u>	<u>\$ 418,714,285</u>	\$ 2,728,760,127	\$ 48,382,279	<u>\$ 172,910,989</u>	\$3,372,779,033
Accumulated depreciation andimpairment						
Balance at January 1, 2018 Additions Disposals or retirements Impairment Effect of exchange rate changes	\$ 510,498 20,900 - - 19,177	\$ 194,446,521 24,293,366 (398,955) - 33,210	\$ 1,795,448,842 258,195,315 (4,773,589) 423,468 (15,128)	\$ 27,666,944 5,615,316 (789,993)	\$ - - - -	\$ 2,018,072,805 288,124,897 (5,962,537) 423,468 70,121
Balance at December 31, 2018	<u>\$ 550,575</u>	<u>\$ 218,374,142</u>	<u>\$ 2,049,278,908</u>	\$ 32,525,129	<u>\$</u>	\$2,300,728,754
Carrying amounts at December 31, 2018	<u>\$ 3,460,778</u>	\$ 200,340,143	<u>\$ 679,481,219</u>	<u>\$ 15,857,150</u>	<u>\$ 172,910,989</u>	\$ 1,072,050,279
Cost						
Balance at January 1, 2017 Additions (Deductions) Disposals or retirements Reclassification Effect of disposal of subsidiary Effect of exchange rate changes	\$ 4,049,292 - - - - (66,049)	\$ 304,404,474 75,594,667 (36,957) - (827,571)	\$ 2,042,867,744 458,605,807 (9,552,995) 8,791 (51,216) (4,125,866)	\$ 34,729,640 8,195,896 (377,798) 1,507 (14,750) (142,979)	\$ 387,199,675 (219,902,510) - (518) 	\$ 2,773,250,825 322,493,860 (9,967,750) 10,298 (66,484) (5,105,622)
Balance at December 31, 2017	\$ 3,983,243	<u>\$ 379,134,613</u>	<u>\$ 2,487,752,265</u>	<u>\$ 42,391,516</u>	<u>\$ 167,353,490</u>	\$3,080,615,127
Accumulated depreciation and impairment						
Balance at January 1, 2017 Additions Disposals or retirements Reclassification Effect of disposal of subsidiary Effect of exchange rate changes	\$ 524,845 27,790 - - (42,137)	\$ 174,349,077 20,844,584 (28,816) - (718,324)	\$ 1,577,377,509 229,985,588 (8,114,327) 8,195 (42,830) (3,765,293)	\$ 23,221,707 4,938,000 (377,470) 1,466 (13,838) (102,921)	\$ - - - - -	\$ 1,775,473,138 255,795,962 (8,520,613) 9,661 (56,668) (4,628,675)
Balance at December 31, 2017	<u>\$ 510,498</u>	<u>\$ 194,446,521</u>	\$1,795,448,842	\$ 27,666,944	<u>\$</u>	\$ 2,018,072,805
Carrying amounts at December 31, 2017	<u>\$ 3,472,745</u>	<u>\$ 184,688,092</u>	<u>\$ 692,303,423</u>	<u>\$ 14,724,572</u>	<u>\$ 167,353,490</u>	\$ 1,062,542,322

The significant part of the Company's buildings includes main plants, mechanical and electrical power equipment and clean rooms, and the related depreciation is calculated using the estimated useful lives of 20 years, 10 years and 10 years, respectively.

For the year ended December 31, 2018, the Company recognized an impairment loss of NT\$423,468 thousand for certain machinery and equipment that was assessed to have no future use, and the recoverable amount of certain machinery and equipment was nil. Such impairment loss was recognized in other operating income and expenses.

## 18. INTANGIBLE ASSETS

	Goodwill	Technology License Fees	Software and System Design Costs	Patent and Others	Total
Cost					
Balance at January 1, 2018 Additions Disposals or retirements Effect of exchange rate changes	\$ 5,648,702 - - 146,786	\$ 10,443,257 533,669 (2,468)	\$ 25,186,218 4,601,885 (186,671) (6,949)	\$ 5,716,146 1,969,439 (31,183) 	\$ 46,994,323 7,104,993 (217,854) 139,491
Balance at December 31, 2018	\$ 5,795,488	<u>\$ 10,974,458</u>	\$ 29,594,483	<u>\$ 7,656,524</u>	\$ 54,020,953
Accumulated amortization and impairment					
Balance at January 1, 2018 Additions Disposals or retirements Effect of exchange rate changes	\$ - - - -	\$ 7,694,857 1,063,616 (2,468)	\$ 20,376,693 2,835,265 (186,615) (1,845)	\$ 4,747,633 522,524 (31,183) 339	\$ 32,819,183 4,421,405 (217,798) (3,974)
Balance at December 31, 2018	<u>\$</u>	<u>\$ 8,756,005</u>	\$ 23,023,498	\$ 5,239,313	<u>\$ 37,018,816</u>
Carrying amounts at December 31, 2018	\$ 5,795,488	<u>\$ 2,218,453</u>	\$ 6,570,985	<u>\$ 2,417,211</u>	<u>\$ 17,002,137</u>
Cost					
Balance at January 1, 2017 Additions Retirements Reclassification Effect of disposal of subsidiary Effect of exchange rate changes	\$ 6,007,975 - - (13,499) (345,774)	\$ 9,546,007 897,861 - - (611)	\$ 22,243,595 3,021,085 (75,237) 7,662 (7,662) (3,225)	\$ 5,386,435 349,265 - (17,960) - (1,594)	\$ 43,184,012 4,268,211 (75,237) (10,298) (21,161) (351,204)
Balance at December 31, 2017	\$ 5,648,702	<u>\$ 10,443,257</u>	\$ 25,186,218	<u>\$ 5,716,146</u>	<u>\$ 46,994,323</u>
Accumulated amortization and impairment					
Balance at January 1, 2017 Additions Retirements Reclassification Impairment Effect of disposal of subsidiary Effect of exchange rate changes	\$ - - - 13,520 (13,499) (21)	\$ 6,147,200 1,548,263 - - - (606)	\$ 18,144,428 2,310,742 (75,237) 7,409 (7,554) (3,095)	\$ 4,277,538 487,731 - (17,070) - (566)	\$ 28,569,166 4,346,736 (75,237) (9,661) 13,520 (21,053) (4,288)
Balance at December 31, 2017	<u>\$</u>	\$ 7,694,857	\$ 20,376,693	<u>\$ 4,747,633</u>	\$ 32,819,183
Carrying amounts at December 31, 2017	\$ 5,648,702	<u>\$ 2,748,400</u>	\$ 4,809,525	\$ 968,513	<u>\$ 14,175,140</u>

The Company's goodwill has been tested for impairment at the end of the annual reporting period and the recoverable amount is determined based on the value in use. The value in use was calculated based on the cash flow forecast from the financial budgets covering the future five-year period, and the Company used annual discount rates of 9.0% and 8.5% in its test of impairment as of December 31, 2018 and 2017, respectively, to reflect the relevant specific risk in the cash-generating unit.

For the year ended December 31, 2018, the Company did not recognize any impairment loss on goodwill. For the year ended December 31, 2017, the Company assessed goodwill impairment and recognized an impairment loss of NT\$13,520 thousand related to a subsidiary since the operating result of this cash generating unit was not as expected and the recoverable amount of goodwill was nil. Such impairment loss was recognized in other operating income and expenses.

## 19. OTHER ASSETS

		December 31, 2018	December 31, 2017
	receivable paid expenses ers	\$ 3,780,293 1,298,710 1,912,067	\$ 4,021,602 1,559,963 1,623,995
		<u>\$ 6,991,070</u>	<u>\$ 7,205,560</u>
	rent portion	\$ 5,406,423 1,584,647	\$ 4,222,440 2,983,120
		<u>\$ 6,991,070</u>	<u>\$ 7,205,560</u>
20. SH	ORT-TERM LOANS		
		December 31, 2018	December 31, 2017
	ecured loans mount	<u>\$ 88,754,640</u>	<u>\$ 63,766,850</u>
J	ginal loan content S\$ (in thousands) UR (in thousands)	\$ 2,610,000 242,000	\$ 2,150,000

0.01%-3.22% Due by January

2019

1.54%-1.82%

Due by February

2018

## 21. PROVISIONS

Annual interest rate

Maturity date

The Company's current provisions were provisions for sales returns and allowances.

	Sales Returns and Allowances
Year Ended December 31, 2017	
Balance, beginning of year Provision	\$ 18,037,789 44,833,557
Payment Effect of exchange rate changes	(48,884,704) (24,855)
Balance, end of year	<u>\$ 13,961,787</u>

Provisions for sales returns and allowances are estimated based on historical experience and the consideration of varying contractual terms, and are recognized as a reduction of revenue in the same year of the related product sales.

Starting from 2018, the Company recognizes the estimation of sales returns and allowance as refund liability (classified under accrued expenses and other current liabilities) upon initial application of IFRS 15.

# 22. BONDS PAYABLE

	December 31, 2018	December 31, 2017
Domestic unsecured bonds	\$ 91,800,000	\$ 116,100,000
Overseas unsecured bonds	<u>-</u>	34,107,850
	91,800,000	150,207,850
Less: Discounts on bonds payable	_ ·	(6,728)
Less: Current portion	(34,900,000)	(58,401,122)
	\$ 56,900,000	<u>\$ 91,800,000</u>

The major terms of domestic unsecured bonds are as follows:

Issuance	Tranche	Issuance Period	Total Amount	Coupon Rate	Repayment and Interest Payment
100-1	В	September 2011 to September 2018	\$ 7,500,000	1.63%	Bullet repayment; interest payable annually
100-2	A	January 2012 to January 2017	10,000,000	1.29%	The same as above
	В	January 2012 to January 2019	7,000,000	1.46%	The same as above
101-1	A	August 2012 to August 2017	9,900,000	1.28%	The same as above
	В	August 2012 to August 2019	9,000,000	1.40%	The same as above
101-2	A	September 2012 to September 2017	12,700,000	1.28%	The same as above
	В	September 2012 to September 2019	9,000,000	1.39%	The same as above
101-3	-	October 2012 to October 2022	4,400,000	1.53%	The same as above
101-4	A	January 2013 to January 2018	10,600,000	1.23%	The same as above
	В	January 2013 to January 2020	10,000,000	1.35%	The same as above
	C	January 2013 to January 2023	3,000,000	1.49%	The same as above
102-1	A	February 2013 to February 2018	6,200,000	1.23%	The same as above
	В	February 2013 to February 2020	11,600,000	1.38%	The same as above
	C	February 2013 to February 2023	3,600,000	1.50%	The same as above
102-2	A	July 2013 to July 2020	10,200,000	1.50%	The same as above
	В	July 2013 to July 2023	3,500,000	1.70%	The same as above
102-3	A	August 2013 to August 2017	4,000,000	1.34%	The same as above
	В	August 2013 to August 2019	8,500,000	1.52%	The same as above
					(Continued)

Issuance	Tranche	Issuance Period	Total Amount	Coupon Rate	Repayment and Interest Payment
102-4	В	September 2013 to September 2017	\$ 1,500,000	1.45%	Bullet repayment; interest payable annually
102-4	C	September 2013 to March 2019	1,400,000	1.60%	Bullet repayment; interest payable annually (interest for the six months prior to maturity will accrue on the basis of actual days and be repayable at maturity)
	D	September 2013 to March 2021	2,600,000	1.85%	The same as above
	E	September 2013 to March 2023	5,400,000	2.05%	The same as above
	F	September 2013 to September 2023	2,600,000	2.10%	Bullet repayment; interest payable annually (Concluded)

The major terms of overseas unsecured bonds are as follows:

	Total Amount (US\$		Repayment and Interest
<b>Issuance Period</b>	in Thousands)	Coupon Rate	Payment
April 2013 to April 2018	US\$1,150,000	1.625%	Bullet repayment; interest payable semi-annually

## 23. RETIREMENT BENEFIT PLANS

## a. Defined contribution plans

The plan under the R.O.C. Labor Pension Act (the "Act") is deemed a defined contribution plan. Pursuant to the Act, TSMC, Mutual-Pak and VisEra Tech have made monthly contributions equal to 6% of each employee's monthly salary to employees' pension accounts. Furthermore, TSMC North America, TSMC China, TSMC Nanjing, TSMC Europe, TSMC Canada, TSMC Technology and TSMC Solar Europe GmbH also make monthly contributions at certain percentages of the basic salary of their employees. Accordingly, the Company recognized expenses of NT\$2,568,945 thousand and NT\$2,369,940 thousand for the years ended December 31, 2018 and 2017, respectively.

## b. Defined benefit plans

TSMC has defined benefit plans under the R.O.C. Labor Standards Law that provide benefits based on an employee's length of service and average monthly salary for the six-month period prior to retirement. The Company contributes an amount equal to 2% of salaries paid each month to their respective pension funds (the Funds), which are administered by the Labor Pension Fund Supervisory Committee (the Committee) and deposited in the Committee's name in the Bank of Taiwan. Before the end of each year, the Company assesses the balance in the Funds. If the amount of the balance in the Funds is inadequate to pay retirement benefits for employees who conform to retirement requirements in the next year, the Company is required to fund the difference in one appropriation that should be made before the end of March of the next year. The Funds are operated and managed by the government's designated authorities; as such, the Company does not have any right to intervene in the investments of the Funds.

Amounts recognized in respect of these defined benefit plans were as follows:

	Years Ended December 31		
	2018	2017	
Current service cost	\$ 137,758	\$ 145,026	
Net interest expense	144,108	126,525	
Components of defined benefit costs recognized in profit or loss	281,866	271,551	
Remeasurement on the net defined benefit liability:			
Return on plan assets (excluding amounts included in net			
interest expense)	(71,288)	29,290	
Actuarial loss arising from experience adjustments	334,630	483,846	
Actuarial loss (gain) arising from changes in financial			
assumptions	597,820	(258,455)	
Components of defined benefit costs recognized in other		· · · · · · · · · · · · · · · · · · ·	
comprehensive income	861,162	254,681	
Total	<u>\$ 1,143,028</u>	<u>\$ 526,232</u>	

The pension costs of the aforementioned defined benefit plans were recognized in profit or loss by the following categories:

	Years Ended December 31			
	2018	2017		
Cost of revenue	\$ 177,772	\$ 175,357		
Research and development expenses	79,143	75,340		
General and administrative expenses	20,591	16,669		
Marketing expenses	4,360	4,185		
	<u>\$ 281,866</u>	<u>\$ 271,551</u>		

The amounts arising from the defined benefit obligation of the Company were as follows:

	December 31, 2018	December 31, 2017
Present value of defined benefit obligation Fair value of plan assets	\$ 13,662,684 (4,011,279)	\$ 12,774,593 (3,923,889)
Net defined benefit liability	<u>\$ 9,651,405</u>	\$ 8,850,704

Movements in the present value of the defined benefit obligation were as follows:

	Years Ended December 31		
	2018	2017	
Balance, beginning of year	\$ 12,774,593	\$ 12,480,480	
Current service cost	137,758	145,026	
Interest expense	207,804	185,561	
Remeasurement:			
Actuarial loss arising from experience adjustments	334,630	483,846	
Actuarial loss (gain) arising from changes in financial			
assumptions	597,820	(258,455)	
Benefits paid from plan assets	(274,326)	(261,865)	
Benefits paid directly by the Company	(115,595)		
Balance, end of year	<u>\$ 13,662,684</u>	<u>\$ 12,774,593</u>	

Movements in the fair value of the plan assets were as follows:

	Years Ended December 31		
	2018	2017	
Balance, beginning of year	\$ 3,923,889	\$ 3,929,072	
Interest income	63,696	59,036	
Remeasurement:			
Return on plan assets (excluding amounts included in net			
interest expense)	71,288	(29,290)	
Contributions from employer	226,732	226,936	
Benefits paid from plan assets	(274,326)	(261,865)	
Balance, end of year	<u>\$ 4,011,279</u>	\$ 3,923,889	

The fair value of the plan assets by major categories at the end of reporting period was as follows:

	December 31, 2018	December 31, 2017
Cash Equity instruments Debt instruments	\$ 756,126 2,148,040 1,107,113	\$ 707,477 1,993,336 1,223,076
	<u>\$ 4,011,279</u>	<u>\$ 3,923,889</u>

The actuarial valuations of the present value of the defined benefit obligation were carried out by qualified actuaries. The principal assumptions of the actuarial valuation were as follows:

	Measurei	<b>Measurement Date</b>		
	December 31, 2018	December 31, 2017		
Discount rate	1.30%	1.65%		
Future salary increase rate	3.00%	3.00%		

Through the defined benefit plans under the R.O.C. Labor Standards Law, the Company is exposed to the following risks:

- 1) Investment risk: The pension funds are invested in equity and debt securities, bank deposits, etc. The investment is conducted at the discretion of the government's designated authorities or under the mandated management. However, under the R.O.C. Labor Standards Law, the rate of return on assets shall not be less than the average interest rate on a two-year time deposit published by the local banks and the government is responsible for any shortfall in the event that the rate of return is less than the required rate of return.
- 2) Interest risk: A decrease in the government bond interest rate will increase the present value of the defined benefit obligation; however, this will be partially offset by an increase in the return on the debt investments of the plan assets.
  - Assuming a hypothetical decrease in interest rate at the end of the reporting period contributed to a decrease of 0.5% in the discount rate and all other assumptions were held constant, the present value of the defined benefit obligation would increase by NT\$921,750 thousand and NT\$890,116 thousand as of December 31, 2018 and 2017, respectively.
- 3) Salary risk: The present value of the defined benefit obligation is calculated by reference to the future salaries of plan participants. As such, an increase in the salary of the plan participants will increase the present value of the defined benefit obligation.

Assuming the expected salary rate increases by 0.5% at the end of the reporting period and all other assumptions were held constant, the present value of the defined benefit obligation would increase by NT\$901,629 thousand and NT\$873,801 thousand as of December 31, 2018 and 2017, respectively.

The sensitivity analysis presented above may not be representative of the actual change in the defined benefit obligation as it is unlikely that the change in assumptions would occur in isolation of one another as some of the assumptions may be correlated.

Furthermore, in presenting the above sensitivity analysis, the present value of the defined benefit obligation has been calculated using the projected unit credit method at the end of the reporting period, which is the same as that applied in calculating the defined benefit obligation liability.

The Company expects to make contributions of NT\$233,534 thousand to the defined benefit plans in the next year starting from December 31, 2018. The weighted average duration of the defined benefit obligation is 13 years.

#### 24. GUARANTEE DEPOSITS

	December 31, 2018	December 31, 2017
Capacity guarantee Receivables guarantee Others	\$ 9,289,628 653,686 245,731	\$ 13,346,550 2,427,548 306,521
	<u>\$ 10,189,045</u>	<u>\$ 16,080,619</u>
Current portion (classified under accrued expenses and other current liabilities) Noncurrent portion	\$ 6,835,667 3,353,378 \$ 10,189,045	\$ 8,493,829 7,586,790 \$ 16,080,619

Some of guarantee deposits were refunded to customers by offsetting related accounts receivable.

## 25. EQUITY

#### a. Capital stock

2018	2017
8,050,000	28,050,000 \$ 280,500,000
5,930,380	25,930,380 \$ 259,303,805
	8,050,000 0,500,000 5,930,380

A holder of issued common shares with par value of NT\$10 per share is entitled to vote and to receive dividends.

The authorized shares include 500,000 thousand shares allocated for the exercise of employee stock options.

As of December 31, 2018, 1,068,157 thousand ADSs of TSMC were traded on the NYSE. The number of common shares represented by the ADSs was 5,340,787 thousand shares (one ADS represents five common shares).

#### b. Capital surplus

	December 31, 2018	December 31, 2017
Additional paid-in capital	\$ 24,184,939	\$ 24,184,939
From merger	22,804,510	22,804,510
From convertible bonds	8,892,847	8,892,847
From share of changes in equities of subsidiaries	121,473	118,792
From share of changes in equities of associates	282,820	289,240
Donations	29,343	19,208
	\$ 56,315,932	\$ 56,309,536

Under the relevant laws, the capital surplus generated from donations and the excess of the issuance price over the par value of capital stock (including the stock issued for new capital, mergers and convertible bonds) may be used to offset a deficit; in addition, when the Company has no deficit, such capital surplus may be distributed as cash dividends or stock dividends up to a certain percentage of TSMC's paid-in capital. The capital surplus from share of changes in equities of subsidiaries and associates and dividend of a claim extinguished by a prescription may be used to offset a deficit; however, when generated from issuance of restricted shares for employees, such capital surplus may not be used for any purpose.

## c. Retained earnings and dividend policy

TSMC's Articles of Incorporation provide that, when allocating the net profits for each fiscal year, TSMC shall first offset its losses in previous years and then set aside the following items accordingly:

- 1) Legal capital reserve at 10% of the profits left over, until the accumulated legal capital reserve equals TSMC's paid-in capital;
- Special capital reserve in accordance with relevant laws or regulations or as requested by the authorities in charge;
- 3) Any balance left over shall be allocated according to the resolution of the shareholders' meeting.

TSMC's Articles of Incorporation provide the policy about the profit sharing bonus to employees, please refer to Note 33.

TSMC's Articles of Incorporation also provide that profits of TSMC may be distributed by way of cash dividend and/or stock dividend. However, distribution of earnings shall be made preferably by way of cash dividend. Distribution of earnings may also be made by way of stock dividend, provided that the ratio for stock dividend shall not exceed 50% of the total distribution.

Any appropriations of the profits are subject to shareholders' approval in the following year.

The appropriation for legal capital reserve shall be made until the reserve equals the Company's paid-in capital. The reserve may be used to offset a deficit, or be distributed as dividends in cash or stocks for the portion in excess of 25% of the paid-in capital if the Company incurs no loss.

Pursuant to existing regulations, the Company is required to set aside additional special capital reserve equivalent to the net debit balance of the other components of stockholders' equity, such as the accumulated balance of foreign currency translation reserve, unrealized valuation gain or loss from fair value through other comprehensive income financial assets, unrealized valuation gain or loss from available-for-sale financial assets, gain or loss from changes in fair value of hedging instruments in cash flow hedges, etc. For the subsequent decrease in the deduction amount to stockholders' equity, any special reserve appropriated may be reversed to the extent that the net debit balance reverses.

The appropriations of 2017 and 2016 earnings had been approved by TSMC's shareholders in its meetings held on June 5, 2018 and June 8, 2017, respectively. The appropriations and dividends per share were as follows:

	Appropriatio	n of Earnings		Per Share T\$)
	For Fiscal Year 2017	For Fiscal Year 2016	For Fiscal Year 2017	For Fiscal Year 2016
Legal capital reserve Special capital reserve Cash dividends to shareholders	\$ 34,311,148 26,907,527 207,443,044	\$ 33,424,718 	\$8	\$7
	\$ 268,661,719	<u>\$214,937,381</u>		

TSMC's appropriation of earnings for 2018 had been approved in the meeting of the Board of Directors held on February 19, 2019. The appropriation and dividends per share were as follows:

	Appropriation of Earnings	Dividends Per Share (NT\$)	
	For Fiscal Year 2018		cal Year 018
Legal capital reserve Special capital reserve Cash dividends to shareholders	\$ 35,113,088 (11,459,458) _207,443,044	\$	8
	\$ 231,096,674		

The appropriation of earnings for 2018 is to be presented for approval in the TSMC's shareholders' meeting to be held on June 5, 2019 (expected).

## d. Others

Changes in others were as follows:

	Year Ended December 31, 2018				
	Foreign Currency Translation Reserve	Unrealized Gain (Loss) on Financial Assets at FVTOCI	Gain (Loss) on Hedging Instruments	Unearned Stock-Based Compensation	Total
Balance, beginning of year (IFRS 9)	\$ (26,697,680)	\$ (524,915)	\$ 4,226	\$ (10,290)	\$ (27,228,659)
Exchange differences arising on translation of					
foreign operations	14,562,073	-	-	-	14,562,073
Unrealized gain (loss) on financial assets at FVTOCI					
Equity instruments	-	(3,311,621)	-	-	(3,311,621)
Debt instruments	-	(1,858,054)	-	-	(1,858,054)
Cumulative unrealized gain (loss) of equity instruments transferred to retained		1.102.056			1 102 056
earnings due to disposal	-	1,193,056	-	-	1,193,056
Cumulative unrealized gain (loss) of debt instruments transferred to profit or loss due					
to disposal		989,138			989,138
Loss allowance adjustments from debt	-	909,130	-	-	909,130
instruments	_	(1,990)		_	(1,990)
Gain (loss) arising on changes in the fair	_	(1,770)	_	_	(1,770)
value of hedging instruments	_	_	40,975	_	40,975
Transferred to initial carrying amount of			10,775		10,575
hedged items	_	-	(22,162)	-	(22,162)
Share of other comprehensive income (loss)			( , - ,		( , - ,
of associates	93,260	(6,766)	-	-	86,494
Share of unearned stock-based employee	,	( ) ,			,
compensation of associates	-	-	-	8,447	8,447
Income tax effect	<del>_</del>	91,828	562	<u>-</u>	92,390
Balance, end of year	<u>\$ (12,042,347)</u>	<u>\$ (3,429,324)</u>	\$ 23,601	<u>\$ (1,843)</u>	<u>\$ (15,449,913</u> )

	Year Ended December 31, 2017				
	Foreign Currency Translation Reserve	Unrealized Gain/Loss from Available-for- sale Financial Assets	Cash Flow Hedges Reserve	Unearned Stock-Based Employee Compensation	Total
Balance, beginning of year	\$ 1,661,237	\$ 2,641	\$ 105	\$ -	\$ 1,663,983
Exchange differences arising on translation of foreign operations	(28,257,449)	_	-	-	(28,257,449)
Changes in fair value of available-for-sale financial assets	-	(154,680)	-	-	(154,680)
Cumulative (gain)/loss reclassified to profit or loss upon disposal of available-for-sale financial assets		(61,182)	_	_	(61,182)
Gain/(loss) arising on changes in the fair value of hedging instruments	<u>-</u>	(01,102)	99,534	<u>-</u>	99,534
Transferred to initial carrying amount of hedged items	-	-	(94,851)	-	(94,851)
Share of other comprehensive income (loss) of associates	(101,468)	2,121	-	-	(99,347)
Share of unearned stock-based employee compensation of associates	-	- (2.074)	- (5(2)	(10,290)	(10,290)
Income tax effect		(2,974)	(562)	<del></del>	(3,536)
Balance, end of year	<u>\$ (26,697,680</u> )	<u>\$ (214,074)</u>	<u>\$ 4,226</u>	<u>\$ (10,290)</u>	<u>\$ (26,917,818</u> )

The aforementioned other equity includes the changes in other equities of TSMC and TSMC's share of its subsidiaries and associates.

## 26. NET REVENUE

a. Disaggregation of revenue from contracts with customers

Product	Year Ended December 31, 2018
Wafer	\$ 911,296,364
Others	120,177,193
	<u>\$1,031,473,557</u>
Geography	Year Ended December 31, 2018
Taiwan	\$ 78,260,773
United States	632,821,464
China	175,794,228
Europe, the Middle East and Africa	71,068,438
Japan	58,125,879
Others	15,402,775
	\$1,031,473,557

The Company categorized the net revenue mainly based on the countries where the customers are headquartered.

Application Type		Year Ended December 31, 2018
Communication Industrial/Standard Computer Consumer		\$ 578,923,664 234,153,360 144,614,153 73,782,380
Resolution		\$1,031,473,557  Year Ended December 31, 2018
7-nanometer 10-nanometer 16/20-nanometer 28-nanometer 40/45-nanometer 65-nanometer 90-nanometer 0.11/0.13 micron 0.15/0.18 micron 0.25 micron and above Wafer revenue		\$ 81,680,746 96,989,486 210,989,033 178,440,396 101,801,017 76,122,259 36,652,061 20,677,658 81,182,646 26,761,062 \$ 911,296,364
. Contract balances	December 31, 2018	January 1, 2018
Contract liabilities (classified under accrued expenses and other current liabilities)	<u>\$ 4,684,024</u>	<u>\$ 32,434,829</u>

The changes in the contract liability balances primarily result from the timing difference between the satisfaction of performance obligation and the customer's payment.

For the year ended December 31, 2018, the Company recognized NT\$31,769,970 thousand as revenue from the beginning balance of contract liability.

## c. Refund liabilities

b.

Estimated sales returns and other allowances is made and adjusted based on historical experience and the consideration of varying contractual terms, which amounted to NT\$55,405,973 thousand for the year ended December 31, 2018. As of December 31, 2018, the aforementioned refund liabilities amounted to NT\$22,672,634 thousand (classified under accrued expenses and other current liabilities).

# 27. OTHER OPERATING INCOME AND EXPENSES, NET

	Years Ended December 31			
	2018	2017		
Gain (loss) on disposal or retirement of property, plant and				
equipment, net	\$ (1,005,644)	\$ (1,097,908)		
Impairment loss on property, plant and equipment	(423,468)	-		
Others	(672,337)	(267,603)		
	\$ (2,101,449)	\$ (1,365,511)		

## 28. OTHER INCOME

	Years Ended December 31				
	2018	2017			
Interest income					
Bank deposits	\$ 10,310,738	\$ 6,412,823			
Financial assets at FVTPL	382,673	-			
Financial assets at FVTOCI	3,078,604	-			
Financial assets at amortized cost	922,441	-			
Available-for-sale financial assets	· -	2,091,435			
Held-to-maturity financial assets	-	568,552			
Structured product	<u></u> _	391,896			
1	14,694,456	9,464,706			
Dividend income	158,358	145,588			
	\$ 14,852,814	\$ 9,610,294			

## 29. FINANCE COSTS

	Years Ended December 31				
	2018	2017			
Interest expense					
Corporate bonds	\$ 1,633,775	\$ 2,563,544			
Bank loans	1,417,287	766,625			
Others	161	144			
	<u>\$ 3,051,223</u>	\$ 3,330,313			

# **30. OTHER GAINS AND LOSSES, NET**

	Years Ended December 31		
	2018	2017	
Gain (loss) on disposal of financial assets, net Investments in debt instruments at FVTOCI	\$ (989,138)	\$ -	
Available-for-sale financial assets	-	76,986	
Financial assets carried at cost	-	12,809	
Gain from disposal of subsidiaries Net gain (loss) on financial instruments at FVTPL	-	17,343	
Held for trading	-	2,253,651	
Mandatorily measured at FVTPL	(2,293,895)	-	
Designated as at FVTPL	<u>-</u>	131,037	
Loss arising from fair value hedges, net Impairment loss on financial assets	(2,386)	(30,293)	
Financial assets carried at cost	-	(29,603)	
The reversal of expected credit loss of financial assets			
Investments in debt instruments at FVTOCI	1,990	-	
Financial assets at amortized cost	393	-	
Other gains (losses), net	(127,768)	385,428	
	<u>\$ (3,410,804)</u>	<u>\$ 2,817,358</u>	

## 31. INCOME TAX

a. Income tax expense recognized in profit or loss

Income tax expense consisted of the following:

	Years Ended December 31			
	2018	2017		
Current income tax expense				
Current tax expense recognized in the current year	\$ 51,710,319	\$ 57,503,831		
Income tax adjustments on prior years	(989,984)	(896,147)		
Other income tax adjustments	152,884	152,790		
	50,873,219	56,760,474		
Deferred income tax expense (benefit)				
Effect of tax rate changes	(1,474,808)	561,818		
The origination and reversal of temporary differences	(3,072,554)	(4,336,110)		
	(4,547,362)	(3,774,292)		
Income tax expense recognized in profit or loss	\$ 46,325,857	\$ 52,986,182		

A reconciliation of income before income tax and income tax expense recognized in profit or loss was as follows:

	<b>Years Ended December 31</b>			
	2018	2017		
Income before tax	\$ 397,510,263	<u>\$ 396,133,030</u>		
Income tax expense at the statutory rate	\$ 80,865,915	\$ 69,608,602		
Tax effect of adjusting items:				
Nondeductible (deductible) items in determining taxable				
income	2,539,966	(1,410,955)		
Tax-exempt income	(54,543,521)	(16,901,134)		
Additional income tax under the Alternative Minimum Tax Act	21,455,854	-		
Additional income tax on unappropriated earnings	7,420,479	11,835,948		
Effect of tax rate changes on deferred income tax	(1,474,808)	561,818		
The origination and reversal of temporary differences	(3,072,554)	(4,336,110)		
Income tax credits	(6,028,374)	(5,628,630)		
	47,162,957	53,729,539		
Income tax adjustments on prior years	(989,984)	(896,147)		
Other income tax adjustments	152,884	152,790		
Income tax expense recognized in profit or loss	<u>\$ 46,325,857</u>	\$ 52,986,182		

For the year ended December 31, 2017, the Company applied a tax rate of 17% for entities subject to the R.O.C. Income Tax Law. In February 2018, the Income Tax Law in the R.O.C. was amended and, starting from 2018, the corporate income tax rate was adjusted from 17% to 20%. In addition, the tax rate for 2018 unappropriated earnings was reduced from 10% to 5%.

For other jurisdictions, taxes are calculated using the applicable tax rate for each individual jurisdiction.

## b. Income tax expense recognized in other comprehensive income

	<b>Years Ended December 31</b>			
	2018	2017		
Deferred income tax benefit (expense)				
Related to remeasurement of defined benefit obligation	\$ 103,339	\$ 30,562		
Related to unrealized gain/loss on investments in equity				
instruments at FVTOCI	91,828	-		
Related to gain/loss on cash flow hedges	562	(562)		
Related to unrealized gain/loss on available-for-sale financial				
assets	<del>_</del>	(2,974)		
	<u>\$ 195,729</u>	<u>\$ 27,026</u>		

# c. Deferred income tax balance

The analysis of deferred income tax assets and liabilities was as follows:

	December 31, 2018	December 31, 2017
Deferred income tax assets		
Temporary differences Depreciation Refund liability Net defined benefit liability Unrealized loss on inventories Deferred compensation cost Provision for sales returns and allowance Investments in equity instruments at FVTOCI Others	\$ 11,839,221 2,594,003 1,084,874 750,995 271,711 56,191 209,392 \$ 16,806,387	\$ 8,401,266 975,324 629,442 266,521 1,637,713 - 195,197 \$ 12,105,463
Deferred income tax liabilities		
Temporary differences Unrealized exchange gains Available-for-sale financial assets Others	\$ (61,677) (171,607) \$ (233,284)	\$ (169,480) (95,421) (37,304) \$ (302,205)

	Year Ended December 31, 2018						
		Recog	nized in				
	Balance, Beginning of Year	Profit or Loss	Other Comprehensive Income	Effect of Exchange Rate Changes	Balance, End of Year		
Deferred income tax assets							
Temporary differences Depreciation Refund liability Net defined benefit liability Unrealized loss on inventories Deferred compensation cost Investments in equity instruments at FVTOCI Others	\$ 8,401,266 1,637,713 975,324 629,442 266,521	\$ 3,430,421 954,976 6,211 120,644 (4,718) 7,106	\$ - 103,339 - 56,191	\$ 7,534 1,314 - 909 9,908 - 7,089	\$ 11,839,221 2,594,003 1,084,874 750,995 271,711 56,191 209,392		
	<u>\$ 12,105,463</u>	<u>\$ 4,514,640</u>	<u>\$ 159,530</u>	<u>\$ 26,754</u>	<u>\$ 16,806,387</u>		
Deferred income tax liabilities							
Temporary differences Unrealized exchange gains Investments in equity instruments at FVTOCI Others	\$ (169,480) (95,421) (37,304)	\$ 107,803 - (75,081)	\$ - 95,421 (59,222)	\$ - -	\$ (61,677) - (171,607)		
	\$ (302,205)	<u>\$ 32,722</u>	\$ 36,199	<u>\$</u>	\$ (233,284)		

	Year Ended December 31, 2017											
	Recognized in											
		Balance, eginning of Year	Pr	ofit or Loss	Com	Other prehensive Income	Di	Effect of isposal of ibsidiary	Exc	Effect of hange Rate Changes	Bal	ance, End of Year
Deferred income tax assets												
Temporary differences												
Depreciation Provision for sales returns and	\$	4,244,214	\$	4,207,209	\$	-	\$	-	\$	(50,157)	\$	8,401,266
allowance		1,512,061		129,971		_		_		(4,319)		1,637,713
Net defined benefit liability		939,543		5,219		30,562		-		-		975,324
Unrealized loss on inventories		737,247		(105,068)		-		-		(2,737)		629,442
Deferred compensation cost		378,740		(83,124)		-		-		(29,095)		266,521
Others		445,133		(222,429)		-		-		(27,507)		195,197
Operating loss carryforward	_	14,483		<del>-</del>		<u> </u>		(14,483)		<del></del>		
	\$	8,271,421	\$	3,931,778	\$	30,562	\$	(14,483)	\$	(113,815)	\$	12,105,463
Deferred income tax liabilities												
Temporary differences												
Unrealized exchange gains Available-for-sale financial	\$	(48,736)	\$	(120,744)	\$	-	\$	-	\$	-	\$	(169,480)
assets		(92,447)		_		(2,974)		_		_		(95,421)
Others	_			(36,742)		(562)			_		_	(37,304)
	\$	(141,183)	\$	(157,486)	\$	(3,536)	\$		\$		\$	(302,205)

d. The investment operating loss carryforward and deductible temporary differences for which no deferred income tax assets have been recognized

As of December 31, 2018 and 2017, the aggregate deductible temporary differences for which no deferred income tax assets have been recognized amounted to NT\$20,060,918 thousand and NT\$26,536,307 thousand, respectively.

## e. Unused tax-exemption information

As of December 31, 2018, the profits generated from the following projects of TSMC are exempt from income tax for a five-year period:

## **Tax-exemption Period**

Construction and expansion of 2008 by TSMC	2015 to 2019
Construction and expansion of 2009 by TSMC	2018 to 2022

f. The information of unrecognized deferred income tax liabilities associated with investments

As of December 31, 2018 and 2017, the aggregate taxable temporary differences associated with investments in subsidiaries not recognized as deferred income tax liabilities amounted to NT\$112,893,001 thousand and NT\$95,003,344 thousand, respectively.

## g. Income tax examination

The tax authorities have examined income tax returns of TSMC through 2015. All investment tax credit adjustments assessed by the tax authorities have been recognized accordingly.

## **32. EARNINGS PER SHARE**

		Years Ended December 31			
		2018	2017		
Basic EPS Diluted EPS		\$ 13.54 \$ 13.54	\$ 13.23 \$ 13.23		
EPS is computed as follows:					
	Amounts (Numerator)	Number of Shares (Denominator) (In Thousands)	EPS (NT\$)		
Year Ended December 31, 2018					
Basic/Diluted EPS Net income available to common shareholders of the parent  Year Ended December 31, 2017	\$ 351,130,884	25,930,380	<u>\$ 13.54</u>		
Basic/Diluted EPS Net income available to common shareholders of the parent	<u>\$ 343,111,476</u>	25,930,380	<u>\$ 13.23</u>		

# 33. ADDITIONAL INFORMATION OF EXPENSES BY NATURE

		Years Ended December 31	
		2018	2017
a.	Depreciation of property, plant and equipment		
	Recognized in cost of revenue Recognized in operating expenses Recognized in other operating income and expenses	\$ 264,804,741 23,292,299 27,857 \$ 288,124,897	\$ 235,985,189 19,746,263 64,510 \$ 255,795,962
b.	Amortization of intangible assets		
	Recognized in cost of revenue Recognized in operating expenses	\$ 2,073,480 2,347,925	\$ 2,135,521 2,211,215
		<u>\$ 4,421,405</u>	<u>\$ 4,346,736</u>
c.	Research and development costs expensed as incurred	<u>\$ 85,895,569</u>	\$ 80,732,463

			Years Ended December 31			
		2018	2017			
d. Em	ployee benefits expenses					
Pos	st-employment benefits					
	Defined contribution plans	\$ 2,568,945	\$ 2,369,940			
	Defined benefit plans	281,866	271,551			
	•	2,850,811	2,641,491			
Oth	ner employee benefits	105,364,132	101,488,608			
		<u>\$ 108,214,943</u>	<u>\$ 104,130,099</u>			
Em	ployee benefits expense summarized by function					
	Recognized in cost of revenue	\$ 63,597,704	\$ 61,026,107			
	Recognized in operating expenses	44,617,239	43,103,992			
		\$ 108,214,943	\$ 104,130,099			

According to TSMC's Articles of Incorporation, TSMC shall allocate compensation to directors and profit sharing bonus to employees of TSMC not more than 0.3% and not less than 1% of annual profits during the period, respectively.

TSMC accrued profit sharing bonus to employees based on a percentage of net income before income tax, profit sharing bonus to employees and compensation to directors during the period, which amounted to NT\$23,570,040 thousand and NT\$23,019,082 thousand for the years ended December 31, 2018 and 2017, respectively; compensation to directors was expensed based on estimated amount payable. If there is a change in the proposed amounts after the annual consolidated financial statements are authorized for issue, the differences are recorded as a change in accounting estimate.

TSMC's profit sharing bonus to employees and compensation to directors in the amounts of NT\$23,570,040 thousand and NT\$349,272 thousand in cash for 2018, respectively, profit sharing bonus to employees and compensation to directors in the amounts of NT\$23,019,082 thousand and NT\$368,919 thousand in cash for 2017, respectively, and profit sharing bonus to employees and compensation to directors in the amounts of NT\$22,418,339 thousand and NT\$376,432 thousand in cash for 2016, respectively, had been approved by the Board of Directors of TSMC held on February 19, 2019, February 13, 2018 and February 14, 2017, respectively. There is no significant difference between the aforementioned approved amounts and the amounts charged against earnings of 2018, 2017 and 2016, respectively.

The information about the appropriations of TSMC's profit sharing bonus to employees and compensation to directors is available at the Market Observation Post System website.

# 34. CASH FLOW INFORMATION

Reconciliation of liabilities arising from financing activities

	Non-cash changes				
	Balance as of January 1, 2018	Financing Cash Flow	Foreign Exchange Movement	Other Changes (Note)	Balance as of December 31, 2018
Short-term loans Guarantee deposits Bonds payable	\$ 63,766,850 16,080,619 150,201,122	\$ 23,922,975 (279,219) (58,024,900)	\$ 1,064,815 423,545 (382,878)	\$ (6,035,900) 6,656	\$ 88,754,640 10,189,045 91,800,000
Total	<u>\$ 230,048,591</u>	<u>\$ (34,381,144)</u>	\$ 1,105,482	\$ (6,029,244)	<u>\$ 190,743,685</u>

Note: Other changes include amortization of bonds payable and guarantee deposits refunded to customers by offsetting related accounts receivable.

#### 35. CAPITAL MANAGEMENT

The Company requires significant amounts of capital to build and expand its production facilities and acquire additional equipment. In consideration of the industry dynamics, the Company manages its capital in a manner to ensure that it has sufficient and necessary financial resources to fund its working capital needs, capital asset purchases, research and development activities, dividend payments, debt service requirements and other business requirements associated with its existing operations over the next 12 months.

### **36. FINANCIAL INSTRUMENTS**

# a. Categories of financial instruments

	December 31, 2018
Financial assets FVTPL (Note 1) FVTOCI (Note 2) Hedging financial assets Amortized cost (Note 3)	\$ 3,504,590 107,067,490 23,497 745,585,774
Financial liabilities FVTPL (Note 4) Hedging financial liabilities Amortized cost (Note 5)	\$ 856,181,351 \$ 40,825 155,832 318,475,704 \$ 318,672,361

- Note 1: Financial assets mandatorily measured at FVTPL.
- Note 2: Including notes and accounts receivable, net, debt and equity investments.
- Note 3: Including cash and cash equivalents, financial assets at amortized cost, notes and accounts receivable (including related parties), other receivables and refundable deposits.
- Note 4: Held for trading.

Note 5: Including short-term loans, accounts payable (including related parties), payables to contractors and equipment suppliers, accrued expenses and other current liabilities, bonds payable, and guarantee deposits.

	December 31, 2017
Financial assets	
FVTPL (Note 6)	\$ 569,751
Available-for-sale financial assets (Note 7)	98,248,410
Held-to-maturity financial assets	20,821,714
Hedging derivative financial assets	34,394
Loans and receivables (Note 8)	684,416,654
	<u>\$ 804,090,923</u>
Financial liabilities	
FVTPL (Note 6)	\$ 26,709
Hedging derivative financial liabilities	15,562
Amortized cost (Note 9)	340,501,266
	\$ 340,543,537

- Note 6: Including held for trading and designated as at FVTPL.
- Note 7: Including financial assets carried at cost.
- Note 8: Including cash and cash equivalents, notes and accounts receivable (including related parties), other receivables and refundable deposits.
- Note 9: Including short-term loans, accounts payable (including related parties), payables to contractors and equipment suppliers, accrued expenses and other current liabilities, bonds payable and guarantee deposits.

### b. Financial risk management objectives

The Company seeks to ensure sufficient cost-efficient funding readily available when needed. The Company manages its exposure to foreign currency risk, interest rate risk, equity price risk, credit risk and liquidity risk with the objective to reduce the potentially adverse effects the market uncertainties may have on its financial performance.

The plans for material treasury activities are reviewed by Audit Committees and/or Board of Directors in accordance with procedures required by relevant regulations or internal controls. During the implementation of such plans, Corporate Treasury function must comply with certain treasury procedures that provide guiding principles for overall financial risk management and segregation of duties.

#### c. Market risk

The Company is exposed to the financial market risks, primarily changes in foreign currency exchange rates, interest rates and equity investment prices. A portion of these risks is hedged.

### Foreign currency risk

Most of the Company's revenues and expenditures are denominated in foreign currencies. Consequently, the Company is exposed to foreign currency risk. To protect against reductions in value and the volatility of future cash flows caused by changes in foreign exchange rates, the Company uses derivative financial instruments, such as forward exchange contracts and cross currency swaps, and non-derivative financial instruments, such as foreign currency-denominated debt, to partially hedge the Company's existing and certain forecasted currency exposure. These hedges will offset only a portion of, but do not eliminate, the financial impact from movements in foreign currency exchange rates.

The Company's sensitivity analysis of foreign currency risk mainly focuses on the foreign currency monetary items and the derivatives financial instruments at the end of the reporting period. Assuming an unfavorable 10% movement in the levels of foreign exchanges relative to the New Taiwan dollar, the net income for the years ended December 31, 2018 and 2017 would have decreased by NT\$506,369 thousand and NT\$867,910 thousand, respectively, and the other comprehensive income for the years ended December 31, 2018 and 2017 would have decreased by NT\$315,571 thousand and NT\$265,875 thousand, respectively.

#### Interest rate risk

The Company is exposed to interest rate risk primarily related to its outstanding debt and investments in fixed income securities. All of the Company's bonds payable have fixed interest rates and are measured at amortized cost. As such, changes in interest rates would not affect the future cash flows.

The Company classified its investments in fixed income securities as financial assets at FVTPL, financial assets at FVTOCI and financial assets at amortized costs starting from 2018; as available-for-sale and held-to-maturity financial assets in 2017. Because financial assets at amortized costs and held-to-maturity fixed income securities are measured at amortized cost, changes in interest rates would not affect the fair value. On the other hand, financial assets at FVTPL, financial assets at FVTOCI and available-for-sale fixed income securities are exposed to fair value fluctuations caused by changes in interest rates. The Company utilized interest rate futures to partially hedge the interest rate risk on its financial assets at FVTPL and financial assets at FVTOCI and available-for-sale fixed income investments. These hedges may offset only a small portion of the financial impact from movements in interest rates.

Based on a sensitivity analysis performed at the end of the reporting period, an unfavorable movement of hypothetical 1.00% increase in interest rates across all maturities would have resulted in a decrease in net income by NT\$247,761 thousand for the year ended December 31, 2018, and in a decrease in other comprehensive income by NT\$2,449,954 thousand and NT\$2,119,713 thousand for the years ended December 31, 2018 and 2017, respectively.

### Other price risk

The Company is exposed to equity price risk for 2018 and 2017 arising from financial assets at FVTOCI and available-for-sale equity investments, respectively.

Assuming a hypothetical decrease of 5% in prices of the equity investments at the end of the reporting period for the years ended December 31, 2018 and 2017, the other comprehensive income would have decreased by NT\$213,550 thousand and NT\$351,520 thousand, respectively.

#### d. Credit risk management

Credit risk refers to the risk that a counterparty will default on its contractual obligations resulting in financial losses to the Company. The Company is exposed to credit risks from operating activities, primarily trade receivables, and from investing activities, primarily deposits, fixed-income investments and other financial instruments with banks. Credit risk is managed separately for business related and

financial related exposures. As of the end of the reporting period, the Company's maximum credit risk exposure is equal to the carrying amount of financial assets.

# Business related credit risk

The Company's trade receivables are from its customers worldwide. The majority of the Company's outstanding trade receivables are not covered by collaterals or guarantees. While the Company has procedures to monitor and manage credit risk exposure on trade receivables, there is no assurance such procedures will effectively eliminate losses resulting from its credit risk. This risk is heightened during periods when economic conditions worsen.

As of December 31, 2018 and 2017, the Company's ten largest customers accounted for 79% and 70% of accounts receivable, respectively. The Company believes the concentration of credit risk is not material for the remaining accounts receivable.

#### Financial credit risk

The Company mitigates its financial credit risk by selecting counterparties with investment-grade credit ratings and by limiting the exposure to any individual counterparty. The Company regularly monitors and reviews the limit applied to counterparties and adjusts the limit according to market conditions and the credit standing of the counterparties.

The risk management of expected credit loss for financial assets at amortized cost and investments in debt instruments at FVTOCI is as follows:

The Company only invests in debt instruments that are rated as investment grade or higher. The credit rating information is supplied by external rating agencies. The Company assesses whether there has been a significant increase in credit risk since initial recognition by reviewing changes in external credit ratings, financial market conditions and material information of the bond-issuers.

The Company assesses the 12-month expected credit loss and lifetime expected credit loss based on the probability of default and loss given default provided by external credit rating agencies. The current credit risk assessment policies are as follows:

Category	Description	Basis for Recognizing Expected Credit Loss	Expected Credit Loss Ratio
Performing	Credit rating on trade date and valuation date: (1) Within investment grade (2) Between BB+ and BB-	12 months expected credit loss	0-0.1%
Doubtful	Credit rating on trade date and valuation date:  (1) From investment grade to non-investment grade  (2) From BB+~BB- to B+~CCC-	Lifetime expected credit loss-not credit impaired	-
In default	Credit rating CC or below	Lifetime expected credit loss-credit impaired	-
Write-off	There is evidence indicating that the debtor is in severe financial difficulty and the Company has no realistic prospect of recovery	Amount is written off	-

For the year ended December 31, 2018, the expected credit loss decreases NT\$1,040 thousand, mainly attributed to asset allocation adjustment to debt investments of higher credit rating.

# e. Liquidity risk management

The objective of liquidity risk management is to ensure the Company has sufficient liquidity to fund its business operations over the next 12 months. The Company manages its liquidity risk by maintaining adequate cash and cash equivalent, debt investment at FVTPL, financial assets at FVTOCI-current, and financial assets amortized at cost-current.

The table below summarizes the maturity profile of the Company's financial liabilities based on contractual undiscounted payments, including principal and interest.

	Less Than 1 Year	2-3 Years	4-5 Years	5+ Years	Total
December 31, 2018					
Non-derivative financial liabilities					
Short-term loans	\$ 88,810,737	\$ -	\$ -	\$ -	\$ 88,810,737
Accounts payable (including related parties) Payables to contractors and	34,357,432	-	-	-	34,357,432
equipment suppliers Accrued expenses and other current	43,133,659	-	-	-	43,133,659
liabilities Bonds payable Guarantee deposits (including those	50,240,928 36,039,935	35,340,742	22,979,426	-	50,240,928 94,360,103
classified under accrued expenses and other current liabilities)	6,835,667 259,418,358	2,891,663 38,232,405	461,715 23,441,141	<u> </u>	10,189,045 321,091,904
Derivative financial instruments					
Forward exchange contracts Outflows Inflows	49,302,325 (49,393,679) (91,354)				49,302,325 (49,393,679) (91,354)
	<u>\$ 259,327,004</u>	\$ 38,232,405	\$ 23,441,141	<u>\$ -</u>	\$ 321,000,550
<u>December 31, 2017</u>					
Non-derivative financial liabilities					
Short-term loans Accounts payable (including related parties) Payables to contractors and	\$ 63,801,977 30,069,163	\$ -	\$ - -	\$ - -	\$ 63,801,977 30,069,163
equipment suppliers Accrued expenses and other current	55,723,774	-	-	-	55,723,774
liabilities Bonds payable Guarantee deposits (including those classified under accrued expenses	24,659,738 60,176,818	68,378,787	7,777,715	18,203,601	24,659,738 154,536,921
and other current liabilities)	8,493,829 242,925,299	7,503,151 75,881,938	83,639 7,861,354	18,203,601	16,080,619 344,872,192
Derivative financial instruments					
Forward exchange contracts Outflows Inflows	67,393,539 (67,957,919) (564,380)	- 	<u>-</u>		67,393,539 (67,957,919) (564,380)
	<u>\$ 242,360,919</u>	\$ 75,881,938	\$ 7,861,354	<u>\$ 18,203,601</u>	<u>\$ 344,307,812</u>

# f. Fair value of financial instruments

1) Fair value measurements recognized in the consolidated balance sheets

Fair value measurements are grouped into Levels 1 to 3 based on the degree to which the fair value is observable:

- Level 1 fair value measurements are those derived from quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2 fair value measurements are those derived from inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and
- Level 3 fair value measurements are those derived from valuation techniques that include inputs for the asset or liability that are not based on observable market data (unobservable inputs).
- 2) Fair value of financial instruments that are measured at fair value on a recurring basis

# Fair value hierarchy

The following table presents the Company's financial assets and liabilities measured at fair value on a recurring basis:

	December 31, 2018				
-	Level 1	Level 2	Level 3	Total	
Financial assets at FVTPL					
Mandatorily measured at FVTPL Agency mortgage-backed					
securities	\$ -	\$ 3,419,287	\$ -	\$ 3,419,287	
Forward exchange contracts		85,303	<u> </u>	85,303	
	<u>\$ -</u>	\$ 3,504,590	<u>\$</u>	<u>\$ 3,504,590</u>	
Financial assets at FVTOCI					
Investments in debt instruments					
Corporate bonds	\$ -	\$ 40,753,582	\$ -	\$ 40,753,582	
Agency bonds/Agency					
mortgage-backed securities	-	31,288,762	-	31,288,762	
Asset-backed securities	-	15,670,295	-	15,670,295	
Government bonds	11,006,167	145,192	-	11,151,359	
Commercial paper	-	107,590	-	107,590	
Investments in equity instruments Non-publicly traded equity					
investments	-	-	3,910,681	3,910,681	
Publicly traded stocks	590,152	=	-	590,152	
Notes and accounts receivable, net	<del></del>	3,595,069	<del>_</del>	3,595,069	
	<u>\$ 11,596,319</u>	<u>\$ 91,560,490</u>	<u>\$ 3,910,681</u>	<u>\$107,067,490</u>	
Hedging financial assets					
Cash flow hedges					
Forward exchange contracts	<u>\$</u>	<u>\$ 23,497</u>	<u>\$</u>	\$ 23,497 (Continued)	

	December 31, 2018				
	Level 1	Level 2	Level 3	Total	
Financial liabilities at FVTPL					
Held for trading Forward exchange contracts	<u>\$</u>	<u>\$ 40,825</u>	<u>s -</u>	<u>\$ 40,825</u>	
Hedging financial liabilities					
Fair value hedges Interest rate futures contracts Cash flow hedges Forward exchange contracts	\$ 153,891 <u> </u>	\$ - 1,941 \$ 1,941	\$ - <u>-</u> <u>\$</u> -	\$ 153,891	
		Decembe	r 31, 2017		
	Level 1	Level 2	Level 3	Total	
Financial assets at FVTPL					
Held for trading Forward exchange contracts	<u>\$</u> _	<u>\$ 569,751</u>	<u>\$</u>	<u>\$ 569,751</u>	
Available-for-sale financial assets					
Corporate bonds Agency bonds/Agency mortgage-backed securities Asset-backed securities Government bonds Publicly traded stocks Commercial paper	\$ - 7,715,980 2,548,054 - \$ 10,264,034	\$ 40,165,148 29,235,388 13,459,545 101,743 	\$ - - - - - - - - -	\$ 40,165,148 29,235,388 13,459,545 7,817,723 2,548,054 148,295 \$ 93,374,153	
Hedging derivative financial assets					
Fair value hedges Interest rate futures contracts Cash flow hedges Forward exchange contracts	\$ 27,016 	\$ - - 7,378 \$ 7,378	\$ - - <u>\$</u> -	\$ 27,016	
Financial liabilities at FVTPL					
Held for trading Forward exchange contracts	<u>\$</u>	<u>\$ 26,709</u>	<u>\$</u>	\$ 26,709	
Hedging derivative financial liabilities					
Cash flow hedges Forward exchange contracts	<u>s -</u>	<u>\$ 15,562</u>	<u>\$</u>	<u>\$ 15,562</u>	

# Reconciliation of Level 3 fair value measurements of financial assets

The financial assets measured at Level 3 fair value were equity investments classified as financial assets at FVTOCI. Reconciliations for the year ended December 31, 2018 were as follows:

Balance at January 1, 2018	\$ 5,841,384
Additions	212,488
Recognized in other comprehensive income	(2,141,421)
Disposals and proceeds from return of capital of investments	(175,731)
Effect of exchange rate changes	<u>173,961</u>
Balance at December 31, 2018	\$ 3,910,681

# Valuation techniques and assumptions used in Level 2 fair value measurement

The fair values of financial assets and financial liabilities are determined as follows:

- The fair values of corporate bonds, agency bonds, agency mortgage-backed securities, asset-backed securities, and government bonds are determined by quoted market prices provided by third party pricing services.
- Forward exchange contracts are measured using forward exchange rates and the discounted yield curves that are derived from quoted market prices. For investments in commercial paper, the fair values are determined by the present value of future cash flows based on the discounted yield curves that are derived from the quoted market prices.
- The fair value of accounts receivables classified as at FVTOCI are determined by the present value of future cash flows based on the discount rate that reflects the credit risk of counterparties.

# Valuation techniques and assumptions used in Level 3 fair value measurement

The fair values of non-publicly traded equity investments are mainly determined by using the asset approach, income approach and market approach.

To determine the fair value, the Company utilizes the asset approach and takes into account the net asset value measured at the fair value by independent parties. On December 31, 2018, the Company uses unobservable inputs derived from discount for lack of marketability by 10%. When other inputs remain equal, the fair value will decrease by NT\$31,420 thousand if discounts for lack of marketability increase by 1%.

The income approach utilizes discounted cash flows to determine the present value of the expected future economic benefits that will be derived from the investment. On December 31, 2018, the Company uses significant unobservable inputs, which include expected returns, discount rate of 10%, discounts for lack of marketability of 10% and discounts for lack of control of 10%.

For the remaining few investments, the market approach is used to arrive at their fair value, for which the recent financing activities of investees, the market transaction prices of the similar companies and market conditions are considered.

# 3) Fair value of financial instruments that are not measured at fair value

Except as detailed in the following table, the Company considers that the carrying amounts of financial instruments in the consolidated financial statements that are not measured at fair value approximate their fair values.

# Fair value hierarchy

The table below sets out the fair value hierarchy for the Company's assets and liabilities which are not required to measure at fair value:

			December 31, 2018	8	
	Carrying Fair Value				
	Amount	Level 1	Level 2	Level 3	Total
Financial assets					
Financial assets at amortized costs Corporate bonds Commercial paper	\$ 19,511,794 2,294,098 \$ 21,805,892	\$ - - - \$ -	\$ 19,554,553 2,296,188 \$ 21,850,741	\$ - - - \$ -	\$ 19,554,553 2,296,188 \$ 21,850,741
Financial liabilities	<u>\$\psi 21,000,072\$</u>	Ψ	<u>\$\psi\$ 21,030,711</u>	<u>9</u>	<u>\$\pi\$ 21,000,711</u>
Financial liabilities at amortized costs Bonds payable	<u>\$ 91,800,000</u>	<u>\$</u> _	<u>\$ 93,171,255</u>	<u>\$</u> _	<u>\$ 93,171,255</u>
			December 31, 2017	7	
	Carrying		Fair	Value	
	Amount	Level 1	Level 2	Level 3	Total
Financial assets					
Held-to-maturity securities Corporate bonds Structured product	\$ 19,338,764 	\$ - - - <u>\$</u> -	\$ 19,541,419 1,475,350 \$ 21,016,769	\$ - - - \$ -	\$ 19,541,419 1,475,350 \$ 21,016,769
Financial liabilities					
Measured at amortized cost Bonds payable	<u>\$ 150,201,122</u>	<u>\$</u> _	<u>\$ 152,077,728</u>	<u>\$</u>	<u>\$ 152,077,728</u>

# Valuation techniques and assumptions used in Level 2 fair value measurement

The fair value of corporate bonds is determined by quoted market prices provided by third party pricing services. The fair value of structured product is determined by quoted market prices provided by the counterparty.

The fair value of commercial paper is determined by the present value of future cash flows based on the discounted curves that are derived from the quoted market prices.

The fair value of the Company's bonds payable is determined by quoted market prices provided by third party pricing services.

# 37. RELATED PARTY TRANSACTIONS

Intercompany balances and transactions between TSMC and its subsidiaries, which are related parties of TSMC, have been eliminated upon consolidation; therefore those items are not disclosed in this note. The following is a summary of significant transactions between the Company and other related parties:

**Related Party Categories** 

# a. Related party name and categories

**Related Party Name** 

			: ::··································	
	GUC VIS SSMC Xintec Mutual-Pak TSMC Education and Culture For TSMC Charity Foundation	A A A A A A A A A A A A A A A A A A A	Associates Associates Associates Associates Associates Other related parties Other related parties	
b.	Net revenue			
			Years Ended	December 31
			2018	2017
	<u>Item</u>	Related Party Categories		
	Net revenue from sale of goods	Associates Other related parties	\$ 8,980,079 330	\$ 8,495,937 133
			<u>\$ 8,980,409</u>	<u>\$ 8,496,070</u>
	Net revenue from royalties	Associates	<u>\$ 362,259</u>	<u>\$ 482,537</u>
c.	Purchases			
			Years Ended	December 31
			2018	2017
	Related Party Categories			
	Associates		<u>\$ 8,809,533</u>	\$ 9,904,637
d.	Receivables from related parties			
			December 31, 2018	December 31, 2017
	<u>Item</u>	Related Party Name/Categ	ories	
	Receivables from related parties	GUC Xintec	\$ 481,934 102,478	\$ 1,022,892 161,232
			<u>\$ 584,412</u>	\$ 1,184,124 (Continued)

			December 31, 2018	December 31, 2017
	<u>Item</u>	Related Party Name/Categories		
	Other receivables from related parties	SSMC VIS Other Associates	\$ 53,780 10,423 825 \$ 65,028	\$ 83,099 78,141 9,818 \$ 171,058 (Concluded)
e.	Payables to related parties			
			December 31, 2018	December 31, 2017
	<u>Item</u>	Related Party Name/Categories		
	Payables to related parties	Xintec SSMC VIS Other Associates	\$ 649,812 362,564 357,080 7,043 \$ 1,376,499	\$ 817,930 406,959 409,950 21,517 \$ 1,656,356
f.	Others			
		-	Years Ended I	December 31
	<u>Item</u>	Related Party Categories	2010	2017
	Manufacturing expenses	Associates	<u>\$ 2,974,581</u>	\$ 2,196,141
	General and administrative expenses	Other related parties	<u>\$ 120,756</u>	<u>\$ 101,500</u>

The sales prices and payment terms to related parties were not significantly different from those of sales to third parties. For other related party transactions, price and terms were determined in accordance with mutual agreements.

The Company leased factory and office from associates. The lease terms and prices were both determined in accordance with mutual agreements. The rental expenses were paid to associates monthly; the related expenses were both classified under manufacturing expenses.

The Company deferred the disposal gain or loss derived from sales of property, plant and equipment to related parties (transactions with associates), and then recognized such gain or loss over the depreciable lives of the disposed assets.

# g. Compensation of key management personnel

The compensation to directors and other key management personnel for the years ended December 31, 2018 and 2017 were as follows:

	Years Ended	December 31
	2018	2017
Short-term employee benefits Post-employment benefits	\$ 2,004,881 3,383	\$ 2,170,280 3,727
	<u>\$ 2,008,264</u>	\$ 2,174,007

The compensation to directors and other key management personnel were determined by the Compensation Committee of TSMC in accordance with the individual performance and the market trends.

### 38. PLEDGED ASSETS

The Company provided certificate of deposits recorded in other financial assets as collateral mainly for building lease agreements. As of December 31, 2018 and 2017, the aforementioned other financial assets amounted to NT\$124,244 thousand and NT\$165,618 thousand, respectively.

# 39. SIGNIFICANT OPERATING LEASE ARRANGEMENTS

The Company's major significant operating leases are arrangements on several parcels of land, machinery and equipment and office premises.

The Company expensed the lease payments as follows:

	Years Ended	December 31
	2018	2017
Minimum lease payments	<u>\$ 4,243,091</u>	<u>\$ 2,178,054</u>

Future minimum lease payments under the above non-cancellable operating leases are as follows:

	December 31, 2018	December 31, 2017
Not later than 1 year Later than 1 year and not later than 5 years Later than 5 years	\$ 5,824,119 5,834,884 9,190,582	\$ 3,116,209 5,174,729 8,905,848
	<u>\$ 20,849,585</u>	<u>\$ 17,196,786</u>

# 40. SIGNIFICANT CONTINGENT LIABILITIES AND UNRECOGNIZED COMMITMENTS

Significant contingent liabilities and unrecognized commitments of the Company as of the end of the reporting period, excluding those disclosed in other notes, were as follows:

- a. Under a technical cooperation agreement with Industrial Technology Research Institute, the R.O.C. Government or its designee approved by TSMC can use up to 35% of TSMC's capacity provided TSMC's outstanding commitments to its customers are not prejudiced. The term of this agreement is for five years beginning from January 1, 1987 and is automatically renewed for successive periods of five years unless otherwise terminated by either party with one year prior notice. As of December 31, 2018, the R.O.C. Government did not invoke such right.
- b. Under a Shareholders Agreement entered into with Philips and EDB Investments Pte Ltd. on March 30, 1999, the parties formed a joint venture company, SSMC, which is an integrated circuit foundry in Singapore. TSMC's equity interest in SSMC was 32%. Nevertheless, in September 2006, Philips spun-off its semiconductor subsidiary which was renamed as NXP B.V. Further, TSMC and NXP B.V. purchased all the SSMC shares owned by EDB Investments Pte Ltd. pro rata according to the Shareholders Agreement on November 15, 2006. After the purchase, TSMC and NXP B.V. currently own approximately 39% and 61% of the SSMC shares, respectively. TSMC and NXP B.V. are required, in the aggregate, to purchase at least 70% of SSMC's capacity, but TSMC alone is not required to purchase more than 28% of the capacity. If any party defaults on the commitment and the capacity utilization of SSMC falls below a specific percentage of its capacity, the defaulting party is required to compensate SSMC for all related unavoidable costs. There was no default from the aforementioned commitment as of December 31, 2018.
- c. In May 2017, Uri Cohen filed a complaint in the U.S. District Court for the Eastern District of Texas alleging that TSMC, TSMC North America and other companies infringe four U.S. patents. Cohen's case was transferred to and consolidated with the responsive declaratory judgment case for non-infringement of Cohen's asserted patents filed by TSMC and TSMC North America in the U.S. District Court for the Northern District of California. In July 2018, all pending litigations between the parties in the U.S. District Court for the Northern District of California were dismissed.
- d. On September 28, 2017, TSMC was contacted by the European Commission (the "Commission"), which has asked us for information and documents concerning alleged anti-competitive practices in relation to semiconductor sales. We are cooperating with the Commission to provide the requested information and documents. In light of the fact that this proceeding is still in its preliminary stage, it is premature to predict how the case will proceed, the outcome of the proceeding or its impact.
- e. TSMC entered into long-term purchase agreements of material with multiple suppliers. The relative minimum purchase quantity and price are specified in the agreements.
- f. TSMC entered into a long-term purchase agreement of equipment. The relative purchase quantity and price are specified in the agreement.
- g. TSMC entered into long-term energy purchase agreements with multiple suppliers. The relative purchase period, quantity and price are specified in the agreements.
- h. Amounts available under unused letters of credit as of December 31, 2018 and 2017 were NT\$70,702 thousand and NT\$94,909 thousand, respectively.

# 41. SIGNIFICANT LOSSES FROM DISASTERS

The Company experienced a computer virus outbreak on August 3, 2018, which affected a number of computer systems and fab tools, and consequently impacted wafer production in Taiwan. All the impacted tools have been recovered by August 6, 2018. The Company recognized a loss of NT\$2,596,046 thousand related to this incident for the three months ended September 30, 2018, which was included in cost of revenue.

# 42. SIGNIFICANT SUBSEQUENT EVENTS

On January 19, 2019, the Company discovered a wafer contamination issue in a fab in Taiwan caused by a batch of unqualified photoresist materials. After investigation, the Company immediately stopped using the unqualified materials. As of the date the accompanying consolidated financial statements were issued, a preliminary estimated loss of NT\$6,100,000 thousand will be recognized in cost of revenue for the three months ended March 31, 2019.

# 43. EXCHANGE RATE INFORMATION OF FOREIGN-CURRENCY FINANCIAL ASSETS AND LIABILITIES

The following information was summarized according to the foreign currencies other than the functional currency of the Company. The exchange rates disclosed were used to translate the foreign currencies into the functional currency. The significant financial assets and liabilities denominated in foreign currencies were as follows:

	Foreign Currencies (In Thousands)	Exchange Rate (Note 1)	Carrying Amount (In Thousands)
<u>December 31, 2018</u>			
Financial assets			
Monetary items			
USD	\$ 4,618,566	30.740	\$ 141,974,734
USD	343,132	6.866 (Note 2)	10,547,875
EUR	7,561	35.22	266,307
JPY	490,635	0.2783	136,544
Non-monetary items			
HKD	144,567	3.93	568,150
Financial liabilities			
Monetary items			
USD	4,323,763	30.740	132,912,486
EUR	477,776	35.22	16,827,260
JPY	35,084,436	0.2783	9,763,999
			(Continued)

	Foreign Currencies (In Thousands)	Exchange Rate (Note 1)	Carrying Amount (In Thousands)
<u>December 31, 2017</u>			
<u>Financial assets</u>			
Monetary items USD USD EUR JPY	\$ 5,668,611 580,555 236,474 34,335,661	29.659 6.512 (Note 2) 35.45 0.2629	\$ 168,125,342 17,218,674 8,383,015 9,026,845
Financial assets			
Non-monetary items HKD Financial liabilities	285,336	3.80	1,084,276
Monetary items USD EUR JPY	4,048,384 415,819 43,205,838	29.659 35.45 0.2629	120,071,030 14,740,766 11,358,815 (Concluded)

Note 1: Except as otherwise noted, exchange rate represents the number of N.T. dollars for which one foreign currency could be exchanged.

Note 2: The exchange rate represents the number of RMB for which one USD dollars could be exchanged.

Please refer to the consolidated statements of comprehensive income for the total of realized and unrealized foreign exchange gain and loss for the years ended December 31, 2018 and 2017, respectively. Since there were varieties of foreign currency transactions and functional currencies within the subsidiaries of the Company, the Company was unable to disclose foreign exchange gain (loss) towards each foreign currency with significant impact.

# 44. ADDITIONAL DISCLOSURES

Following are the additional disclosures required by the Securities and Futures Bureau for TSMC:

- a. Financings provided: Please see Table 1 attached;
- b. Endorsement/guarantee provided: Please see Table 2 attached;
- c. Marketable securities held (excluding investments in subsidiaries and associates): Please see Table 3 attached;

- d. Marketable securities acquired and disposed of at costs or prices of at least NT\$300 million or 20% of the paid-in capital: Please see Table 4 attached;
- e. Acquisition of individual real estate properties at costs of at least NT\$300 million or 20% of the paid-in capital: Please see Table 5 attached;
- f. Disposal of individual real estate properties at prices of at least NT\$300 million or 20% of the paid-in capital: None;
- g. Total purchases from or sales to related parties of at least NT\$100 million or 20% of the paid-in capital: Please see Table 6 attached;
- h. Receivables from related parties amounting to at least NT\$100 million or 20% of the paid-in capital: Please see Table 7 attached;
- i. Information about the derivative financial instruments transaction: Please see Notes 7 and 13;
- j. Others: The business relationship between the parent and the subsidiaries and significant transactions between them: Please see Table 8 attached;
- k. Names, locations, and related information of investees over which TSMC exercises significant influence (excluding information on investment in mainland China): Please see Table 9 attached;
- 1. Information on investment in mainland China
  - 1) The name of the investee in mainland China, the main businesses and products, its issued capital, method of investment, information on inflow or outflow of capital, percentage of ownership, income (losses) of the investee, share of profits/losses of investee, ending balance, amount received as dividends from the investee, and the limitation on investee: Please see Table 10 attached.
  - 2) Significant direct or indirect transactions with the investee, its prices and terms of payment, unrealized gain or loss, and other related information which is helpful to understand the impact of investment in mainland China on financial reports: Please see Table 8 attached.

## 45. OPERATING SEGMENTS INFORMATION

a. Operating segments, segment revenue and operating results

The Company has only one operating segment, the foundry segment. The foundry segment engages mainly in the manufacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing of masks.

The Company uses the income from operations as the measurement for the basis of performance assessment. The basis for such measurement is the same as that for the preparation of financial statements. Please refer to the consolidated statements of comprehensive income for the related segment revenue and operating results.

# b. Geographic, product and major customers information were as follows:

# 1) Geographic information

	fr	Net Revenue Com External Customers Year Ended	Noncurr	ent Assets
	Γ	December 31 2017	December 31, 2018	December 31, 2017
Taiwan	\$	88,046,147	\$ 1,039,471,321	\$ 1,027,963,202
United States		635,851,720	7,569,797	7,515,835
China		110,201,389	43,574,538	44,204,888
Europe, the Middle East and Africa		69,046,797	8,269	8,123
Japan		60,628,029	13,138	8,534
Others	_	13,673,159	<del>_</del>	<del>_</del>
	\$	977,447,241	\$ 1,090,637,063	\$ 1,079,700,582

The Company categorized the net revenue mainly based on the countries where the customers are headquartered. For geographic information in 2018, please refer to Note 26. Noncurrent assets include property, plant and equipment, intangible assets and other noncurrent assets.

# 2) Product information

	Year Ended December 31
Product	2017
Wafer	\$ 875,461,445
Others	101,985,796
	<u>\$ 977,447,241</u>

For product information in 2018, please refer to Note 26.

# 3) Major customers representing at least 10% of net revenue

	Year	s Ended	December 31	
	2018		2017	
	Amount	%	Amount	%
Customer A	\$ 224,690,695	22	\$ 220,463,127	23

Commencing in 2018, the Company began to break down the net revenue by geography, by product and by customer based on a new method which associates most estimated sales returns and allowances with individual sales transactions, as opposed to the previous method which allocated sales returns and allowances based on the aforementioned gross revenue. The Company believes the new method provides a more relevant breakdown than the previous one. On a comparable basis, the classifications of 2017 have been revised accordingly.

# Faiwan Semiconductor Manufacturing Company Limited and Subsidiaries

FINANCINGS PROVIDED
FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Dinonoina	Company's Total Financing Amount Limits (Note 1 and 2)	\$ 55,586,818	393,577,931
Unonoing I imite	Financing Linns for Each Borrowing Financing Amount Company (Note I and 2)	\$ 55,586,818 \$	393,577,931
Collateral	Value	\$	ı
Co Co	Item	•	•
	Allowance for Bad Debt	\$	ı
	Reason for Financing Allowance for Bad (Note 4) Debt	Operating capital	Operating capital
	Transaction Amounts		1
	Interest Rate Nature for Financing Transaction (Note 4)	1.30%-1.96% The need for short-term and long-term	financing The need for short-term financing
	Interest Rate	5.1-%0£.1	2.53%
	Amount Actually Drawn in (foreign currencies in Thousands)	\$ 30,829,260 (RMB 6,000,000)&	(US\$ 129,000) 3,227,700 (US\$ 105,000)
	Ending Balance (foreign currencies in (for Thousands) (Note 3)	\$ 46,065,560 (RMB 7,000,000)&	(US\$ 700,000) (US\$ 479,000) 46,110,000 46,110,000 (US\$ 1,500,000) (US\$ 1,500,000)
Maximum		Yes \$ 52,859,100 \$ 46,065,560 (RMB 7,000,000)& (RMB 7,000,000)&	(US\$ 700,000) 46,110,000 (US\$ 1,500,000)
	Related Party	Yes	Yes
	Counter-party Financial Statement Related Account Party	TSMC Nanjing Other receivables from related parties	Other receivables from related parties
	Counter-party	TSMC Nanjing	TSMC
	Financing Company	TSMC China	2 TSMC Global
	No.	-	7

The total amount available for lending purpose shall not exceed the net worth of TSMC China. The total amount for lending to a short-term period shall not exceed ten percent (10%) of the net worth of TSMC China. In addition, the total amount lendable to any one borrower shall be no more than the substitution, the substitution, the substitution does not apply to the bese voting shades are below, sowed, directly or indirectly, by TSMC. However, the total amount lendable to any such substitution that the substitution does not apply to the substitution and the substitution are 100% sowed, directly or indirectly, by TSMC, white I are not located in Taiwan, the lending will not be subject to the restriction set forth in the above paragraph of this Article. Notwithstanding the foregoing, the aggregate amount available for lending to such borrowers and the total amount lendable to each of such borrowers still shall not exceed the net worth of TSMC China. Note 1:

The total amount available for lending purpose shall not exceed the net worth of TSMC Global. The total amount for lending for a short-term period shall not exceed the net worth of TSMC Global. The total amount lendable to any one borrowers shall be no mone than thirty percent (10%) of the borrower's net worth. While TSMC, or foreign subsidiaries whose voting shares are 100% owned, directly or indirectly, by TSMC will not be subject to this restriction, their total borrowing amount still shall not exceed the net worth of TSMC Global. Notwithstanding the foregoing, the aggregate amount for lending to Taiwan companies other than TSMC shall not exceed forty percent (40%) of the net worth of TSMC Global. Note 2:

The maximum balance for the period and ending balance represent the amounts approved by the Board of Directors. Note 3: The restriction of the term of each loan for funding not exceeding one year shall not apply to inter-company loans for funding between offshore subsidiaries in which the Company holds, directly or indirectly, 100% of the voting shares. Note 4:

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

ENDORSEMENTS/GUARANTEES PROVIDED
FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	Guarantee Provided to Subsidiaries in Mainland China	No	No
	Guarantee Provided by A Subsidiary	No	oN.
	Guarantee Provided by Parent Company	Yes	Yes
	Maximum Endorsement/ Guarantee Amount Allowable (Note 2)	\$ 419,204,416	419,204,416
Dotion	Amount of Accumulated Endorsement Endorsement Guarantee Guarantee to Net Collateralized by Equity per Properties Latest Financial Statements	1	0.15%
	Amount of Endorsement/ Guarantee Collateralized by Properties	·	1
	mount Actually Drawn (USS in Thousands)	· •	2,557,977 (US\$ 83,213)
	Ending Balance (US\$ in Thousands) (Note 3)	₩	(US\$ 83,213) (US\$ 83,213)
	Maximum Balance for the Period (USS in Thousands) (Note 3)	419,204,416 \$ 35,351,000	(US\$ 83,213)
Limits on	Endorsement/ Guarantee Amount Provided to Each Guaranteed Party (Notes 1 and 2)	\$ 419,204,416	419,204,416 2,557 (US\$ 83
eed Party	Nature of Relationship	Subsidiary	Subsidiary
Guaranteed Party	Name	TSMC Global Subsidiary	TSMC North America
	No. Guarantee Provider	0 TSMC	
	No. C	1 0	

Note 1: The total amount of the guarantee provided by TSMC to any individual entity shall not exceed ten percent (10%) of TSMC's net worth, or the net worth of such entity. However, subsidiaries whose voting shares are 100% owned, directly or indirectly, by TSMC are not subject to the above restrictions after the approval of the Board of Directors.

Note 2: The total amount of guarantee shall not exceed twenty-five percent (25%) of TSMC's net worth.

Note 3: The maximum balance for the period and ending balance represent the amounts approved by the Board of Directors.

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

MARKETABLE SECURITIES HELD
DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Held Company Name	Marketable Securities Type and Name	3			Carrying Value			T
		Kelationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	(Foreign Currencies in Thousands)	cies Percentage of Ownership (%)	(Foreign Currencies in Thousands)	es Note
	Commercial paper Taiwan Power Company CPC Corporation, Taiwan		Financial assets at amortized cost	180	\$ 1,795,261 498,837	N/A N/A	\$ 1,797,107	
	Non-publicly traded equity investments United Industrial Gases Co., Ltd.		Financial assets at fair value through other	21,230	493,225	10	493,225	
	Shin-Eisu Handotai Taiwan Co., Ltd. Global Investment Holding Inc.		comprehensive income	10,500	379,176 78,430		379,176 78,430	
~ ~	W.K. Technology Fund IV Crimson Asia Capital Horizon Ventures Fund			908	5,747 4,554 2,477	12 12	5,747 4,554 2,477	
,	Publicly traded stocks Semiconductor Manufacturing International Corporation		Financial assets at fair value through other comprehensive income	21,105	568,150		568,150	
TSMC Partners	Non-publicly traded equity investments Shanghai Walden Venture Capital Enterprise		Financial assets at fair value through other	,	US\$ 8,904	9	US\$ 8,904	
	China Walden Venture Investments II, L.P. China Walden Venture Investments III 1. P		comprehensive income " "		US\$ 8,175	9 4	US\$ 8,175 US\$ 1,486	
	Tela Innovations  Mcube Inc.		: " "	10,440 6,333				
	Sonics, Inc.	•	"	637		6		
TSMC Global	Corporate bond Bank of America Corp	•	Financial assets at fair value through other		US\$ 44,755	N/A	US\$ 44,755	
	JPMorgan Chase & Co Morgan Stanlay				US\$ 44,291		US\$ 44,291	
	Goldman Sachs Group Inc/The	1	: 1	•				
	Citigroup Inc	1	"	'				
	CVS Health Corp AT&T Inc		= =		US\$ 27,238	A A X	US\$ 27,238 US\$ 23,123	
	Comcast Corp	ı	"	•				
	Verizon Communications Inc HSBC Holdings DI C		"		US\$ 15,927		US\$ 15,927	
	BAT Capital Corp		: 1					
	Apple Inc	1	"	•				
-	Daimler Finance North America LLC	•	"	1				
	PINC Bank INA Nordea Bank Abb				US\$ 12,203	¢ ¢ ž	US\$ 12,203 US\$ 11,704	
	AbbVie Inc	•	"	,				

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies	y Value urrencies	Percentage of	Fair (Foreign	Fair Value (Foreign Currencies	Note
				(6)	in Thousands)	sands)	(a) d	in Tho	in Thousands)	
TSMC Global	United Technologies Corp		Financial assets at fair value through other	,	\$SO	11,159	N/A	\$SO	11,159	
	A merican International Groum Inc	,	comprehensive income	,	3511	10 737	<b>A</b> /Z	3511	10 737	
	Ford Motor Credit Co LLC				3511	10,737	C/N	\$511	10,737	
	Credit Suisse A G/New York NY		: =	•	8811	10.096	Y Z	SSI	10.096	
	Sumitomo Mitsui Financial Group Inc	,	: "	•	SSO	10,008	V/Z	SSO	10.008	
	Mitsubishi UFJ Financial Group Inc		"	'	SSO	9.547	N/A	SSO	9.547	
	Duke Energy Corp	•	"	•	SSO.	9,228	N/A	\$SO	9,228	
	Macquarie Group Ltd	•	"	•	\$SO	8,970	N/A	\$SO	8,970	
	Analog Devices Inc	•	"	•	SSD	8.841	N/A	SSO	8.841	
	ABN AMRO Bank NV	•	"	•	SSO	8.652	N/A	SSO	8.652	
	ERAC USA Finance LLC	•	"	'	\$SO	8,601	N/A	\$SO	8,601	
	Wells Fargo & Co	•	"	'	SSO	8,495	N/A	\$SO	8,495	
	Tencent Holdings Ltd	•	"	•	\$SO	8,089	N/A	\$SO	8,089	
	Intercontinental Exchange Inc	•	"	•	SSO	7,850	N/A	\$SO	7,850	
	Celgene Corp	•	"	•	SSO	7,726	N/A	\$SO	7,726	
	American Express Credit Corp	•	"	'	SSO	7,718	N/A	\$SO	7,718	
	Huntington National Bank/The	•	"	'	\$SO	7,717	N/A	\$SO	7,717	
	Wells Fargo Bank NA		"	•	\$SO	7,621	N/A	\$SO	7,621	
	Siemens Financieringsmaatschappij NV		"	•	\$SO	7,517	N/A	\$SO	7,517	
	Cardinal Health Inc		"	'	\$SO	7,484	N/A	\$SO	7,484	
	Citizens Bank NA/Providence RI		"	•	\$SO	7,469	N/A	\$SO	7,469	
	Cooperatieve Rabobank UA/NY	•	"	•	\$SO	7,462	N/A	\$SO	7,462	
	QUALCOMM Inc	•	"	'	\$SO	7,432	N/A	\$SO	7,432	
	Reliance Standard Life Global Funding II		"	•	\$SO	7,387	N/A	\$SO	7,387	
	UBS Group Funding Switzerland AG		"	•	\$SO	7,367	N/A	\$SO	7,367	
	Hewlett Packard Enterprise Co		"	•	\$SO	7,327	N/A	\$SO	7,327	
	ANZ New Zealand Int'l Ltd/London		"	•	\$SO	7,270	N/A	\$SO	7,270	
	Microsoft Corp		"	•	\$SO	7,152	N/A	\$SO	7,152	
	Deutsche Telekom International Finance BV		"	•	\$SO	7,110	N/A	\$SO	7,110	
	African Development Bank		"	•	\$SO	7,097	N/A	\$SO	7,097	
	Svenska Handelsbanken AB		"	•	SSO	7,081	N/A	SSO	7,081	
	General Dynamics Corp	•	"	•	SSO	7,039	A/A	SSO.	7,039	
	Welltower Inc	•	"	'	SSO	6,995	N/A	\$20	6,995	
	Banco Santander SA			•	\$50	706,90	N/A	\$20	6,907	
	Dank of New Tolk Mellon Colp/ the		· ·	'	931	706,0	N/A	9511	0,907	
	Toyota Motol Cledit Cotp Mizuho Financial Group Inc				881	6 783	K/N N/A	\$S.11	6 783	
	BB&T Corn	,	: =	•	SSII	6 703	V/N	SSII	6 703	
	Hyundai Capital America	•	"	•	SSO	6,644	N/A	\$SO	6,644	
	Anheuser-Busch InBev Finance Inc		"	'	\$SO	6,637	N/A	\$SO	6,637	
	BP Capital Markets PLC		"	•	\$SO	6,589	N/A	\$SO	6,589	
	Southern Co/The		"	•	\$SO	6,477	N/A	\$SO	6,477	
	Westpac Banking Corp		"	•	\$SO	6,474	N/A	\$SO	6,474	
	Sun Trust Bank/Atlanta GA		"	•	SSO	6,467	N/A	\$SO	6,467	
	Tyson Foods Inc		"	'	SO	6,213	N/A	\$SO	6,213	
	Dominion Energy Inc		"	•	SSO	6,187	N/A	\$SO	6,187	
	Air Lease Corp	1	"	•	SSO	6,161	<b>V</b> /V	\$SO	6,161	
	21st Century Fox America Inc	1	"	•	SSO	6,152	N/A	SSO	6,152	
	Keybank NA/Cleveland OH	•	"	•	\$20	0,049	N/A	\$50	6,049	
	Film Inita Bancorp	•	"	•	680	0,045	N/A	es o	0,043	
										(Continued)
										(communed)

						Decembe	December 31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carry (Foreign in Th	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair (Foreign in Tho	Fair Value (Foreign Currencies in Thousands)	Note
TSMC Global	Northrop Grumman Corp	•	Financial assets at fair value through other		\$SO	6,036	N/A	\$SO	6,036	
	KeyCorp	1		•	\$SO	5,806	N/A	\$SO	5,806	
	SMBC Aviation Capital Finance DAC	•	"	•	\$SO	5,806	N/A	\$SO	5,806	
	Santander UK Group Holdings PLC		"	•	\$SO	5,782	N/A	\$SO	5,782	
	UBS AG/London		"	•	\$SO	5,772	V/A	SO	5,772	
	DowDuPont Inc	•	"		\$SO	5,757	A/A	SSO	5,757	
	BPCE SA	•	"		SSO.	5,709	Ψ/X	SSO	5,709	
	AXA Equitable Holdings Inc	•	"		SSO.	5,662	Ψ/X	SSO	5,662	
	Aviation Capital Group LLC	•	" :	•	SSO	5,657	Ϋ́Ν,	\$SO	5,657	
	Br Capital Markets America Inc			•	\$20	5,610	V/A	\$20	5,610	
	Reckitt Benckiser Treasury Services P.L.	•	# · ·	•	\$50 \$511	2,011	A/A	600	5,611	
	Enterprise Products Operating LLC Sentender LIK DI			•	820	5,568	4/N	\$20	5,568	
	Santanuel UNIEC				1166	2,500	N/N	9911	5,500	
	Oracle Corp Denske Truck Leasing Co Ln / DTI Finance Com				\$20	5,399	V V V	880	5,300	
	1 Clistic fluck Leasing CO Lp / 1 LL Finance Corp.	•			3511	5 350	V/N	3511	5 350	
	Carried One NA				3511	5 305	V/N	3511	5,305	
	Western Union Co/The	, ,			\$50	5.218	K / Z	381	5.218	
	International Bank for Reconstruction & Develonment	,		•	SSII	5 186	. ×	SSII	5 186	
	Somno International Holdings Ltd	,	: *	•	SSII	5 092	Z Z	SSII	5 092	
	Tackson National Life Global Funding	,		•	SSII	5 069	N/A	SSII	5 069	
	Manufacturers & Traders Trust Co	•	: "		\$SO	5,049	A/N	\$SO	5,049	
	Sun Trust Banks Inc	•	"	•	\$SO	5,044	N/A	SSO	5.044	
	Toronto-Dominion Bank/The	•	"		\$SO	5,000	N/A	SSO O	5,000	
	UBS AG/Stamford CT	•	"		\$SO	4,972	N/A	\$SO	4,972	
	Cigna Holding Co	,	-	•	SSO	4.917	A/N	SSO	4,917	
	Marriott International Inc/MD	•	" "		\$SO	4,799	N/A	SSO OS	4,799	
	Cox Communications Inc	•	"	•	\$SO	4,791	N/A	\$SO	4,791	
	Ryder System Inc	•	"		\$SO	4,778	N/A	\$SO	4,778	
	NextEra Energy Capital Holdings Inc	•	"	•	\$SO	4,706	N/A	\$SO	4,706	
	US Bank NA/Cincinnati OH	•	"	•	\$SO	4,644	N/A	\$SO	4,644	
	Five Comers Funding Trust	•	"	•	\$SO	4,624	N/A	\$SO	4,624	
	Credit Suisse Group Funding Guernsey Ltd		"		\$SO	4,564	N/A	\$SO	4,564	
	American Express Co	•	"	•	\$SO	4,547	N/A	SSO.	4,547	
	BNP Paribas SA	•	"	•	\$SO	4,530	V/A	SO	4,530	
	Amgen Inc	•	" :	•	SSO	4,526	K/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N	\$SO	4,526	
	New Vork I ife Global Funding	, ,			\$50	4,502	€/N	\$511	4,502	
	Barclays PLC	1	: "	•	\$SO	4,216	A/N	\$SO	4.216	
	Credit Agricole SA/London	•	"	•	\$SO	4,118	N/A	\$SO	4,118	
	Vodafone Group PLC		"	•	\$SO	4,040	N/A	\$SO	4,040	
	Fifth Third Bank/Cincinnati OH		"		\$SO	4,031	N/A	\$SO	4,031	
	Banque Federative du Credit Mutuel SA	•	"	•	\$SO	4,028	N/A	\$SO	4,028	
	Exelon Generation Co LLC	•	"	•	\$SO	3,969	N/A	\$SO	3,969	
	European Investment Bank	•	"	•	\$SO	3,903	N/A	\$SO	3,903	
	Bank of Nova Scotia/The		"	•	\$SO	3,862	N/A	\$SO	3,862	
	Air Liquide Finance SA	,	"		\$SO	3,827	V/A	SSO	3,827	
	Edison International	1	"		SSO	3,762	<b>Y</b> / <b>X</b>	SSO	3,762	
	Alimentation Couche-Lard Inc	•	"		SSO	3,656	e s	SSO LISE	3,656	
	Macquane Bank Ltd			•	820	5,045	N/A	200	5,045	
										(Continued)

						December 31, 2018	31, 2018		_	
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryi (Foreign	Carrying Value (Foreign Currencies	Percentage of Ownership (%)	Fair (Foreign	Fair Value (Foreign Currencies	Note
				,	u I I	in Inousands)		u I u	in I nousands)	
TSMC Global	Bayer US Finance II LLC		Financial assets at fair value through other	1	\$SO	3,638	N/A	\$SO	3,638	
	Barclays Bank PLC	•	"	•	\$SO	3,621	N/A	SSO O	3,621	
	Asian Development Bank		"	•	\$SO	3,594	N/A	\$SO	3,594	
	Canadian Imperial Bank of Commerce		"	•	\$SO	3,586	N/A	\$SO	3,586	
	Branch Banking & Trust Co		"	•	\$SO	3,489	N/A	\$SO	3,489	
	Royal Bank of Canada		"	•	\$SO	3,484	N/A	\$SO	3,484	
	Keurig Dr Pepper Inc	1	"	•	\$SO	3,480	N/A	\$SO	3,480	
	Capital One Financial Corp		"	•	\$SO	3,426	N/A	\$SO	3,426	
	BMW US Capital LLC		"	•	\$SO	3,406	N/A	\$SO	3,406	
	Enel Finance International NV	•	"	•	\$SO	3,385	N/A	\$SO	3,385	
	Mondelez International Holdings Netherlands BV		"	•	\$SO	3,382	N/A	\$SO	3,382	
	LyondellBasell Industries NV		"	•	\$SO	3,366	N/A	\$SO	3,366	
	Lloyds Banking Group PLC	•	"	•	\$SO	3,222	N/A	\$SO	3,222	
	Inter-American Development Bank	•	"	•	\$SO	3,118	N/A	\$SO	3,118	
	Digital Realty Trust LP	•	"	•	\$SO	3,102	N/A	\$SO	3,102	
	Bank of Montreal	•	"		\$SO	3,086	N/A	\$SO	3,086	
	Walgreens Boots Alliance Inc	,	"	•	SSO	3,075	N/A	SSO	3.075	
	Skandinaviska Enskilda Banken AB		"		SSO.	3,058	N/A	SSO.	3,058	
	Schlumberger Holdings Corp	•	"	•	\$SO	3,019	N/A	\$SO	3,019	
	State Street Corp	•	"	•	SSO	3,007	A/N	SSO	3,007	
	Eversource Energy	•	"	•	SSO	2,915	A/N	SSO	2,915	
	Anthem Inc	,	"	•	\$SO	2,843	N/A	SSO	2,843	
	Charles Schwab Com/The	,	"	•	SSO	2,793	N/A	SSO	2,793	
	National Australia Bank Ltd/New York	•	"	•	\$SO	2,741	N/A	\$SO	2,741	
	Express Scripts Holding Co	•	"	•	\$SO	2,727	N/A	\$SO	2,727	
	Shell International Finance BV	•	"		SSO.	2,718	N/A	\$SO	2,718	
	ING Groep NV		"	•	\$SO	2,664	N/A	\$SO	2,664	
	Nestle Holdings Inc		"	•	\$SO	2,611	N/A	\$SO	2,611	
	McCormick & Co Inc/MD		"	•	\$SO	2,595	N/A	\$SO	2,595	
	PartnerRe Finance B LLC		"		\$SO	2,568	N/A	\$SO	2,568	
	Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC / Sprint		"	•	\$SO	2,502	N/A	\$SO	2,502	
	Spectrum Co III LLC		:		1100	103.0	4717	1100	103.0	
	Berksnire Hatnaway Energy Co		"	•	\$20 \$21	2,501	A/N	\$20	2,501	
	WK Berkley Coff Date Air Line 2007 1 Class A Bass Through Throat		" :	•	\$20	7,484	N/A	\$20	2,484	
	Detta Air Lines 2007-1 Class A Fass Inrough Trust		"	•	\$50 \$51	2,483	N/A	600	2,483	
	Vantas Bashri I D / Vantas Canital Com		, :		660	2,407	A'N	9511	2,482	
	Nisource Inc		: 1		SSI	2,377	A/N	SSI	2,377	
	DXC Technology Co		"	•	\$SO	2,345	N/A	\$SO	2,345	
	EI du Pont de Nemours & Co	•	"	•	\$SO	2,326	N/A	\$SO	2,326	
	Xylem Inc/NY		"	•	\$SO	2,319	N/A	\$SO	2,319	
	MUFG Bank Ltd		"	•	\$SO	2,296	N/A	\$SO	2,296	
	NBCUniversal Media LLC		"	•	\$SO	2,252	N/A	\$SO	2,252	
	Lloyds Bank PLC		"	_	\$SO	2,219	N/A	\$SO	2,219	
	Cintas Corp No 2		"	•	\$SO	2,165	N/A	\$SO	2,165	
	Sumitomo Mitsui Banking Corp		"	•	SSO	2,164	N/A	\$SO	2,164	
	Gilead Sciences Inc		"	•	SSO	2,101	N/A	\$SO	2,101	
	ProAssurance Corp		11	•	SSO	2,094	V/A	SSO	2,094	
	HCF Inc		" :	•	\$20	2,039	N/A	\$20	2,039	
	vorkswagen Group of America Finance LLC		"	•	ŝ	7,074	A/A	es o	7,074	
										(Continued)
										(comman)

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies	g Value Jurrencies	Percentage of Ownership (%)	Fair Value (Foreign Currence in Thousands)	Fair Value (Foreign Currencies	Note
TSMC Global	EOG Resources Inc		Financial assets at fair value through other	,	\$SO	2,003	N/A	\$SO	2,003	
	Roche Holdings Inc	,	comprehensive income	•	8511	1 999	A/N	SSII	1 999	
	British Telecommunications PLC	,	: =	•	SSO	1.997	A/N	SSO	1.997	
	Aetna Inc	•	"	'	SSO.	1.997	N/A	SSO.	1,997	
	Realty Income Corp		"	•	\$SO	1,959	N/A	\$SO	1,959	
	Caterpillar Financial Services Corp	•	"	'	\$SO	1,938	N/A	\$SO	1,938	
	American Airlines 2013-2 Class A Pass Through Trust	•	"	•	\$SO	1,925	N/A	\$SO	1,925	
	Huntington Bancshares Inc/OH	1	"	•	\$SO	1,912	N/A	\$SO	1,912	
	Duke Realty LP		"	•	\$SO	1,895	N/A	\$SO	1,895	
	Dow Chemical Co/The	•	"	•	\$SO	1,881	N/A	\$SO	1,881	
	Societe Generale SA		"	•	\$SO	1,819	N/A	\$SO	1,819	
	General Mills Inc		"	'	\$SO	1,818	N/A	\$SO	1,818	
	Simon Property Group LP		"	•	SSO.	1,781	N/A	SSO	1,781	
	Visa Inc	1	"	•	SSO	1,755	Ψ/N,	SSO	1,755	
	UnitedHealth Group Inc	•	"	•	SSO TES	1,752	N/A	SSO 1	1,732	
	Westkock KK I Co	•	"		SSO I	1,/46	N/A	\$20	1,/46	
	Brambles USA Inc	•	"	'	SSO	1,740	Y/X	SSO	1,740	
	Page Power LLC	•		•	980	1,730	N/A	600	1,730	
	Dominion Energy Gas Holdings LLC	1	"	•	SSO	1,726	A/N	SSO	1,726	
	Mickesson Corp		"	•	\$20	1,/0/	N/A	\$50 128	1,/0/	
	Danske Bank A/S	•	"	'	SSO.	1,68/	N/A	\$\$O	1,68/	
	Standard Chartered PLC	•	#	•	SSO TEST	1,680	N/A	SSO	1,680	
	Wisconsin Public Service Corp	•	"	'	\$20	8/9/1	N/A	880	1,6/8	
	Regions Financial Corp		" :	•	\$20	1,658	N/A	\$20	1,658	
	Amazon com inc			•	660	1,381	N/A	\$50 1168	1,561	
	Tincipal Life Global Funding II	•		'	951	1,304	¥/N/	9511	1,564	
	General Flectric Co				\$S11	1 552	V V/N	351	1,551	
	American Flectric Power Co Inc				\$S11	1,526	V V	3511	1,526	
	Weverhaenser Co	,	: =	•	SSI	1 537	V V	SSII	1,537	
	Lincoln National Com	,	: =	•	\$S1	1,536	V/N	SSII	1.536	
	AIG Global Funding	•		•	SSD	1.491	Y X	SSO	1,491	
	Harley-Davidson Financial Services Inc	•	"	'	\$SO	1,490	N/A	SSO.	1,490	
	Compass Bank		"	•	\$SO	1,483	N/A	\$SO	1,483	
	O'Reilly Automotive Inc	•	"	'	\$SO	1,470	N/A	\$SO	1,470	
	John Deere Capital Corp	•	"	•	\$SO	1,470	N/A	\$SO	1,470	
	Nissan Motor Acceptance Corp		"	•	\$SO	1,466	N/A	\$SO	1,466	
	Guardian Life Global Funding	ı	"	•	\$SO	1,459	Ψ/X	\$SO	1,459	
	Figury 1nc			•	680 178	1,457	V/N	880	1,45/	
	FISCIVILIC Oesterreichische Kontrollbank AG	• '			3511	144	A/N	351	1,43	
	TransCanada Pinel ines 1td				SSI	1 436	V V	SSI	1,441	
	HSBC Bank PLC	,	: =	•	SSI	1 434	V/N	SSII	1,130	
	Eastman Chemical Co	•	: "	,	\$SO	1,433	N/A	\$SO	1,433	
	CBS Corp		"	•	\$SO	1,420	N/A	\$SO	1,420	
	Takeda Pharmaceutical Co Ltd	•	"	'	\$SO	1,412	N/A	\$SO	1,412	
	IBM Credit LLC	•	"	•	\$SO	1,407	N/A	\$SO	1,407	
	Monongahela Power Co		"	•	SSO	1,387	N/A	SSO	1,387	
	Cboe Global Markets Inc	•	"	•	SSO	1,368	V/A	nss N	1,368	
	l exas Eastern Transmission LP	•	"	1	SSO	1,363	N/A	\$\$O	1,363	
										(Continued)

Public company Name   Automative Script III   Exemption   Controlled							December 31, 2018	31, 2018		_	
Compatibility   Compatibilit	Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryir (Foreign (in Tho	ig Value Currencies usands)	Percentage of Ownership (%)	Fair (Foreign ( in Tho	Value Currencies usands)	Note
7. (15) 131 N.A. (15) 132 N.A. (15) 131 N.A. (15) 132 N.A.	TSMC Global	Georgia-Pacific LLC	•	Financial assets at fair value through other	,	\$SO	1,346	N/A	\$SO	1,346	
W. C.		Kreditanstalt fuer Wiederaufbau	•	"	•	\$SO	1,331	N/A	\$SO	1,331	
7.		Rockwell Collins Inc	•	"	•	\$SO	1,321	N/A	\$SO	1,321	
77         108         1236         NAA         108           108         1236         NAA         108         11           108         1236         NAA         108         108           108         1236		GATX Com	•	"	'	\$SO	1,265	N/A	SSO	1,265	
VY		Entergy Arkansas LLC	,	, ii	•	\$SO	1,262	N/A	\$SO	1,262	
W. (18) 1236 N/A (18) 1237 N/A (18) 1238 N/A		CNA Financial Corp	•	n n	•	\$SO	1,249	N/A	SSO	1,249	
VA (1997)		Entergy Corp	,	"	•	\$SO	1,226	N/A	\$SO	1,226	
V. (18) 1,100 N/A (18		CenterPoint Energy Inc	•	"	•	\$SO	1,224	N/A	\$SO	1,224	
VY		Consolidated Edison Inc		"	•	\$SO	1,203	N/A	SSO.	1,203	
VY		Glencore Funding LLC		"	•	\$SO	1,190	N/A	NS\$	1,190	
VY		GlaxoSmithKline Capital PLC		"	•	\$SO	1,182	N/A	\$SO	1,182	
VY		Regions Bank/Birmingham AL	,	"	•	OSS	1.157	N/A	nss	1.157	
VY		Magellan Midstream Partners LP	,	"	•	SSO	1.149	A/X	NS\$	1.149	
VY         1		Woolworths Group Ltd	,	"	•	SSO	1.099	A/N	SSII	1.099	
188   1886   NA   1885   NA   1885   1886   NA		Commonwealth Bank of Australia/New York NY	,		•	SSII	1 094	A/N	SSII	1 094	
1.00		Interpublic Group of Cos Inc/The	,	: "	'	SSI	1.086	A/X	SSI	1.086	
1,000, 1,000,		Swedhank AB	,	"	•	\$511	1 061	A/N	\$511	1 061	
1.00		Reinsurance Group of America Inc	,		'	SSI	1.037	. ∀ Z	SSO	1.037	
1,000		Onest Diagnostics Inc				3511	1 026	V/N	3511	1 026	
1,000, 1,000,		Pridential Financial Inc	•		,	351	1 026	V/N	3511	1,026	
1,000		Clangara Einanga Canada I td	•		•	931	1,020	V (V)	9511	1,020	
10		Giencore rimance Canada Lud	•	"	•	660	1,022	A/N	600	1,022	
1,014   N/A   USS   1,01		Amene Global Funding	•	"	•	\$60	070,1	A/N	600	1,020	
1,000, 1,000,		Commonwealin Edison Co	•	"	•	\$20	1,014	N/A	620	1,014	
1014   NA   USS   1.014   NA		DNB Bank ASA	•	"		SSO OS	1,014	V/V	28	1,014	
100		Scentre Group Trust 1 / Scentre Group Trust 2	•	"	•	SSO	1,014	N/A	SSO	1,014	
1,000 N/A USS		Mitsubishi UFJ Trust & Banking Corp	•	"	•	SSO	1,013	N/A	SSO.	1,013	
108   108		DTE Energy Co	•	"	•	SSO	1,010	A/N	SSO	1,010	
- USS 1,003 NA USS 1,001 - USS 1,001 NA USS 1,003 - USS 994 NA USS 1,003 - USS 994 NA USS 1,003 - USS 994 NA USS 1,003 - USS 995 NA USS 1		Union Pacific Corp		"	•	\$SO	1,008	N/A	SSO.	1,008	
- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Commonwealth Bank of Australia		"	•	\$SO	1,003	N/A	SSO	1,003	
1.   1.   1.   1.   1.   1.   1.   1.		Philip Morris International Inc	•	"	•	\$SO	1,001	N/A	\$SO	1,001	
1.00   1.00		Equinor ASA	•	"	•	SSO.	995	N/A	\$SO	995	
1		Southern California Edison Co	,	"	•	\$SO	994	N/A	NS\$	994	
1		Laboratory Corp of America Holdings	•	"	•	\$SO	993	N/A	\$SO	993	
1		Biogen Inc	•	"	'	\$SO	992	N/A	SSO	992	
1		Halliburton Co	•	"	'	\$SO	686	N/A	\$SO	686	
NA   NS   NS   NS   NS   NS   NS   NS		Sysco Corp	•	"	•	\$SO	886	N/A	SSO	886	
1		Unum Group		"	'	\$SO	286	N/A	\$SO	786	
1		Orange SA	•	"	•	\$SO	986	N/A	\$SO	986	
1		BOC Aviation Ltd		"	'	\$SO	985	N/A	\$SO	985	
1		Pricoa Global Funding I		"	•	\$SO	985	N/A	\$SO	586	
1		Entergy Texas Inc	•	"	•	\$SO	982	N/A	\$SO	982	
		Protective Life Global Funding		"	•	\$SO	626	N/A	\$SO	626	
		Moody's Corp		"	•	\$SO	846	N/A	NS\$	826	
		Holcim US Finance Sarl & Cie SCS	•	"	'	SSO	973	N/A	NS\$	973	
- 1		Healthcare Trust of America Holdings LP		"	•	\$SO	970	N/A	\$SO	970	
1		State Grid Overseas Investment 2016 Ltd		"	'	\$SO	896	N/A	\$SO	896	
. " " - US\$ 954 N/A US\$ . " " - US\$ 953 N/A US\$ . " " - US\$ 953 N/A US\$ . " " - US\$ 921 N/A US\$		Loews Corp		"	•	SSO O	965	N/A	\$SO	965	
onddwide Inc		Citibank NA	•	"	•	\$SO	954	N/A	\$SO	954	
orldwide Inc - US\$ 921 N/A US\$ .		Bunge Ltd Finance Corp		"	•	\$SO	953	N/A	\$SO	953	
		Anheuser-Busch InBev Worldwide Inc		"	•	\$SO	921	N/A	\$SO	921	

NAY NY NY NY	ith the Company	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies		,	Fair Value	
Cocac-Coh Fenras SAB de CV Lockbeed Martin Crip CVOOC Finance 2011 Ltd CA Inc Virtura Inc Baker Highes as GE Co LLC / Baker Highes Co-Obligor Inc Insus & McTaral Inc Baker Highes as GE Co LLC / Baker Highes Co-Obligor Inc Insus Sampole SpA Adems Finance LLC ONEOK Patences LLC ONEOK Patences LLC SINTOS Pockainty Fannee LLC Sintos Pool Finance LLC Normar Holdings Inc Manual for Finance LLC Normar Media LC Normar Media Estan Corp Normar Media LC		,	in Thousands		Percentage of Ownership (%)	(Foreign Currencies in Thousands)	ncies Note
2 <u>1</u>	comprehensive income	ugh other	\$SO	892	N/A	8 SSN	892
CANDOC Finance 2011 Ltd CANDOC Finance 2011 Ltd CANDOC Finance 2011 Ltd Where the Act Actuant Cost line Where the Actuant Cost line Where the Actual CANDON COST line Interest Strands StA Actual CANDON COST line CLIC Actual Line Cost lin		1	8811	688	<b>4</b> /Z	8S11	688
Manb & Macternan Cos Inc  Manb & Macternan Cos Inc  Baker Fughes of Co LLC / Baker Hughes Co-Obigor Inc  Interes Surgools SpA  And The Trainer LLC  Alternar Finance LLC  Alternar Finance LLC  Activision Bizand Inc  Activision Bizand Inc  Activision Bizand Inc  Mandage Capital Did Lad  Normar Holdings Inc  Mandage Capital Did Lad  Mandage Age Incerc  Mandage Mandage Age  Mandage Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage Mandage  Mandage  Mandage Mandage  Mandage	-	•	SSO OS	098	N/A		09
Many & Widerman Cos Inc  Many & Widerman Cos Inc  Interes sampato SpA  Annu Finance LLC  Anture Finance LLC  ONEOK Farmers IP  Anturación Bluzand Inc  Suropes Capital 2013 Ltd  Naturación Bluzand Inc  Manutile Finance LLC  Manutile Finance LLC  Manutile Finance LLC  Manutile Finance LC  Manutile Financ		•	\$SO	857	N/A		857
When the state of ECo LLC / Baker Hughes Co-Obligar Inc Interest Snapoulo SpA Avan PLC Avan PLC ONSEON Princes LLC ONSEON Princes LLC Avanish Sizzard Inc Snaroep-Ceptial Style Norman Holangs In Style Month of Expansion Company Numer Inc Month of Expansion Inc Norman Stall of Inc	-	•	\$SO	853	N/A		853
Baket Hughes Co-Obligar Inc  Alven France LD  Activities and EC o LLC / Baket Hughes Co-Obligar Inc  Alven France LD  Activities Bizzed P  Activities Bizzed P  Activities Bizzed P  Activities Bizzed P  Annualify France LDC  Annualify France Corp  Annualify France France France France  Annualify France France France  Annualify France France France  Annualify France France France  Annualify France  Annualif	"	•	\$SO	850	N/A		20
Alters Simpolo SyA  Auter Simpolo SyA  Auter Simpolo SyA  Activision Blizzard Inc  Suncerp-Markay Lid  Aux Specially Finance LLC  Sinopec Capital 2013 Lid  Normar Boldings Inc  Manualise Financial Corp  Incice Prot Finance LLC  Aux Core Inc  Baids Inc  Markamel Lic Global Funding I  Memopolina Lie Global Funding I  Repolids American Inc  Nordol Scaulter Railway Co  Olino Power & Element Corp  Nordol Scaulter Railway Co  Olino Power & Element Corp  Nordol Corp  Nordol Corp  Memopolina Lie Gquiries Inc  Recursor Real Estate Equiries Inc  Recursor Real Estate Equiries Inc  Recursor Forgero LIP  Recursor Forgero LIP  Recursor Forgero LIP  Nordol Corp  Recursor Recursor Corp  Recursor Forgero LIP  Nordol Corp  Recursor Corp  Recursor Forgero LIP  Nordol Corp  Recursor Corp  Recursor Corp  Recursor Forgero LIP  Nordol Corp  Recursor Forg		•	\$SO	823	N/A		23
Ann PLC  Alter Finance LLC  AUXIOS Permes 1P  Auxision Blizzard I and  AXIS Specialty Finance LLC  Simper Capital 2013 Lind  Montant liderings how Montant liderings how Montant liderings and Montant liderings how Merc Energy Group Lud/New York NY WEC Energy Group Lud/New York NY WEC Energy Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Australia & New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar New Zealand Banking Group Lud/New York NY Workely Sealar Sealar New York NY Workely Sealar New Zealand Banking Group Lud/N	"	_	\$SO	804	N/A		95
Alternes ILC ONDOCK Partnese ILC Suncorp-Menway Lid Suncorp-Menway Lid AXIS Specialty Finance ILC Sinapec Capital 2013 Lid Normar Biolidings Inc Mandilla 2013 Lid Normar Biolidings Inc Capital 2014 Incide Prot Finance ILC Mandilla Incide Capital 2014 Incide Prot Finance ILC Mandilla Incide Capital 2014 Incide Prot Finance ILC Mandilla Incide Capital 2014 Incide In		•	\$SO	800	N/A		00
Activision Bizzard In Parace LIC Simocry-Merway Lid AXIS Specialty Finance LIC Simocry-Merway Lid Nomeric abloading line Manufic Financial O31 std Namid fine Baids line Mariophilant line Global Fanding I Financia Vest Capital Corp Philips of Corp Philips of Corp Philips of Corp Reprodes American line Avareatiate & New Zealand Banking Group Lid/New York NY edsty in Corp Reprodes American line Avareatiate & New Zealand Banking Group Lid/New York NY edsty line Avareatiate & New Zealand Banking Group Lid/New York NY edsty line Avareatiate & New Zealand Banking Group Lid/New York NY edsty fractional Lid Avareatiate & New Zealand Banking Group Lid/New York NY edsty fractional Lid Avareatiate & New Zealand Banking Group Lid/New York NY edsty Corp Northely Sealand Banking Group Lid/New York NY Revers Corp Northely Sealand Banking Group Inc Northely Sealand Banking Group Inc Citron Financial Group Inc Citron Financial Group Inc Grute Sealand Group Inc Grute Sealand Arthree 2000-1 Class A-1 Pass Through Trast	"		\$SO	787	N/A		87
Suitoring Markinson Birlizard Inc. Sinorep-Markey Lid AXIS Specially Finance LLC Sinopec Capital 2013 Lid Nomaria Holdings inc Manufile Finance LLC Marke Steed Capital Cap Incitee Pivor Finance LLC AutoZone Inc Baida Inc Marker Definance ILC AutoZone Inc Baida Inc Marker Scientific Inc AutoZone Inc Baida Inc Marker Scientific Inc Marker Scientific Inc Marker Scientific Inc Marker Scientific Inc Autoring Stage Stage Stage Inc Marker Scientific Inc Marker Hoghes a GE Co. LLC Textron Inc Reynolds American Inc Marker Hoghes a GE Co. LLC Textron Inc Marker Marker Comp National Otive II Varco Inc Marker Marker Co. The Marker Marker Co. The Marker Marker Co. The Marker Marker Co. The Marker		•	\$SO	783	N/A		83
ANS Specialty Finance Ld  ANS Specialty Finance Ld  Nomure Holdings Inc  Manualte Financial Corp  Incidere Prote Finance LLC  Nomure Holdings Inc  Manualte Financial Corp  Marian Holdings Incident Inci		•	\$SO	774	N/A		74
ANS Specially Finance LLC Nomura Holdings Inc Nomura Holdings Inc Mandrie Finance ICC Namer Media LLC Namer Sieher Scientific Inc Namer Media Scientific In	"	_	\$SO	774	N/A		74
Simpose Gupial 2013 Ltd  Nomura Hodings Inc Manulie Financial Corp Indice Voor Finance LLC Warren Media LLC AutoZove Inc Baida Inc Baida Inc Well Financial Corp Philips of Corp Robardor Really LP Vornado Really LP Nordon Really LP Nordon Really LP Nordon Really LP Nordon Johel Varco Inc Norfolk Souther Railway Co Obin Power Co Toledo Edison Co'The Wm Wrigely Jr Co Philips of Corp Chiese Tester Equives Inc Norfolk Souther Railway Co Obin Power Co Toledo Edison Co'The Wm Wrigely Jr Co Philips of Corp Chiese Financial Group Inc Grupo Binbo SAB de CV Liberty Property LP Nutrier Lid N	-	•	\$SO	771	N/A		71
Normat Indiangs from Finance LLC  Warner Media LLC  AutaCone Ince Baid of the C  Baid of the C  Baid of the C  Warner Media LLC  AutaCone Ince Baid of the C  Warner Media LLC  Philips of Carp in C  Philips of Carp of C  Reynolds American Inc  Normado Really LP  Reynolds American Inc  Normado Sauther Railway Co  Ohio Power Co  Telectron Inc  Reynolds Sauther Railway Co  Ohio Power Co  Telectron Inc  Normado Sauther Railway Co  Ohio Power Co  Telectron Ince  Normado Sauther Railway Co  Ohio Power Co  Telectron Ince  Normado Really LP  Reynolds Andeloc Corp  Christors Famoral Group Inc  Grupo Bimbo SAB decV  Christors Famoral Group Inc  Grupo Bimbo SAB decV  Christors Famoral Group Inc  Grupo Bimbo SAB decV  Narier LdA	-		\$SO	771	N/A	uss 7	71
Manufule the particul Corp Indicate the AutoZone Inc Baudu Inc Warner Media LLC AutoZone Inc Baudu Inc Matopolian Life Global Funding I Primacle West Capital Corp Weller Energy Group Inc Phillips 66 Thermog Faber Scientife Inc Australia & New Zealand Banking Group Ltd/New York NY Baylor Carle American Inc Arstrol Inc Reynolds American Inc Normado Realty LP Reynolds American Inc Normado Realty LP Normado R		•	SSO I	692	A/A		69
Mustree Media LLC AutoZone Inc Baidu Inc Warnard Media LLC AutoZone Inc Baidu Inc Warnard Inc Warnard Inc Warnard Inc Warnard Inc Warnard Corp Primace Word Capial Corp WE Enger Group Inc Primace Word Capial Group Ltd/New York NY WE Enger Group Inc Apt Pipelines Ld Astraila & New Zealand Banking Group Ltd/New York NY Castron Inc Apt Pipelines Ld Baker Hughes a GE Co LLC Textron Inc Cyornado Realty LP Rechester Group Rechester Group Norfolk Southern Railway Co Olinio Power Co Olinio Power Co Olinio Power Co Toledo Edison Corfte Warnardin Real Estate Equities Inc Republic Rechester Group National Olivel Varco Inc Norfolk Southern Railway Co Olinio Power Co Clitzens Financial Group Inc Critzens Financial Group Inc Critzens Financial Group Inc Critzens Financial Group Inc Critzens Financial Group Inc Continental Adrilines 2000-1 Class A-1 Pass Through Trast		_	\$SO	769	V/A		69
AutoZone Inc  Baidu Inc  Walmart Prodeia LLC  Matto And Inc  Matto And Inc  Matto And Inc  Australia & New Zealand Banking Group Lid/New York NY  Gasy Inc  Australia & New Zealand Banking Group Lid/New York NY  Gasy Inc  Are Priphines Ld  Are Priphines Ld  Reyolds American Inc  Norado Realty LP  Rechester Gas & Electric Corp  National Olytell Varco Inc  Norfolk Southern Railway Co  Toledo Edson Co'The  Wm Wrigley Jr Co  RRO Operania Real Estate Equities Inc  RRO LISA Holdeo Corp  Citizens Financial Group Inc  Carlop Banbo SAB de CY  Liberty Property LP  Nutrien Lid Arisos 2000-1 Class A-1 Pass Through Trast	-		SSO C	/9/	A S		/9
Autocome into Baid to the Walmart Inc Metropoliton Life Global Funding I Printade West Capital Corp WEC Energy Group Inc Philips 66 Thermo Fisher Scientific Inc Anstratia & New Zealand Banking Group Ltd/New York NY eday prelimes Ltd Baker Hughes a GE Co LLC Textron Inc Reynolds American Inc Normado Realty LP Rochester Gross Electric Corp Normado Realty LP Rochester Gross Electric Corp Norfiel Southern Railway Co Ohio Power Co Tolede Edson Co/The Wm Wrigley Lt Co ERP Operating LP Alexandria Real Estate Equities Inc Ticker Binancial Group Inc Grupo Binbo SAB de CV Liberty Propart LP Nutrien Lid Nutrien Lid Nutrien Lofer Incentive Incurrent Lofer Incomposition of Contribution Lid Nutrien Lofer Incurrent Lofer Incurrent Lide Contribution Lide Contribution Lide Nutrien Lide Contribution Lofer Liberty Propaga Trust			\$20	753	V /A	7 951	28
Austraft inc Metropolism Life Global Funding I Pinnacle West Capital Corp WEC Benegy Group Inc Phillips 66 Thermore Fisher Scientific Inc Any The pleines Lid Any The Alexandria Real Estate Equities Inc Alexandria Real Estate Equities Inc Citizens Financial Group Inc Citizens Financial Group Inc Citizens Financial Group Inc Cuptor Property LP Nutrien Lid Nutrien Lid Nutrien Lid Continental Aritines 2000-1 Class A-1 Pass Through Trust			650	577	N/A		33
Metropolitan Life Global Funding I Pinnacle West Capital Corp WEE Energy Group Inc Phillips 66 Thermoe Fisher Scientifu Inc Australia & New Zealand Banking Group Ltd/New York NY GBAy Inc APT Pipelines Ltd Baker Hughes a GE Co LLC Textron Inc Reynolds American Inc Vornado Really LP Nordis Kealter Grae & Electric Corp National Oilwell Varco Inc Nordis Southern Railway Co Oilo Power Co Win Wrigely Jr Co Toledo Edison Co/The Win Wrigely Jr Co RR BCORT Real Estate Equities Inc RRECUSA Flodoco Corp Ciricens Financial Group Inc Grapo Bimbo SAB de CV Liberty Property LP Nutrier Ltd Continental Aritines 2000-1 Class A-1 Pass Through Trast			SSII	747	K/N		£ 4
Pinnace West Capital Corp  WEC Energy Group Inc Phillips (Group Ltd/New York NY Australia & New Zealand Banking Group Ltd/New York NY Basker Hughes a GE Co LLC Textron Inc APTP ipelines Ltd Baker Hughes a GE Co LLC Textron Inc Reynolds American Inc Normol Realty LP Rochester Gas & Electric Corp National Olivelt Varco Inc Norfolk Southern Railway Co Ohio Power Co Toledo Edison Co/The Wm Wrigley Jr Co ERP Operating LP Alexandria Real Estate Equities Inc Citizens Financial Group Inc Continental Airlines 2000-1 Class A-1 Pass Through Trust			\$311	738	A/N		38
WEC Energy Group Inc. Phillips 66 Thermo Fisher Scientific Inc Australia & New Zealand Banking Group Ltd/New York NY eBay Inc APITP inclines Ltd Baker Hughes a GE Co LLC Textron Inc Reynolds American Inc Vornado Realiy L.P Rochester Gas & Electric Corp National Olivally Jarco Inc Norfolk Southern Railway Co Olivio Powert Co Tolede Edison Co/The Wm Wrigley Jr Co Tolede Edison Co/The Wm Wrigley Jr Co Tolede Edison Co/The Wm Wrigley Jr Co Tolede Edison Co/The Curbos Binnbo SAB de CV Liberty Property LP Nutrien Ltd Nutrien Ltd Nutrien Ltd Nutrien Ltd Nutrien Ltd Continental Airlines 2000-1 Class A-1 Pass Through Trust		•	SSO	734	Z/Z		34
Phillips 66		1	SSO OS	733	N/A		33
Australia & New Zealand Banking Group Ltd/New York NY  Australia & New Zealand Banking Group Ltd/New York NY  Abyr Pipelines Ltd  Baker Hughes a GE Co LLC  Textron Inc  Reynolds American Inc  Vornado Really LP  Rochester Gas & Electric Corp  Notional Olivell Varco Inc  Nordok Souther Railway Co  Olivio Power Co  Toledo Edison Co/The  Wm Wrigley Jr Co  ERP Operating LP  Alexandria Real Estate Equities Inc  RBC USA Holdeo Corp  Citizens Financial Group Inc  Grupo Bimbo SAB de CV  Liberty Property LP  Nutrient Ltd  Nutrient Ltd  Continental Airlines 2000-1 Class A-1 Pass Through Trust	"	•	\$SO	701	N/A		01
Australia & New Zealand Banking Group Ltd/New York NY eBasy Fulce		•	\$SO	701	N/A	LOS\$	701
Bay Fripelines Ld   Baker Hughes a GE Co LLC   Textron Inc   Reynolds American Inc   Reynolds American Inc   Nomado Realy LP   Composed Realy LP   Continental Ariaines 2000-1 Class A-1 Pass Through Trust   Continent	-	•	\$SO	969	N/A		95
APT Pipelines Ltd	-		\$SO	969	N/A		569
Baker Hughes a GE Co LLC	-		\$SO	969	N/A		969
Pextool Inc   Reynolds American Inc   Vormado Realty LP   Rochester Gas & Electric Corp   National Olivel IV arco Inc   NorDik Southern Railway Co   Olive Power Co   Toledo Edison Co/The   Wm Wrigley Jr Co   ERP Operating LP   Ackandria Real Estate Equiries Inc   RBC USA Holdoc Corp   Citizens Financial Group Inc   Grupo Bimbo SAB de CV   Liberty Property LP   Nutrien Ltd   Continental Aritines 2000-1 Class A-1 Pass Through Trust	-	•	\$SO	169	N/A		169
Reynolds American Inc	-	•	\$SO	985	N/A		685
Nordon Realty LP   Nordon Realty LP			\$SO	029	N/A		029
Nortices to ask Electric Corp   Nortices to ask Electric Corp   Nortices to ask Electric Corp   Nortices Southern Railway Co   Ohio Power Co   Toledo Edison Co/The   Wm Wrigley Jr Co   ERP Operating LP   Alexandria Real Estate Equities Inc   RBC USA Holdco Corp   Citizens Financial Group Inc   Compo Bimbo SAB de CV   Liberty Property LP   Nutrien Ltd   Nutrien Ltd   Continental Aritines 2000-1 Class A-1 Pass Through Trust   Nutrien Ltd   Continental Aritines 2000-1 Class A-1 Pass Through Trust   Nutrien Ltd   Continental Aritines 2000-1 Class A-1 Pass Through Trust   Nutrien Ltd   Continental Aritines 2000-1 Class A-1 Pass Through Trust   Nutrien Ltd   Continental Aritines 2000-1 Class A-1 Pass Through Trust   Nutrien Ltd   Nutrien	-		SSO I	699	A/N		69
National Othwell Varico Inc Norfolk Southern Railway Co Ohio Power Co Toledo Edison Co/The Wm Wrigley Jr Co ENP Operating LP Alexandria Real Estate Equities Inc RBC USA Holdco Corp Citizens Financial Group Inc Grupo Bimbo SAB de CV Liberty Property LP Nutrien Ltd Continental Aritines 2000-1 Class A-1 Pass Through Trust	"		SSO .	099	A/N 7	SSO O	099
Notice Power Office   Project Continental Aritines 2000-1 Class A-1 Pass Through Trust   Project Class A-1 Pass Through Trust   Proje			\$20	669	V /A		629
Total of Coffice   Coffi		•	\$50	020	K/N	9 950	635
Wm Wrigley Jr Co         -         "           ERP Operating LP         -         "           Alexandra Real Estate Equities Inc         -         "           RBC USA Holdox Corp         -         "           Citizens Financial Group Inc         -         "           Grupo Bimbo SAB de CV         -         "           Liberty Property LP         -         "           Nurrien Ltd         -         "           Continental Airlines 2000-1 Class A-1 Pass Through Trust         -         "		•	SSO	630	N/A		630
ERP Operating LP	-	•	\$SO	624	N/A		624
Alexandria Real Estate Equities Inc   Citizens Financial Group Inc   Citizens Financial Group Inc   Citizens Primarcial Air   Citizens Air   Citiz	-	•	\$SO	623	N/A		623
RBC USA Holdeo Corp			\$SO	819	N/A		819
Citizens Financial Group Inc   Citizens Financial Group Inc   Composition State CV     Continental Aritines 2000-1 Class A-1 Pass Through Trust   Continental Aritines 2000-1 Class A-1 Pass Through Trust		•	\$SO	618	N/A		819
Grupo Bimbo SAB de CV	"	•	\$SO	613	N/A		613
Liberty Property LP  Nutrien Ltd  Continental Airlines 2000-1 Class A-1 Pass Through Trust  "			SSO	612	N/A		612
Nutrien Ltd Continental Airlines 2000-1 Class A-1 Pass Through Trust	-		\$SO	612	N/A		612
Continental Airlines 2000-1 Class A-1 Pass 1 hrough 1 rust	"		SSO .	019	V. A		610
Continued Aiding Anna Theory I Chan A Day		•	\$SO	902	V/A		605
Continuada Arimes 2007 - Class Arfass Intogn Hust Paiva Scentifies Groun Inc			\$SI	200	K/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N/N	\$ \$SII	200
and dear operations with			)				``

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies	Value	Percentage of Ownership (%)	Fair Value (Foreign Currencies	alue urrencies	Note
					nou I III	sanus)			samus)	
TSMC Global	MUFG Union Bank NA		Financial assets at fair value through other comprehensive income	1	\$SO	298	N/A	\$SO	865	
	OneBeacon US Holdings Inc	•	" " " " " " " " " " " " " " " " " " "	•	\$SO	597	N/A	\$SO	597	
	US Bancorp	•	"	•	\$SO	595	N/A	SSO	595	
	Ontario Teachers' Cadillac Fairview Properties Trust	•	"	•	\$SO	594	N/A	\$SO	594	
	BAT International Finance PLC	•	"	•	\$SO	591	N/A	\$SO	591	
	Kimco Realty Corp	•	"	•	SSO	589	N/A	\$SO	589	
	Life Technologies Corp	•	"	•	\$SO	585	N/A	\$SO	585	
	AXIS Specialty Finance PLC	•	"	•	\$SO	574	N/A	\$SO	574	
	Nationwide Financial Services Inc		"	•	SSO	569	N/A	\$SO	569	
	ABC Inc		"	•	\$SO	268	N/A	\$SO	268	
	Host Hotels & Resorts LP		"	•	\$SO	564	N/A	\$SO	564	
	AvalonBay Communities Inc	•	"	•	\$SO	563	N/A	\$SO	563	
	Duke Energy Progress LLC		"	•	SSO	551	N/A	\$SO	551	
	Church & Dwight Co Inc		"	•	\$SO	525	N/A	SSO	525	
	Sempra Energy		"	•	\$SO	518	N/A	SSO	518	
	Fulton Financial Corp		"	•	\$SO	510	N/A	\$SO	510	
	ASB Bank Ltd		"	•	\$SO	501	N/A	\$SO	501	
	Regency Centers Corp		"	•	SSO	498	N/A	\$SO	498	
	TD Ameritrade Holding Corp		"	•	\$SO	497	N/A	\$SO	497	
	Sumitomo Mitsui Trust Bank Ltd	•	"	•	SSO I	496	N/A	SSO	496	
	Highwoods Realty LP	•	"	•	SSO	493	N/A	SSO	493	
	ORIX Corp	•	"	•	\$SO	490	N/A	SSO	490	
	International Paper Co		"	•	SSO	478	N/A	\$SO	478	
	MassMutual Global Funding II		"	•	SSO	477	N/A	\$SO	477	
	Diageo Capital PLC		"	•	\$SO	475	N/A	SSO	475	
	Comerica Inc	ı	"	•	SO	473	V/A	SSO	473	
	Eni SpA	•	"		SSO I	472	A/A	SSO	472	
	Spire Inc	•	"	•	SSO	459	N/A	\$20	604	
	Narragansett Electric Co/ Ine	•	"	•	SSO I	456	A/N	\$80	456	
	United Overseas Bank Ltd	•	"	•	SSO	454	V/A	SSO	454	
	Duke Energy Carolinas LLC	•	"	•	SSO I	453	Ψ/N X	SSO	453	
	Eaton Corp	•	"	•	\$ CO	104	N/A	\$20	104	
	Fublic Service Enterprise Group Inc	•		•	\$ CO	449	N/A	\$20	449	
	Dudington Morthorn South En LT	•		•	951	0440	A/N	9511	9 5	
	Duttington Motine in Santa re LLC	1		•	1156	674	V/N	\$50	674	
	Canadian Pacific Railway Co				\$S11	t 4 C14	K K/N	881	424	
	Marathon Petroleum Corp	,	: =	•	SSO	412	A/N	SSO	412	
	Valero Energy Corp	•	"	•	\$SO	412	N/A	\$SO	412	
	Texas-New Mexico Power Co		"	•	\$SO	406	N/A	\$SO	406	
	Eaton Electric Holdings LLC	1	"	•	\$SO	403	N/A	\$SO	403	
	Markel Corp	•	"	•	\$SO	400	N/A	SSO	400	
	Tanger Properties LP	•	"	•	\$SO	393	N/A	\$SO	393	
	Southern Power Co	•	"	•	\$SO	388	N/A	\$SO	388	
	Continental Airlines 2012-1 Class A Pass Through Trust	•	"	•	SSO	385	N/A	\$SO	385	
	StanCorp Financial Group Inc	•	"	•	\$SO	379	N/A	\$SO	379	
	Aon Corp	•	"	•	\$SO	377	N/A	\$SO	377	
	First Niagara Financial Group Inc		"	•	\$SO	364	N/A	SSO	364	
	CenterPoint Energy Resources Corp	1	"	•	SSO.	355	<b>V</b> /V	SSO	355	
	American Honda Finance Corp		"	•	\$SO	554	N/A	\$\$O	334	
										(Continued)
										(communed)

						December 31, 2018	1, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units	Carrying Value (Foreign Currencies	Value rrencies	Percentage of	Fair Value (Foreign Currencies	alue urrencies	Note
				(III I III OUSANUS)	in Thousands)	(spur	Ownersmp (70)	in Thous	(sands)	
TSMC Global	Deutsche Bank AG		Financial assets at fair value through other	1	\$SO	348	N/A	\$SO	348	
	VII. 1. 1. 1. 1. 1. 1. 2		comprehensive income		\$ OLI	ç	471%	9511	9	
	Cobperance Enough Condo 144		"	•	1156	202	N/A	9511	202	
	Fli I illy & Co		: =		SSI	289	C A/Z	\$S11	289	
	Amphenol Corp		: "	•	\$SO	286	N/A	\$SO	286	
	BAE Systems Holdings Inc	•	"		\$SO	282	N/A	\$SO	282	
	Home Depot Inc/The		"	•	\$SO	277	N/A	\$SO	277	
	EMD Finance LLC		"	•	\$SO	277	N/A	\$SO	277	
	Archer-Daniels-Midland Co	,	"	•	\$SO	250	N/A	\$SO	250	
	Hartford Financial Services Group Inc/The	,	"	•	\$SO	228	N/A	\$SO	228	
	Rolls-Royce PLC	,	"	•	\$SO	221	N/A	\$SO	221	
	Protective Life Corp		"		\$SO	216	N/A	SSO.	216	
	WestRock MWV LLC		"	•	\$SO	210	N/A	SSO.	210	
	ING Bank NV		"	•	\$SO	207	N/A	SSO.	207	
	Fidelity National Information Services Inc	,	"	•	\$SO	202	N/A	\$SO	202	
	Equifax Inc	,	"	•	\$SO	174	N/A	\$SO	174	
	Packaging Corp of America	,	"	•	\$SO	157	N/A	\$SO	157	
	Schneider Electric SE		"	•		157	N/A	SSO.	157	
	Wells Fargo & Co		Financial assets at amortized cost	•	US\$ 14	149,941	N/A	US\$ 1:	150,065	
	JPMorgan Chase & Co.	•	"	•		124,948	N/A		125,726	
	Westpac Banking Corp.		"			786,96	N/A		100,111	
	Goldman Sachs Group, Inc.		"	•		006,66	N/A		100,103	
	Commonwealth Bank of Australia		"	•	US\$ 4	49,994	N/A	SSO.	50,037	
	National Australia Bank		ll l			49,994	N/A		50,010	
	Bank of Nova Scotia	,	"	•		49,976	N/A	ns\$	50,077	
	Industrial and Commercial Bank of China		"	•	\$SO	966'6	N/A		10,000	
	Government bond									
	United States Treasury Note/Bond		Financial assets at fair value through other	•	US\$ 28	287,628	N/A	US\$ 2	287,628	
			comprehensive income							
	United States Treasury Floating Rate Note	,	"	•	9 \$SO	68,164	N/A	\$SO	68,164	
	Abu Dhabi Government International Bond		"	•		3,408	N/A	\$SO	3,408	
	United States Treasury Bill		"	•	\$SO	2,248	N/A	\$SO	2,248	
	Qatar Government International Bond	•	"	1	\$SO	1,315	N/A	\$SO	1,315	
	Agency bonds/Agency mortgage-backed securities									
	Freddie Mac REMICS		Financial assets at fair value through Profit or		US\$	47,996	N/A	· SSO	47,996	
	Fannie Mae REMICS	,	#	•		33,767	N/A		33,767	
	Government National Mortgage Association		"	•	US\$ 2	24,518	N/A	\$SO	24,518	
	Fannie Mae Interest Strip		"	•		1,859	N/A		1,859	
	Freddie Mac Multifamily Structured Pass Through Certificates		"	•		1,713	N/A	\$SO	1,713	
	Freddie Mac Strips		"			1,380	N/A		1,380	
	Fannie Mae Pool		Financial assets at fair value through other		0S\$ 39	398,735	N/A	ns\$ 3	398,735	
	Freddie Mac Gold Pool	,	comprehensive income	•		133 948	N/A		133 948	
	Fannie Mae REMICS		: 3		USS	131.341	K K	SSI	131,341	
	Government National Mortgage Association		: =	٠		128236	4/N		128.236	
	Freddie Mac REMICS			•		112,050	K/Z		112,050	
	Ginnie Mae II Pool			•		51,015	N/A		51,015	
	Fannie Mae		"	•	US\$ 2	27,141	N/A	\$SO	27,141	
										(Continued)

- 76 -

						December 51, 2010		_	
Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Valu (Foreign Currencin Thousands)	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair (Foreign in Tho	Fair Value (Foreign Currencies in Thousands)	Note
Ginnie Mae		Financial assets at fair value through other	•	\$SO	16,081	N/A	\$SO	16,081	
Fannie Mae-Aces		comprehensive mechanic	•	\$SO	5,796	N/A	\$SO	5,796	
Freddie Mac Non Gold Pool	•	"		SSO.	2,684	N/A	SSO.	2,684	
Freddie Mac Multifamily Structured Pass Through Certificates	•	"	•	\$SO	2,554	N/A	\$SO	2,554	
Province of Ouebec Canada	1	"	•	SSO	2.514	N/A	SSO	2.514	
FHLMC-GNMA		"	•	\$SO	1,486	N/A	SSO OS	1,486	
Federal Farm Credit Banks	•	-	•	SSI	891	<b>A</b> / <b>N</b>	SSO	891	
NCUA Guaranteed Notes Trust 2010-R2		: 11	•	SSI	842	A/N	SSO	842	
Ginnie Mae I Pool			•	3511	632	A/N	3511	632	
Compon Conton Dailman Com				951	252	VIV.	9311	252	
on-Canton Kanway Corp	•	"	•	600	934	N/A	660	934	
Federal Home Loan Mortgage Corp		"		\$20	200	N/A	\$\$O	200	
Federal National Mortgage Association		"		\$SO	370	N/A	SSO.	370	
NCUA Guaranteed Notes Trust 2010-R1		"		SSO.	335	N/A	SSO	335	
Fannie Mae Benchmark REMIC	•	"	1	SSO	132	<b>A</b> /N	SSO	132	
Freddie Mac	ı	"	•	\$SO	15	N/A	\$SO	15	
A sset-backed securities									
Citibank Credit Card Issuance Trust		Financial assets at fair value through other	•	\$SO	68,487	N/A	\$SO	68,487	
E		comprehensive income		501	700	****	601	700	
Chase Issuance Trust	•	"		SSO I	43,604	V/N	\$20	43,604	
American Express Credit Account Master Trust		"	•	SSO OS	42,144	N/A	nss	42,144	
Discover Card Execution Note Trust		"		SSO.	37,495	N/A	SSO.	37,495	
Ford Credit Floorplan Master Owner Trust A	•	"		\$SO	26,702	N/A	\$SO	26,702	
Hyundai Auto Receivables Trust 2018-B		"	•	\$SO	8,122	N/A	\$SO	8,122	
BA Credit Card Trust	•	"		\$SO	8,092	N/A	SSO.	8,092	
Nissan Master Owner Trust Receivables		*	•	SSI	7 989	A/N	SSII	7 989	
GGDBB Commercial Mortgage Trust 2017-BIOC				3511	7 430	V/N	3511	7.430	
Canital One Multi-A seet Execution Trust		: =	•	SSII	7 304	V/N	SSII	7 304	
BY Commercial Mortgage Trust 2018 IND				3511	6 946	V/N	3311	6 946	
DA Collinetetal Moltgage Hust 2010-110D			•	9511	0,740	Y N	9511	6 2 1 3	
Baiciays Collineteial Moltgage 11ust 2012-02		"	•	600	6,513	N/A	660	0,513	
Mercedes-Benz Master Owner 1rust 2016-B	•	"		SSO I	6,012	V/N	\$20	6,012	
Ford Credit Auto Owner Trust 2016-REV1	•	"	•	ns\$	5,917	V/A	ns\$	5,917	
BBCMS 2018-1 ALL Mortgage 1 rust	•	"		\$\$   	5,403	N/A	\$\$O	5,403	
Chesapeake Funding II LLC		"	•	\$SO	5,328	N/A	\$SO	5,328	
Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10		"		\$SO	4,879	N/A	SSO	4,879	
Ford Credit Auto Owner Trust 2015-REV1		"	•	\$SO	4,871	N/A	\$SO	4,871	
Volvo Financial Equipment Master Owner Trust	•	"	•	\$SO	4,510	N/A	\$SO	4,510	
UBS Commercial Mortgage Trust 2018-C10		"		\$SO	4,047	N/A	\$SO	4,047	
JPMCC Commercial Mortgage Securities Trust 2017-JP7		"		\$SO	3,960	N/A	\$SO	3,960	
J.P. Morgan Chase Commercial Mortgage Securities Trust		"		SSO	3,932	N/A	SSO.	3,932	
2016-WIKI									
BANK 2017-BNK5	•	"	•	\$SO	3,902	N/A	\$SO	3,902	
BANK 2017-BNK6		"	•	\$SO	3,899	N/A	\$SO	3,899	
Nissan Auto Lease Trust 2016-B	•	"	•	\$SO	3,886	N/A	\$SO	3,886	
Cold Storage Trust 2017-ICE3	•	"	•	\$SO	3,732	N/A	\$SO	3,732	
GS Mortgage Securities Corp II		"	•	\$SO	3,247	N/A	\$SO	3,247	
COMM 2015-CCRE25 Mortgage Trust	•	"	•	\$SO	2,998	N/A	\$SO	2,998	
GS Mortgage Securities Corp Trust 2018-RIVR		"	•	\$SO	2,989	N/A	SSO OS	2,989	
Honda Auto Receivables 2017-2 Owner Trust	•	-	•	SSII	2,947	A/N	SSII	2,947	
GM Financial Consumer Automobile Receivables Trust 2017-2				\$511	2 945	₹/X	\$511	2,9.0	
nancial consumer Automobile Receivables 11 ust 2017-2				9	5,7	17/17	900	5,71	

						Decembe	December 31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryi (Foreign in Tho	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair (Foreign in Tho	Fair Value (Foreign Currencies in Thousands)	Note
TSMC Global	BMW Flooplan Master Owner Trust	•	Financial assets at fair value through other		\$SO	2,800	N/A	\$SO	2,800	
	GS Mortgage Securities Trust 2011-GC3			,	\$SO	2,750	N/A	\$SO	2,750	
	Hertz Fleet Lease Funding LP	,	"	•	\$SO	2,672	N/A	\$SO	2,672	
	Morgan Stanley Capital I Trust 2018-H3	•	"	•	\$SO	2,596	N/A	SSO	2,596	
	GS Mortgage Securities Trust 2013-GCJ12		"	•	\$SO	2,576	N/A	\$SO	2,576	
	Toyota Auto Receivables 2018-C Owner Trust		"		\$SO	2,554	N/A	SSO	2,554	
	JPMDB Commercial Mortgage Securities Trust 2016-C2		"		\$SO	2,512	N/A	SSO	2,512	
	Nissan Auto Lease Trust 2017-A	•	"		\$SO	2,386	N/A	\$SO	2,386	
	Toyota Auto Receivables 2018-A Owner Trust		"		\$SO	2,306	N/A	\$SO	2,306	
	Hyundai Auto Lease Securitization Trust 2017-B		"	•	\$SO	2,252	N/A	SSO	2,252	
	Wells Fargo Commercial Mortgage Trust 2015-LC20		"	•	\$SO	2,127	N/A	SSO.	2,127	
	UBS Commercial Mortgage Trust 2018-C11		"	•	\$SO	2,083	N/A	\$SO	2,083	
	COMM 2013-CCRE12 Mortgage Trust		"	•	\$SO	2,061	N/A	SSO	2,061	
	Ford Credit Auto Owner Trust 2017-C		"	•	\$SO	2,046	N/A	SSO	2,046	
	BENCHMARK 2018-B4		"	•	\$SO	2,034	N/A	SSO	2,034	
	JPMBB Commercial Mortgage Securities Trust 2014-C19		"	•	\$SO	2,017	N/A	SSO.	2,017	
	COMM 2015-CCRE22 Mortgage Trust	•	"	•	\$SO	2,010	N/A	SSO	2,010	
	Wells Fargo Commercial Mortgage Trust 2015-C30		"	•	\$SO	2,006	N/A	NS\$	2,006	
	UBS-Barclays Commercial Mortgage Trust 2013-C6		"	•	\$SO	1,979	N/A	SSO	1,979	
	Toyota Auto Receivables 2016-B Owner Trust		"	•	\$SO	1,977	N/A	SSO	1,977	
	Citigroup Commercial Mortgage Trust 2017-P8		"	•	\$SO	1,974	N/A	SSO	1,974	
	Toyota Auto Receivables 2017-C Owner Trust		"	•	\$SO	1,960	N/A	\$SO	1,960	
	Mercedes-Benz Auto Lease Trust 2018-B		"	•	\$SO	1,953	N/A	SSO	1,953	
	JPMDB Commercial Mortgage Securities Trust 2017-C7		"	•	\$SO	1,944	N/A	NS\$	1,944	
	Morgan Stanley Bank of America Merrill Lynch Trust 2016-C31		"	•	\$SO	1,940	N/A	SSO	1,940	
	GM Financial Automobile Leasing Trust 2016-3		"	•	\$SO	1,931	N/A	SSO.	1,931	
	Morgan Stanley Capital I Trust 2016-UB11		"	•	\$SO	1,868	N/A	SSO	1,868	
	Ford Credit Auto Lease Trust 2017-B		"	•	\$SO	1,863	N/A	SSO	1,863	
	BANK 2018-BNK14		"	•	\$SO	1,811	N/A	SSO	1,811	
	BMW Vehicle Lease Trust		"		\$SO	1,801	N/A	SSO	1,801	
	Ford Credit Auto Lease Trust		"	•	SSO .	1,799	N/A	SSO.	1,799	
	Wheels SPV 2 LLC	•	"	•	\$20	1,/88	N/A	0.00	1,788	
	Citigroup Commercial Mortgage Trust 2013-GC35		"		\$20	1,/83	N/A	880	1,783	
	Morgan Stanley Bank of America Mertill Lynch Trust 2013-C8	•	" :	•	\$50	1,//1	N/A	\$50	1///1	
	Denothing Auto Owner Price			•	3511	1,756	V/N	3511	1,760	
	Nelnet Student Loan Trust 2010-4				SSII	1,730	K K/N	381	1,730	
	SLM Student Loan Trust 2005-4	,	: "	,	SSO	1.722	A/N	SSO	1.722	
	UBS-Barclays Commercial Mortgage Trust 2013-C5	•	"		\$SO	1,707	N/A	SSO.	1,707	
	Hyundai Auto Lease Securitization Trust 2016-C	•	"	•	\$SO	1,670	N/A	\$SO	1,670	
	Ford Credit Auto Lease Trust 2017-A		"		\$SO	1,603	N/A	SSO	1,603	
	Edsouth Indenture No 10 LLC		"	•	\$SO	1,598	N/A	SSO	1,598	
	Ford Credit Auto Owner Trust 2015-A		"	•	\$SO	1,541	N/A	SSO	1,541	
	Navient Student Loan Trust 2017-1		"	•	\$SO	1,540	N/A	SSO.	1,540	
	Nelnet Student Loan Trust 2018-3	•	"	•	\$SO	1,538	N/A	SSO	1,538	
	COMM 2015-PC1 Mortgage Trust	•	"	•	\$SO	1,500	N/A	SSO	1,500	
	Ford Credit Auto Lease Trust 2018-A		"	•	\$SO	1,497	N/A	SSO	1,497	
	Morgan Stanley Capital I Trust 2017-H1	•	"		\$SO	1,481	N/A	\$SO	1,481	
	SLM Student Loan Trust 2013-6		"		\$SO	1,465	N/A	\$SO	1,465	
	JPMCC Commercial Mortgage Securities Trust 2017-JP5		"	•	\$SO	1,460	N/A	\$SO	1,460	
										(Continued)

						December 31, 2018	.31, 2018		_	
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryi (Foreign in Tho	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair (Foreign C	Fair Value (Foreign Currencies in Thousands)	Note
TSMC Global	ECMC Group Student Loan Trust 2018-2	,	Financial assets at fair value through other		NS\$	1,448	N/A	\$SO	1,448	
	Nelnet Student Loan Trust 2012-1		comprehensive income	•	SSO	1,446	N/A	SSO	1,446	
	Pheaa Student Loan Trust 2018-1		"	•	\$SO	1,443	N/A	\$SO	1,443	
	Toyota Auto Receivables 2018-B Owner Trust	,	"	•	\$SO	1,432	N/A	\$SO	1,432	
	Mercedes-Benz Master Owner Trust 2018-BA		"	•	\$SO	1,396	N/A	\$SO	1,396	
	Ford Credit Auto Owner Trust 2014-REV2		"	•	\$SO	1,390	N/A	\$SO	1,390	
	Nelnet Student Loan Trust 2006-2		"	•	\$SO	1,388	N/A	\$SO	1,388	
	COMM 2013-CCRE6 Mortgage Trust		"	•	\$SO	1,360	N/A	\$SO	1,360	
	GM Financial Automobile Leasing Trust 2017-1		"	•	\$SO	1,299	N/A	\$SO	1,299	
	COMM 2015-DC1 Mortgage Trust		"	•	\$SO	1,253	N/A	SSO	1,253	
	Enterprise Fleet Financing LLC		"		\$SO	1,251	N/A	\$SO	1,251	
	Hyundai Auto Lease Securitization Trust 2018-A		"	•	\$SO	1,246	N/A	\$SO	1,246	
	JPMBB Commercial Mortgage Securities Trust 2016-C1		"	•	\$SO	1,243	N/A	\$SO	1,243	
	Morgan Stanley Bank of America Merrill Lynch Trust 2015-C20		"	•	\$SO	1,196	N/A	\$SO	1,196	
	Hyundai Auto Lease Securitization Trust 2017-C		"	•	\$SO	1,049	N/A	\$SO	1,049	
	Nissan Auto Receivables 2016-B Owner Trust		"	•	\$SO	1,043	N/A	SSO	1,043	
	WFRBS Commercial Mortgage Trust 2011-C4		"	•	\$SO	1,036	N/A	SSO.	1,036	
	GM Financial Consumer Automobile Receivables Trust 2018-4		"	•	\$SO	1,023	N/A	SSO.	1,023	
	COMM 2014-CCRE20 Mortgage Trust		"	•	\$SO	1,009	N/A	NS\$	1,009	
	Nissan Auto Receivables 2017-B Owner Trust	,	"	•	\$SO	1,008	N/A	\$SO	1,008	
	Morgan Stanley Bank of America Merrill Lynch Trust 2014 C19	,	"	•	\$SO	1,006	N/A	\$SO	1,006	
	Nissan Auto Receivables 2018-B Owner Trust		"	•	\$SO	1,004	N/A	SSO	1,004	
	JPMBB Commercial Mortgage Securities Trust 2014-C21		"		\$SO	1,002	N/A	\$SO	1,002	
	Navient Student Loan Trust 2017-3		"	•	\$SO	1,000	N/A	SSO.	1,000	
	GM Financial Consumer Automobile 2017-1		"		\$SO	986	N/A	\$SO	986	
	Ford Credit Auto Owner Trust 2017-REV1		"		\$SO	985	N/A	\$SO	985	
	Citigroup Commercial Mortgage Trust 2013-GC11		"		\$SO	696	N/A	\$SO	696	
	JPMBB Commercial Mortgage Securities Trust 2015-C31		"	•	\$SO	945	N/A	\$SO	945	
	Honda Auto Receivables 2018-2 Owner Trust		"	•	\$SO	911	N/A	\$SO	911	
	JP Morgan Chase Commercial Mortgage Securities Trust		"	•	\$SO	897	N/A	\$SO	268	
	2012-LC9				901	0	*****	6011	0	
	CarMax Auto Owner Trust 2018-1		,,	•	\$20 178	6/3	N/A	\$20	6/3	
	Motgan stanley bank of America Merrill Lynch Trust 2012-Co		"	•	600	633	A/N	600	633	
	Mercedes-Benz Auto Receivables Trust 2018-1		, ;	•	\$20 116	841	N/A	\$20	241	
	250 Fark Avenue 2017-260F Mongage Trust		"	•	620	778	N/A	820	778	
	SEMI Student Loan 1 rust 2012-3  Ford Crodit Auto Oronor Trust 2015 DEV2		, :	•	\$20	816	N/A	\$20	810	
	Fold Cledit Auto Owile 110st 2013-NEV2 Navient Student Loan Trust 2018-1				880	799	A/N	\$80	200	
	Ford Credit Auto Owner Trust/Ford Credit 2014-REV1		: "	•	SSO	262	Z/X	nS\$	862	
	Honda Auto Receivables 2018-3 Owner Trust		"	•	\$SO	792	N/A	\$SO	792	
	SLM Student Loan Trust 2013-1		"	•	\$SO	786	N/A	\$SO	982	
	CFCRE Commercial Mortgage Trust 2011-C1		"	•	SSO	9//	N/A	\$SO	9//	
	Mercedes-Benz Auto Lease Trust 2018-A		"	•	\$SO	770	N/A	SSO	770	
	GM Financial Automobile Leasing Trust 2018-1		"	•	\$SO	753	N/A	\$SO	753	
	COMM 2015-LC19 Mortgage Trust		"	•	\$SO	716	N/A	\$SO	716	
	Toyota Auto Receivables 2018-D Owner Trust		"	•	\$SO	902	N/A	\$SO	902	
	Ally Auto Receivables Trust 2018-3		"	•	\$SO	669	N/A	\$SO	669	
	SLM Student Loan Trust 2013-4		"	•	\$SO	889	N/A	\$SO	889	
	Wells Fargo Commercial Mortgage Trust 2015-C28		"	•	\$SO	029	N/A	SSO.	029	
	Mercedes-Benz Auto Lease Trust 2016-B	,	"	•	SSO	649	N/A	\$SO	649	
										(Continued)

_									(7 - 1-c	
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Valu (Foreign Curren in Thousands)	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair Value (Foreign Currend in Thousands)	Fair value (Foreign Currencies in Thousands)	Note
TSMC Global	Ford Credit Auto Owner Trust 2018-A	,	Financial assets at fair value through other		\$SO	640	N/A	\$SO	640	
	IP Moroan Chase Commercial Mortoace Securities Trust		comprehensive income	•	3511	989	e Z	3511	929	
	2012-C6				3	000	V/M	3	000	
	JP Morgan Chase Commercial Mortgage Securities Trust	•	"	•	SSO	209	N/A	\$SO	209	
	2012-WLDIN GM Einancial Automobile Leacin of Trust 2018-3	,	=	'	3511	585	A/N	3511	585	
	DRGS 2018_RIOD Mortgage Trust		: =		881	573	V/N	351	573	
	Hyundai Auto Receivables Trust 2015-A		: =	•	SSD	571	Y/Z	SSO	571	
	COMM 2016-SAVA Mortgage Trust		: 1	,	SSI	555	N/A	SSI	555	
	DBUBS 2011-LC2 Mortgage Trust	,	: *	•	SSO	514	A/N	SSO	514	
	ARI Fleet Lease Trust 2018-A	,	: "	•	SSO	508	A/Z	SSO	508	
	GS Mortgage Securities Trust 2014-GC18	•	"	'	ns\$	505	N/A	SSN	505	
	CD 2016-CD2 Mortgage Trust	•	"	'	\$SO	200	N/A	\$SO	200	
	COMM 2014-CCRE19 Mortgage Trust	•		•	\$SO	499	N/A	\$SO	466	
	Ford Credit Auto Owner Trust 2016-A		**	•	\$SO	485	N/A	\$SO	485	
	Hyundai Auto Lease Securitization Trust 2017-A		"	•	\$SO	433	N/A	\$SO	433	
	WFRBS Commercial Mortgage Trust 2014-C25		Ш	,	\$SO	404	N/A	\$SO	404	
	GM Financial Automobile Leasing Trust 2018-2		"	•	\$SO	390	N/A	\$SO	390	
	Morgan Stanley Bank of America Merrill Lynch Trust 2014-C18	•	"	•	\$SO	377	N/A	\$SO	377	
	Honda Auto Receivables 2017-4 Owner Trust		"	•	\$SO	366	N/A	SSn	366	
	Wells Fargo Commercial Mortgage Trust 2016-LC24		"	•	SS	357	V/A	SSO	357	
	Morgan Stanley Bank of America Merrill Lynch Trust 2014-C16	•	"	•	SSO	337	<b>V</b> / <b>V</b>	SSO	337	
	ARI Fleet Lease Trust 2018-B	•	"	•	\$20 100	331	N/A	200	331	
	make Service Lease 1 rust 2018-1	•	"	•	\$20 118	317	N/A	\$20 1188	300	
	JPMISB Commercial Mortgage Securities 1 fust 2013-C14 GM Einemoint Automobile Leaving Tract 2017 2			•	\$20	260	A/N	951	360	
	Wells Faro Commercial Mortgone Trust 2017-2				980	264	A/N	3511	607	
	BMW Vehicle Lease Trust 2016-2	,		'	SSO	259	V/X	SSO	259	
	Honda Auto Receivables 2016-2 Owner Trust	,	: =	•	SSII	248	Y/Z	SSII	248	
	Wells Faron Commercial Mortoace Trust 2015-SG1		: =		SS1	214	Y Z	SI	212	
	Citigroup Commercial Mortgage Trust 2014-GC23	,		•	SSI	1661	V/Z	SSI	166	
	BMW Vehicle Lease Trust 2017-2	,	: =	•	SSI	187	V/Z	SSI	187	
	GS Mortgage Securities Trust 2010-C1			•	SSO	141	A/X	SSO	141	
	WFRBS Commercial Mortgage Trust 2011-C5	•	"	•	\$SO	123	N/A	\$SO	123	
	COMM 2014-CCRE15 Mortgage Trust			•	\$SO	96	N/A	\$SO	96	
	GS Mortgage Securities Trust 2014-GC24		H H	•	\$SO	82	N/A	\$SO	82	
	GS Mortgage Securities Trust 2010-C2	•	"	•	\$SO	45	N/A	\$SO	45	
	Honda Auto Receivables 2015-4 Owner Trust	1	II II	•	\$SO	32	N/A	\$SO	32	
	Commercial paper						į		6	
	Royal Bank of Canada/New York NY	•	Financial assets at fair value through other	•	SSO OS	2,000	N/A	SSO	2,000	
	Toronto-Dominion Bank/NY			1	SSO	1,500	N/A	\$SO	1,500	
	Non-publicly traded equity investments									
	Primavera Capital Fund II L.P.		Financial assets at fair value through other comprehensive income	•	\$SO	70,460	4	ns\$	70,460	
VTAF II	Non-publicly traded equity investments Sentelic	•	Financial assets at fair value through other	1,019	\$SO	2,039	4	\$SO	2,039	
	Aether Systems, Inc.			1,085	\$SO	353	20	\$SO	353	
_										

	Note							
	Fair Value (Foreign Currencies in Thousands)	313	730	800	174	2,393	775	
	Fair (Foreign C in Tho	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	
December 31, 2018	Percentage of Ownership (%)	7		41	,	,	ı	
December	Carrying Value (Foreign Currencies in Thousands)	313	730	800	174	2,393	775	
	Carryin (Foreign C in Thou	\$SO	\$SO	NS\$	\$SO	NS\$	\$SO	
	Shares/Units (In Thousands)	364	83	1,952	4,147	451	237	
	Financial Statement Account	Financial assets at fair value through other comprehensive income	Financial assets at fair value through other comprehensive income	Financial assets at fair value through other		Financial assets at fair value through other		
	Relationship with the Company		,					
	e Marketable Securities Type and Name	5V Technologies, Inc.	Publicly rraded stocks Aquantia	Non-publicly traded equity investments LiquidLeds Lighting Corp.	Neoconix, Inc.	Non-publicly traded equity investments Innovium, Inc.	CNEX Labs, Inc.	
	Held Company Name	VTAF II		VTAF III		Growth Fund		

(Concluded)

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

MARKETABLE SECURITIES ACQUIRED AND DISPOSED OF AT COSTS OR PRICES OF AT LEAST NTS300 MILLION OR 20% OF THE PAID-IN CAPITAL FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	74 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -				Beginning Balance	Balance	Acc	Acquisition				Disposal	la			Ending Balance (Note 1)	nce (Not	te 1)
Company Name	Marketable Securities Type and Name	Financial Statement Account	Counter-party	Nature of Relationship	Shares/Units (In Thousands)	Amount	Shares/Units (In Thousands)		Amount (	Shares/Units (In Thousands)	Amount		Carrying Value		Gain/Loss on Disposal	Shares/Units (In Thousands)	Ame	Amount
TSMC	Commercial paper CPC Corporation, Taiwan	Financial assets at amortized cost	·			s	- 20	s	498,837	,	ss.	۰		· ·	1	50	& 4	498,837
	Non-publicly traded equity. investments TSMC Global	Investments accounted for using equity method (Note		Subsidiary	6	309,211,877		2 62,	62,272,080	•		1		1	,	==	393,5	393,577,931
	TSMC Nanjing	2) "		Subsidiary	1	26,493,740		. 2,	2,361,320	•		1		,	•	•	20,6	20,601,413
	Publicly traded stocks Motech	Financial assets at fair value through other comprehensive income			58,320	1,309,279	. 62		1	58,320	99	651,973	1,831,241	14	(1,179,268)	1		1
TSMC Global	Corporate bond Bank of America Corp	Financial assets at fair value through other	1		1	US\$ 40,876	. 92	NSS -	10,852	1	NS\$	1 066'5	US\$ 6,027	27 US\$	(37)	1	ns\$	44,755
	Citigroup Inc	"	1	,	1	` '		SSO -	11,293	•	ns\$		US\$ 12,128	_	U	•	\$SO	28,602
	CVS Health Corp	"		,	•			SO -	18,102	•	\$SO	_				•	\$SO	27,238
	AT&T Inc	"	1	,	1	CI		SSO -	9,299	1	ns\$		_		_	1	SSO.	23,123
	Comcast Corp	"			•	US\$ 1,256		- CSS	18,768		SSO	1,210	US\$ 1,2		2 5	'	CSS Liga	18,894
	BAT Capital Corp United Technologies Corp						19	880	10,719		\$ S I		_	000 13S			885	12,394
_	Morgan Stanley	: "	,	,	'	US\$ 12,722		SSO -	8,573	•	ns\$	_	_		_	'	\$SO	8,928
_	Celgene Corp	"		,	•			SSO -	10,575	•	\$SO	_			_	•	\$SO	7,726
	Cooperatieve Rabobank UA/NY	"			'		1,450	SSO -	13,474	•	\$SO	_		7,453 US\$	\$ (127)	'	SSO.	7,462
	Asian Development Bank	"			'	US\$ 11,073	.73	SSO -	3,576	•	ns\$	_		_	-	'	SSO.	3,594
	Inter American	"	1		1	\$SO		SSO -	21,168	•	ns\$	1,166 U	US\$ 21,166	SSO 99		1	SSO.	1
	JPMorgan Chase & Co.	Financial assets at amortized cost	ı	,	1	US\$ 10,013		SSO -	,	•	ns\$	10,000 1	US\$ 10,000	SSO OO		1	\$SO	•
	Government bond United States Treasury Note/Bond Financial assets at fair value through other	nd Financial assets at fair value through other	ı	,	1	US\$ 202,689		SSO -	483,976	1	US\$ 4(	401,246	US\$ 403,883	83 US\$	\$ (2,637)	,	US\$ 2	283,314
	United States Treasury Floating	comprehensive income			1	US\$ 49,901		\$SO -	124,504	,	US\$ 106,171		US\$ 106,123	23 US\$	\$ 48	•	\$SO	68,164
	United States Treasury Bill	"				US\$ 2,997		SO -	175,861	•	US\$ 176,725		US\$ 176,682	82 US\$	\$ 43	•	\$SO	2,248
																	3)	(Continued)

	Moderate Comment	Picconstal Statement		Jo omnije N	Beginning	Balance	Acc	Acquisition	_			Disposal	æ			폌	Ending Balance (Note 1	1ce (No	(1 a
Company Name		Account	Counter-party	Relationship	Shares/Units (In Thousands)	Amount	Shares/Units (In Thousands)		Amount (	Shares/Units (In Thousands)	Amount		Carrying Value		Gain/Loss on Disposal		Shares/Units (In Thousands)	Amo	Amount
TSMC Global	Agency bonds/Agency_ mortgage-backed securities FNMA PooL BM4681	Financial assets at fair value	1	,	,	NS\$		nS\$	35,947		\$SO	1,026	US\$ 4	7 680,4	9) <b>SS</b> (0	(63)	ı	ns\$	31,784
		through other comprehensive income																	
	FNMA Pool BM4495	11	1		1	US\$		SSO .	29,035	•	SSO		US\$ 1	1,361	US\$ (112)	(2)	1	SSO	27,324
	FNMA Pool BM1948 FED HM I N BC Bool G61603	" "			1	0.55 41,275	0	880	2,534			1 256 1			(151) SSI	(60		880	26,046
	FNMA Pool CA2352				' '	\$50 8511		SSI	25,688		8811					(25)		SSI	25.130
	FNMA TBA 30 Yr 5	: "	,		1	\$SO		SSO .	186,999	1						(9)	1	SSO	24,761
	FED HM LN PC Pool G61592	"	,		1	\$SO		SSO .	45,987	1						286	,		21,507
	FED HM LN PC Pool G61654	"	,		1	NS\$		SSO .	19,316	1			SSO.			(53)	•		18,555
	GNMA II Pool MA5468	"	1		i	SSO.		SSO .	17,751	1	\$SO					(9)	'	SSO	17,490
	FNMA Pool BM4493	"			1	\$SO		\$SO	18,362	1	\$SO		_			(46)	'	SSO.	16,915
	Government National Mortgage	"	ı		1	NS\$		SSO .	16,433	ı	SSO.	36	SSO.	39 [	US\$		•	SSO.	16,485
	ASSOCIATION FED HM LN PC Pool G61553	"	,	,	1	NS\$		US\$	15.372	1	NS\$	244	NS\$	255	DSS (1	(1)		SSO	15.045
	FNMA Pool CA2169	"	,		1	NS\$		SSO .	15,368	1	SSO.					(23)	•	SSO.	13,859
	GNMA II Pool MA5332	"	,		1	NS\$		SSO .	26,202	1						9	,	SSO.	12,772
	GNMA II TBA 30 Yr 5	"	,		'	NS\$		SSO .	61,268	•		49,012 U				(34)	•	SS <sub>O</sub>	12,209
	Government National Mortgage	"	1		1	\$SO		SO .	10,494	ı	\$SO	-	\$SO	٠	\$SO	_	'	\$SO	10,590
	Association GNMA II TRA 30 Vr 4	=				878 6 8811	~	3511	47 507		3511	47 743	77 47	47773	8511	(30)		3511	2 129
	FNMA TBA 15 Yr 3 5	: 2			'			SSII	42.360							6 4	•	SSII	2,020
	GNMA II TBA 30 Yr 3 S	: 1	,	,	'	US\$ 145		SSII	47 680	•						(£2)	,	SSII	1 157
	FED HM LN PC Pool G08799	: "	,		1			SSO	24,748	1						2 4	'	SSO	. '
	Federal Home Loan Bank	"	,		1	\$SO		SSO .	29,498	1					SS n		'	\$SO	'
	Discount Notes	:						9011										9511	
	FED HM LN PC P001 G60594	"			•	0.000		\$ 50 E	- 120 00	'	820	11,191	11 680	11,/11	7C)	(520)	'	200	'
	FINAL IBA 30 113.3 FNMA TBA 30 Vr 3	, :					0	9511	1/7,00		-				4	71:		9511	
	FNMA TBA 15 Yr 3				•	US\$ 2.015		SSD	65.931		_					(65)		SSO	
	FNMA TBA 30 Yr 4.5	" "	,	,	1	_	. ∞	ns\$	157,210	1			_		_	(90	•	SSO	•
	FED HM LN PC Pool G08773	"	ı		1			\$SO	10,380	•						30	1	\$SO	•
	Asset-backed securities																		
	Citibank Credit Card Issuance	Financial assets at fair value			•	US\$ 48,328	· ∞	SSO .	40,865	•	. ssn	20,343	US\$ 20	20,346 L	) SSO	(3)	•	SSO.	68,487
		comprehensive income																	
	Chase Issuance Trust	"			1			· OS\$	27,720	1						(16)	1	SS <sub>O</sub>	43,604
	Discover Card Execution Note	"	1	1	1	US\$ 45,722		SSO .	16,266	ı	SSO	24,230 U	US\$ 24	24,268 L	OS\$	(88)	1	SSO.	37,495
	American Express Credit Account	"	,		•	US\$ 12,805		SSO .	25,878	•	\$SO	11,239	US\$ 11	11,233 U	NS\$	9	1	\$SO	27,285
	Master Trust Capital One Multi-Asset	"			'	US\$ 22,544	4	ns\$	1	'	NS\$	15,223	US\$ 15	15,227	) \$SD	(4)	1	NS\$	7,304
	Éxecution Trust																		
TSMC Global	<u>Structure product</u> Bank of Tokyo-Mitsubishi UFJ	Financial assets at amortized	ı		ı	US\$ \$0,000	0	. US\$	1	1	ssn	20,000	US\$ 50	20,000	NS\$		1	ns\$	'
		COST		ļ															

Note 1: The ending balance includes the amortization of premium/discount on bonds investments, share of profits/losses of investees and other related adjustment.

Note 2: To lower the hedging cost, in August 2018, the Board of Directors of TSMC approved to inject US\$2,000,000 thousand of capital into TSMC Global. This project was approved by the Investment Commission, Ministry of Economic Affairs, R.O.C. (MOEA). The prepayment for investment was US\$100,000 thousand as of December 31, 2018.

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

ACQUISITION OF INDIVIDUAL REAL ESTATE PROPERTIES AT COSTS OF AT LEAST NT\$300 MILLION OR 20% OF THE PAID-IN CAPITAL FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

National Property   Transaction Date   Aroname   Arona	1			Transaction				Prior	Prior Transaction of Related Counter-party	Related Counter-	party			
March 10, 2017 to March 12, 2018         \$ 303,592         Monthly settlement by progress and accoptance of progress and archives and accoptance of progress and accordance of progress and accoptance of progress and accoptance of progress and accoptan			Transaction Date	Amount (Foreign Currencies in Thousands)	Payment Term	Counter-party	Nature of Relationships	Owner	Relationships	Transfer Date	Amount	Price Reference	Purpose of Acquisition	Other
March 17, 2017 to March 12, 2018         30,341         Monthly sentement by progress and acceptance         TRUEVAL TECHNOLOGY August 6, 2018         - N/A         N/A         N/A         N/A         N/A         N/A           April 10, 2017 to March August 6, 2018         382,672         Monthly settlement by progress and acceptance         HWH High Tech Project Tawwar Co., Ltd         - N/A         N/A         N/A         N/A         N/A           April 10, 2017 to June 4, 30, 2018         1,334,403         Monthly settlement by the construction         HWH High Tech Project Tawwar Co., Ltd         - N/A         N/A         N/A         N/A         N/A           April 18, 2017 to June 4, 19, 2018         1,334,403         Monthly settlement by progress and progress and progress and progress and progress and progress and progress and progress and acceptance         - N/A         N/A         N/A         N/A         N/A           April 21, 2017 to June 12, 2018         1,841,951         Monthly settlement by progress and progress and acceptance         CO., LTD.         - N/A         N/A         N/A         N/A         N/A           April 22, 2017 to June 12, 2018         1,841,951         Monthly settlement by the construction progress and acceptance         CO., LTD.         - N/A         N/A         N/A         N/A           April 22, 2017 to July 10, 2018         413,901         Monthly settlement by		Fab	March 10, 2017 to January 25, 2018			HSIEH KUN CO., LTD		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
March 21, 2017 to August 6, 2018         607,800 progress and acceptance         Manthy settlement by progress and acceptance         TRUSVAL TECHNOLOGY CO., LTD.         - N/A         N/A         N/A         N/A         N/A         N/A           April 10, 2017 to March 30, 2018         382,672 progress and acceptance         Monthly settlement by progress and acceptance         H+W High Tech Project Taiwan Co., Ltd         - N/A         N/A         N/A         N/A           April 18, 2017 to June 19, 2018         1,334,403 progress and acceptance         Monthly settlement by progress and acceptance         CHEN FULL LTD.         - N/A         N/A         N/A         N/A         N/A           April 21, 2017 to June 12, 2018         1,841,951 progress and acceptance         Monthly settlement by progress and acceptance         Corp. Corp.         - N/A         N/A         N/A         N/A         N/A           April 22, 2017 to July 31, 2018         2,559,574 progress and acceptance         Monthly settlement by progress and acceptance         PULD.         - N/A         N/A         N/A         N/A         N/A           April 22, 2018         10, 2018         He construction         PULD.         - N/A         N/A         N/A         N/A           April 22, 2018         April 22, 2017 to July 10, 2018         413,901         Monthly settlement by the construction         TECHNOLOGIES CO			March 17, 2017 to March 12, 2018	301,341		Jer Yih Electrical Eng. Co.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
April 10, 2017 to March         382,672 Monthly settlement by progress and acceptance         M+W High Tech Project         -         N/A         N/A         N/A         N/A         N/A           30, 2018         April 18, 2017 to June 4, 1,334,403         1,334,403         Monthly settlement by progress and acceptance         CHEN FULL         -         N/A         N/A         N/A         N/A           April 20, 2017 to April 19, 2018         300,874         Monthly settlement by requests and acceptance         Corp.         -         N/A         N/A         N/A         N/A           April 21, 2017 to June 11, 2017 to June 12, 2017 to July 25, 2017 to July			March 21, 2017 to August 6, 2018	607,800	Monthly settlement by the construction progress and	TRUSVAL TECHNOLOGY CO., LTD.	1	N/A	K/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
April 18, 2017 to June 4, 1,334,403 Monthly settlement by CHEN FULL - N/A			April 10, 2017 to March 30, 2018	382,672		M+W High Tech Project Taiwan Co., Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
April 20, 2017 to April         300,874 (he construction)         Monthly settlement by progress and acceptance         Unique Station International 19, 2018         - N/A			April 18, 2017 to June 4, 2018			CHEN FULL INTERNATIONAL CO., LTD.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
April 21, 2017 to June         1,841,951         Monthly settlement by rocess and acceptance         Organo Technology Co., Ltd.         -         N/A         N/A         N/A         N/A         N/A           April 25, 2017 to July 12, 2017 to July 2018         2,559,574         Monthly settlement by receptance         YANKEY ENGINEERING POOL TD.         -         N/A         N/A         N/A         N/A           May 12, 2017 to May 12, 2017 to May 2018         413,901         Monthly settlement by receptance         HUAN YU         -         N/A         N/A         N/A         N/A           10, 2018         Progress and acceptance         LTD.         LTD.         -         N/A         N/A         N/A         N/A			April 20, 2017 to April 19, 2018			Unique Station International Corp.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
April 25, 2017 to July 31, 2018         2,559,574 A construction progress and acceptance         May 12, 2017 to May 12, 2017 to May acceptance         April 25, 2017 to May 12, 2017 to May acceptance         April 25, 2017 to May acceptance         April 25, 2017 to May acceptance         YANKEY ENGINEERING and acceptance         N/A         N/A         N/A         N/A         N/A           10, 2018         Progress and acceptance         LTD.         LTD.         April 2017 to May acceptance         LTD.         N/A         N/A         N/A         N/A			April 21, 2017 to June 12, 2018	1,841,951		Organo Technology Co., Ltd.	1	N/A	K/A	Z/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
May 12, 2017 to May 413,901 Monthly settlement by the construction acceptance acceptance A13,901 Monthly settlement by the CONTROLOGIES CO., acceptance acceptance A13,901 Monthly settlement by the CONTROLOGIES CO., acce			April 25, 2017 to July 31, 2018			YANKEY ENGINEERING CO., LTD.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
			May 12, 2017 to May 10, 2018			HUAN YU TECHNOLOGIES CO., LTD.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None

Counter-party         Nature of months         Nature of months         Transfer Date         Amount         Price Reference and price and purpose and purpose and purpose and purpose and price and purpose and purpo			_	Transaction				Prior	Prior Transaction of Related Counter-party	elated Counter-	arty			
- N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation purpose negotiation Purpose negotiation N/A N/A N/A Price comparison Manufacturing and price purpose negotiation Price comparison Manufacturing and price purpose negotiation purpose negotiation Price comparison Manufacturing and price purpose negotiation Price comparison Purpose negotiation purpose negotia	Company Types of Transaction Date (Foreign Payment Term Name Property Currencies in Thousands)	Amount Transaction Date (Foreign Currencies in Thousands)		Payment Ter	Ħ	Counter-party	Nature of Relationships	Owner		Fransfer Date	Amount	Price Reference	Purpose of Acquisition	Other Terms
SS N/A N/A N/A N/A Price comparison Manufacturing and price negotiation or purpose negotiation or purpose negotiation negot	Fab May 25, 2017 to June \$2,187,982 Monthly settlement by the construction progress and progress and accordance.	\$2,187,982		Monthly settlement b the construction progress and	ý	MEGA UNION TECHNOLOGY INCORPORATED		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
SS, - N/A N/A N/A Price comparison Manufacturing and price and price purpose negotiation and price and price negotiation and price and p	Fab July 11, 2017 to July 31, 1,422,454 Monthly settlement by the construction progress and progress and	1,422,454		Monthly settlement by the construction progress and		TASA Construction Corporation	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
PARTNERS, - N/A N/A N/A Price comparison Manufacturing and price purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A	Fab July 24, 2017 to June 21, 347,431 Monthly settlement by the construction progress and progress and	347,431	347,431	Monthly settlement by the construction progress and		MandarTech Interiors Inc.		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ional Corp., - N/A N/A N/A N/A Price comparison Manufacturing and price purpose negotiation purpose negotiation purpose negotiation purpose negotiation negotiatio	Fab July 28, 2017 to April 348,757 Monthly Settlement by 19, 2018 the construction progress and accordance	348,757		Monthly settlement by the construction progress and accentance		J.J. PAN AND PARTNERS , ARCHITECTS AND PLANNERS	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ional Corp., - N/A N/A N/A Price comparison Manufacturing and price negotiation of purpose neuring Co., - N/A N/A N/A N/A N/A N/A Price comparison danufacturing and price negotiation purpose neuring Co., - N/A	574,621 M	574,621		Monthly settlement by the construction progress and accentance		Trane Taiwan Distribution Limited	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
Feastern - N/A N/A N/A Price comparison Manufacturing and price negotiation neutral Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation neutral Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation negotiation and price negotiation negotiation and price negotiation negotiation and price negotiation nego	ement by ction d	337,069 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and acceptance		-	Lumax International Corp., Ltd	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ndustrial Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation negotiation	ement by ction	1,012,550 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and		<,	Air Liquide Far Eastern	1	N/A	N/A	Z/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
industrial Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price negotiation purpose negotiation negotiation manufacturing and price negotiation purpose negotiation negot	ement by ction d	617,447 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and		$\simeq$	Kao Hsin Engineering Co., Ltd.	1	N/A	Z/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
- N/A N/A Price comparison Manufacturing and price purpose negotiation - N/A N/A N/A Price comparison Manufacturing and price purpose negotiation and price purpose negotiation purpose negotiation	ement by ction d	1,224,738 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and acceptance		$\supset$	Uangyih-Tech Industrial Co., Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ONAL N/A N/A N/A Manufacturing and price purpose negotiation	ement by ction	784,003 Monthly settlement by the construction progress and	Monthly settlement by the construction progress and		• 1	Siemens Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
	ement by ction d	1,773,165 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and acceptance		~	MARKETECH INTERNATIONAL CORP.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None

			Transaction				Prior	Transaction of F	Prior Transaction of Related Counter-party	arty			
Company Name	Types of Property	Transaction Date	Amount (Foreign Currencies in Thousands)	Payment Term	Counter-party	Nature of Relationships	Owner	Relationships	Transfer Date	Amount	Price Reference	Purpose of Acquisition	Other Terms
-	Fab	November 10, 2017 to May 24, 2018	\$ 305,783	Monthly settlement by the construction progress and	DESICCANT TECHNOLOGY CO., LTD.		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
	Fab	November 13, 2017 to August 13, 2018	948,048	ement by ction d	Chen Yuan International Co., Ltd		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	November 14, 2017 to April 16, 2018	1,724,550	Monthly settlement by the construction progress and	PAN ASIA Corp.		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
	Fab	December 5, 2017 to July 31, 2018	7,219,028	Monthly settlement by the construction progress and	UNITED INTEGRATED SERVICES CO., LTD.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	December 13, 2017 to July 23, 2018	2,457,695	Monthly settlement by the construction progress and	Taiwan Puritic Corp.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	December 14, 2017 to May 23, 2018	305,566	ement by ction	WHOLETECH SYSTEM HITECH LIMITED		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	December 26, 2017 to February 13, 2018	525,172	ement by ction d	ABB Ltd.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	January 4, 2018 to April 16, 2018	1,744,533	ement by ction d	KEDGE Construction Co., Ltd.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	January 5, 2018 to April 16, 2018	315,886	Monthly settlement by the construction progress and	Shihlin Electric & Engineering Corp. Tainan Branch		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	February 5, 2018 to July 31, 2018	2,564,709	ement by etion d	L&K ENGINEERING CO.,LTD.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	February 6, 2018 to August 13, 2018	5,387,421	ement by ction d	Fu Tsu Construction Co., Ltd.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
													(Continued)

_			Transaction				Prior	Transaction of R	Prior Transaction of Related Counter-party	ırty			
e e	Company Types of Name Property	Transaction Date	Amount (Foreign Currencies in Thousands)	Payment Term	Counter-party 1	Nature of Relationships	Owner	Relationships	Relationships Transfer Date	Amount	Price Reference	Purpose of Acquisition	Other Terms
TSMC	Fab	February 12, 2018 to April 16, 2018	\$ 378,445	\$ 378,445 Monthly settlement by AMPOWER the construction INTERNA Progress and ENTERPR	AMPOWER INTERNATIONAL ENTERPRISE		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
<u> </u>	Fab	February 13, 2018 to June 25, 2018	1,415,232	ement by	Cica-Huntek Chemical Technology Taiwan Co., Ltd		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
<u></u>	Fab	March 16, 2018 to August 2, 2018	1,068,243	ement by ction d	Chun Yuan Steel Industry Co., Ltd		N/A	K/X	A/A	N/A	Price comparison   Manufacturing and price purpose negotiation	Manufacturing purpose	None
	Fab	March 16, 2018 to December 18, 2018	3,098,269	acceptance Monthly settlement by the construction progress and	China Steel Structure Co., Ltd.		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
-	Fab	April 13, 2018 to April 16, 2018	410,000	acceptance Monthly settlement by left construction progress and	Acceptance  Monthly settlement by Lead Fu Industrials Corp. the construction progress and		N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
-	Fab	April 16, 2018 to December 24, 2018	5,311,851	acceptance Monthly settlement by I the construction progress and acceptance	acceptance Monthly settlement by the construction progress and acceptance	1	N/A	N/A	N/A	N/A	Price comparison Manufacturing and price purpose negotiation	Manufacturing purpose	None
						_							

(Concluded)

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

TOTAL PURCHASES FROM OR SALES TO RELATED PARTIES OF AT LEAST NT\$100 MILLION OR 20% OF THE PAID-IN CAPITAL FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

de or	% to Note Total	70		4		3		1	1	20
Notes/Accounts Payable or Receivable	Unit Price Payment Terms (Foreign Currencies 1 in Thousands)	\$ 86,057,097	375,184	(1,299,072)	(414,401)	(1,092,785)	(357,080)	(362,564)	106,750 (US\$ 3,473)	102,478
Abnormal Transaction	Payment Terms	Note			,	,	1			
Abnorm	Unit Price	,	ı	,	,			ı	1	
tails	Payment Terms	Net 30 days from invoice date	Net 30 days from the end of the	Net 30 days from the end of the	Net 30 days from the end of the	Net 30 days from the end of the	Net 30 days from the end of the	Month of when invoice is issued Net 30 days from the end of the month of when invoice is issued	Net 30 days from invoice date	Net 30 days from the end of the month of when invoice is issued
Transaction Details	% to Total	09	-	19	∞	6	5	4		20
Trans	Amount (Foreign Currencies in Thousands)	\$ 650,432,820	6,705,439	18,089,003	7,738,425	8,309,250	5,142,749	3,666,645	1,664,555 (US\$ 55,492)	542,179
	Purchases/ Sales	Sales	Sales	Purchases	Purchases	Purchases	Purchases	Purchases	Sales	Sales
	Nature of Relationships	Subsidiary	Associate	Subsidiary	Subsidiary	Indirect subsidiary	Associate	Associate	Associate of TSMC	Associate of TSMC
	Related Party	TSMC North America	GUC	TSMC China	TSMC Nanjing	WaferTech	VIS	SSMC	GUC	Xintec
	Company Name	TSMC							TSMC North America	VisEra Tech

Note: The tenor is 30 days from TSMC's invoice date or determined by the payment terms granted to its clients by TSMC North America.

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

RECEIVABLES FROM RELATED PARTIES AMOUNTING TO AT LEAST NT\$100 MILLION OR 20% OF THE PAID-IN CAPITAL DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Note 2 (USD) (USD)		of the (USD 3,473) (USD 3,473) (USD 3,473) (USD 3,473)
44	3,473)	(USD 3,473)
		of the (USD (USD
TSMC Nanjing TSMC Technology TSMC Technology TSMC Associate of TSMC Associate of TSMC Tibe ultimate parent of the Company Associate of TSMC Associate of TSMC Tibe United TSMC Associate of TSMC Tibe United TSMC Associate of TSMC Associate of TSMC Tibe United TSMC Associate of TSMC Tibe United TSMC Associate of TSMC Tibe United TsMC TsMC Tibe United TsMC TsMC TsMC TsMC TsMC TsMC TsMC TsMC	U U º	

Note 1: The calculation of turnover days excludes other receivables from related parties.

Note 2: The ending balance is primarily consisted of other receivables, which is not applicable for the calculation of turnover days.

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

INTERCOMPANY RELATIONSHIPS AND SIGNIFICANT INTERCOMPANY TRANSACTIONS FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars)

			Notern of	Interc	Intercompany Transactions		
No.	Company Name	Counter Party	Relationship (Note 1)	Financial Statements Item	Amount	Terms (Note 2)	Percentage of Consolidated Net Revenue or Total Assets
0	JMSL	TSMC North America	1	Net revenue from cale of goods	\$ 650 432 820		%89
)			•	Receivables from related parties	86.057.097	,	4%
				Other receivables from related parties	1,035,465	1	) 1
		TSMC Japan	1	Marketing expenses - commission	225,013		
		TSMC Europe		Marketing expenses - commission	463,093		1
		TSMC Global	_	Short-term loans	3,227,700		1
		TSMC China		Purchases	18,089,003		2%
				Marketing expenses - commission	156,017	•	ı
				Payables to related parties	1,299,072	•	1
		TSMC Nanjing	_	Purchases	7,738,426		1%
				Proceeds from disposal of property, plant and equipment	2,839,622		1
				Payables to related parties	414,401		,
				Accrued expense and other current liabilities	199,638		1
		TSMC Canada	-	Research and development expenses	298,050		1
		TSMC Technology	1	Research and development expenses	2,044,765		1
		1		Payables to related parties	218,347	•	1
		WaferTech	_	Purchases	8,309,250		1%
				Payables to related parties	1,092,785	•	ı
-	TSMC China	TSMC Nanjing	3	Other receivables from related parties	30,986,047	-	1%

Note 1: No. 1 represents the transactions from parent company to subsidiary. No. 3 represents the transactions between subsidiaries.

Note 2: The sales prices and payment terms of intercompany sales are not significantly different from those to third parties. For other intercompany transactions, prices and terms are determined in accordance with mutual agreements.

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

NAMES, LOCATIONS, AND RELATED INFORMATION OF INVESTEES OVER WHICH THE COMPANY EXERCISES SIGNIFICANT INFLUENCE (EXCLUDING INFORMATION ON INVESTMENT IN MAINLAND CHINA) FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

ý	Note	2 Subsidiary	0 Subsidiary	4 Associate	7 Associate	1 Subsidiary	8 Subsidiary	(547,789) Associate	4 Associate		Subsidiary     Subsidiary			2 Subsidiary	2 Subsidiary	2 Subsidiary	2 Subsidiary	2 Subsidiary	2 Subsidiary	2 Associate
Profits/Losses	of Investee (Note 1) (Foreign Currencies in Thousands)	\$ 9,271,602	2,499,370	1,741,394	1,520,207	358,421	117,948	(547,78	344,274	41,697	(3,348) 4,035	(3,652)	(2)	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
Net Income	(Losses) of the Investee (Foreign Currencies in Thousands)	\$ 9,271,602	2,499,370	6,166,269	3,919,068	412,283	117,948	(1,351,951)	988,156	41,697	(3,416) 4,035	(3,726)	(21)	1,863,196 (US\$ 61,803)	4	61	(690,1 &&∪) -	(6,781) (US\$ (231))	(597)	Ü
	Carrying Value (Foreign Currencies in Thousands)	\$ 393,577,931	52,339,094	9,006,126	5,772,815	4,531,929	4,269,393	1,764,607	1,299,423	445,828	194,660	128,758	(20,106)	29,240,767 US\$ 951,229)	٠,	19,096) 205,423	6,683)	(OS\$ 17)	97,782	22,867 744)
	Percentage of Ownership	100	100	28	39	87	100	41	35	100	8 00 001	86	100	0001	100	100	76		100	39
	Shares (In Thousands)	11	988,268	464,223	314	253,120	11,000	111,282	46,688	,	9	' %	8 -	1	1	2,300	583	9,299	1	4,693
	December 31, 2017 (Foreign Currencies in Thousands)	\$ 292,890,229	31,456,130	10,180,677	5,120,028	5,005,171	333,718	1,988,317	386,568	15,749	83,760	412,831	25,266	18,042,499 (US\$ 586,939)	4		7 4	US\$ 475)	66,207	4
_	December 31, 2018 (Foreign Currencies in Thousands)	\$ 355,162,309 (Note 3)	31,456,130	10,180,677	5,120,028	5,005,171	333,718	1,988,317	386,568	15,749	1,308,244	278,800	25,266	18,042,499 (US\$ 586,939)	439,029	14,282) (	14,607	( US\$ 475) ( US\$		48,980 1,593)
	Main Businesses and Products	Investment activities	Investing in companies involved in the design, manufacture, and other related business in the semiconductor industry and other investment activities	mauritacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing and design service of masks	Manufacturing and selling of integrated circuits and other semiconductor devices	Engaged in manufacturing electronic spare parts and in researching, developing, designing, manufacturing, selling, packaging and testing of color filter	Selling and marketing of integrated circuits and other semiconductor devices	Wafer level chip size packaging and wafer level	Researching, developing, manufacturing, testing	Customer service and supporting activities	Investing in new start-up technology companies Customer service and supporting activities	Investing in new start-up technology companies	Customer service and supporting activities Selling of solar related products and providing customer service	Investing in companies involved in the manufacturing related business in the	Engineering support activities	Engineering support activities	Investing in new start-up technology companies	Investing in new start-up technology companies	Investing in new start-up technology companies	Manufacturing of electronic parts, wholesaling and retailing of electronic materials, and researching, developing and testing of RFID
	Location	Tortola, British Virgin Islands	Tortola, British Virgin Islands	Hsin-Chu, Taiwan	Singapore	Hsin-Chu, Taiwan	San Jose, California, U.S.A	Taoyuan, Taiwan	Hsin-Chu, Taiwan	Amsterdam, the Netherlands	Cayman Islands Yokohama, Japan	Cayman Islands	Hamburg, Germany	Delaware, U.S.A	Delaware, U.S.A	Ontario, Canada	Cayman Islands	Cayman Islands	Cayman Islands	New Taipei, Taiwan
	Investee Company	TSMC Global	TSMC Partners	VIS	SSMC	Vis Era Tech	TSMC North America	Xintec	GUC	TSMC Europe	V I AF III TSMC Japan	VTAF II	TSMC Solar Europe GmbH	TSMC Development	TSMC Technology	TSMC Canada	ISDF	ISDF II	Growth Fund	Mutual-Pak
	Investor Company	TSMC												TSMC Partners					VTAF III	

	Note	Note 2 Subsidiary
Share of	Profits/Losses of Investee (Note 1) (Foreign Currencies in Thousands)	Note 2
Mot Income	Losses) of the Investee (Foreign Currencies in	\$ 4,595,263 \$ 1,473,555 US\$ 149,488) (US\$ 48,918)
	Carrying Value (Foreign Currencies in Thousands)	\$ 4,595,263 (US\$ 149,488)
Balance as of December 31, 2018	Shares (In Percentage of Thousands) Ownership	100
Balance	L .	293,637
Original Investment Amount	December 31, December 31, 2018 (Foreign (Foreign Currencies in Thousands)	\$
Original Inves	December 31, 2018 (Foreign Currencies in Thousands)	\$
	Main Businesses and Products	Manufacturing, selling and testing of integrated circuits and other semiconductor devices
	Location	Washington, U.S.A
	Investee Company	WaferTech
	Investor Company	TSMC Development

Note 1: The share of profits/losses of investee includes the effect of unrealized gross profits/losses on intercompany transactions.

Note 2: The share of profits/losses of the investee company is not reflected herein as such amount is already included in the share of profits/losses of the investor company.

Note 3: To lower the hedging cost, in August 2018, the Board of Directors of TSMC approved to inject US\$2,000,000 thousand of capital into TSMC Global. This project was approved by the Investment Commission, Ministry of Economic Affairs, R.O.C. (MOEA). The prepayment for investment was US\$100,000 thousand as of December 31, 2018.

(Concluded)

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

INFORMATION ON INVESTMENT IN MAINLAND CHINA FOR YEAR ENDED DECEMBER 31, 2018 (Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Accumulated	Inward Remittance of Earnings as of December 31, 2018	ı	ı
Accur		<del>\$</del>	
	Carrying Amount as of December 31, 2018	\$ 55,466,911	20,601,413
	Share of Profits/Losses	\$ 5,364,578 \\ (Note 2)	(8,200,927) (Note 2)
	Percentage of Ownership	100%	100%
	Net Income (Losses) of the Investee Company	\$ 5,397,462	(8,215,989)
Accumulated	Investment from Taiwan as of December 31, 2018 (USS in Thousands)	\$ 18,939,667 (US\$ 596,000)	30,521,412 (US\$ 1,000,000)
nt Flows	Inflow	· •	1
Investment Flows	Outflow (US\$ in Thousands)	· •	2,361,320 (US\$ 80,000)
Accumulated	Method of Taiwan as of Investment January 1, 2018 (US\$ in Thousands)	\$ 18,939,667 (US\$ 596,000)	28,160,092 2,361,320 (US\$ 920,000)
	Method of Investment	Note 1	Note 1
	Total Amount of Paid-in Capital (RMB in Thousands)	\$ 18,939,667 (RMB 4,502,080)	30,521,412 (RMB 6,650,119)
	Main Businesses and Products	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices
	Investee Company	TSMC China	TSMC Nanjing

Upper Limit on Investment	Note 3
Investment Amounts Authorized by Investment Commission, MOEA (USS in Thousands)	\$ 119,412,667 (US\$ 3,596,000)
Accumulated Investment in Mainland China as of December, 2018 (USS in Thousands)	\$ 49,461,079 (US\$ 1,596,000)

Note 1: TSMC directly invested US\$596,000 thousand in TSMC China and US\$1,000,000 thousands in TSMC Nanjing.

Note 2: Amount was recognized based on the audited financial statements.

Note 3: As the Company has obtained the certificate of being qualified for operating headquarters issued by Industrial Development Bureau, MOEA on August 2016, the upper limit on investment in mainland China pursuant to "Principle of investment or Technical Cooperation in Mainland China" is not applicable.

Parent Company Only Financial Statements for the Years Ended December 31, 2018 and 2017 and Independent Auditors' Report

# Deloitte.

# 勤業眾信

勤業眾信聯合會計師事務所 11073 台北市信義區松仁路100號20樓

Deloitte & Touche 20F, Taipei Nan Shan Plaza No. 100, Songren Rd., Xinyi Dist., Taipei 11073, Taiwan

Tel:+886 (2) 2725-9988 Fax:+886 (2) 4051-6888 www.deloitte.com.tw

### INDEPENDENT AUDITORS' REPORT

The Board of Directors and Shareholders
Taiwan Semiconductor Manufacturing Company Limited

#### **Opinion**

We have audited the accompanying parent company only financial statements of Taiwan Semiconductor Manufacturing Company Limited (the "Company"), which comprise the parent company only balance sheets as of December 31, 2018 and 2017, and the parent company only statements of comprehensive income, changes in equity and cash flows for the years then ended, and the notes to the parent company only financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying parent company only financial statements present fairly, in all material respects, the parent company only financial position of the Company as of December 31, 2018 and 2017, and its parent company only financial performance and its parent company only cash flows for the years then ended in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers.

#### **Basis for Opinion**

We conducted our audits in accordance with the Regulations Governing Auditing and Attestation of Financial Statements by Certified Public Accountants and auditing standards generally accepted in the Republic of China. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Parent Company Only Financial Statements section of our report. We are independent of the Company in accordance with The Norm of Professional Ethics for Certified Public Accountant of the Republic of China, 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 parent company only financial statements for the year ended December 31, 2018. These matters were addressed in the context of our audit of the parent company only financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Key audit matters for the Company's parent company only financial statements for the year ended December 31, 2018 are stated as follows:

#### Estimate for sales returns and allowances

In consideration of business volume and market conditions, the Company provides a variety of business incentives to specific customers or products. The estimate for sales returns and allowance is based on historical experience and the varying contractual terms. Please refer to Notes 4, 5 and 21 to the parent company only financial statements for the details of the information about estimate for sales returns and allowances. Since the estimate for sales returns and allowances is subject to accounting judgment and estimation, and the result could also affect the net revenue in the parent company only financial statements, it has been identified as a key audit matter.

Our key audit procedures performed in respect of the above area included the following:

- 1. Understood and tested the design and operating effectiveness of the key controls over estimate for sales returns and allowances;
- 2. Understood and assessed the reasonableness of assumptions made and methodology used in estimating sales returns and allowances;
- 3. Sampled and inspected the sales contracts of main products by agreeing the contractual terms and performed an analysis to challenge the estimation on possibility that specific products could meet business incentives condition to verify the reasonableness of the accrual of the sales returns and allowances;
- 4. Performed a retrospective review to comparatively analyze the historical accuracy of judgments with reference to actual sales returns and allowance paid.

# Timing to commence depreciation of property, plant and equipment (PP&E)

The Company continues to invest in capital expenditures to develop and build capacity in leading-edge technologies to meet customers' demand. Please refer to Notes 4, 5 and 12 to the parent company only financial statements for the details of the information and accounting policy about the depreciation of PP&E. According to IAS 16, depreciation of PP&E begins when the assets are available for use, and in the condition necessary for the assets to be capable of operating in the intended manner. Due to the significant capital expenditures of the Company, and the criteria to determine whether such assets are available for their intended use vary within categories of assets as well as involve subjective judgments, the validity of the timing to commence depreciation of PP&E could have a material impact on its financial performance. Consequently, the validity of the timing to commence depreciation of PP&E is identified as a key audit matter.

Our key audit procedures performed in respect of the above area included the following:

- 1. Understood and tested the design and operating effectiveness of the key controls over the timing to commence depreciation of PP&E;
- 2. Understood the criteria the assets are defined as available for their intended use and the corresponding accounting treatments;
- 3. Sampled and reviewed the appropriateness of the timing for commencing depreciation after the assets met the criteria of available for use in current year;
- 4. Performed an observation on the physical count of equipment under installation and construction in progress; sampled and inspected the supporting documentation to verify that the status of equipment under installation and construction in progress are not available for use;
- 5. Sampled equipment under installation and construction in progress which met the criteria of available for use and were transferred in the subsequent period to evaluate the reasonableness of the timing for commencing depreciation;
- 6. Sampled and reviewed the appropriateness of the equipment under installation and construction in progress which are not available for their intended use.

# Responsibilities of Management and Those Charged with Governance for the Parent Company Only Financial Statements

Management is responsible for the preparation and fair presentation of the parent company only financial statements in accordance with the Regulations Governing the Preparation of Financial Reports by Securities Issuers, and for such internal control as management determines is necessary to enable the preparation of parent company only financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the parent company only financial statements, management is responsible for assessing the Company'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 Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance (including members of the Audit Committee) are responsible for overseeing the Company's financial reporting process.

# Auditors' Responsibilities for the Audit of the Parent Company Only Financial Statements

Our objectives are to obtain reasonable assurance about whether the parent company only financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' 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 the auditing standards generally accepted in the Republic of China 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 parent company only financial statements.

As part of an audit in accordance with the auditing standards generally accepted in the Republic of China, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- 1. Identify and assess the risks of material misstatement of the parent company only 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.
- 2. 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 Company's internal control.
- 3. Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- 4. 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 Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the parent company only 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 auditors' report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- 5. Evaluate the overall presentation, structure and content of the parent company only financial statements, including the disclosures, and whether the parent company only financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

6. Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company to express an opinion on the parent company only 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 parent company only financial statements for the year ended December 31, 2018 and are therefore the key audit matters. We describe these matters in our auditors' 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 engagement partners on the audit resulting in this independent auditors' report are Mei Yen Chiang and Yu Feng Huang.

Judens Huers

Deloitte & Touche Taipei, Taiwan Republic of China

February 19, 2019

#### Notice to Readers

The accompanying financial statements are intended only to present the financial position, financial performance and cash flows in accordance with accounting principles and practices generally accepted in the Republic of China and not those of any other jurisdictions. The standards, procedures and practices to audit such financial statements are those generally applied in the Republic of China.

For the convenience of readers, the independent auditors' report and the accompanying financial statements have been translated into English from the original Chinese version prepared and used in the Republic of China. If there is any conflict between the English version and the original Chinese version or any difference in the interpretation of the two versions, the Chinese-language independent auditors' report and financial statements shall prevail.

# PARENT COMPANY ONLY BALANCE SHEETS (In Thousands of New Taiwan Dollars)

	December 31,		December 31, 2	
ASSETS	Amount	%	Amount	%
CURRENT ASSETS Cash and cash equivalents (Note 6) Financial assets at fair value through profit or loss (Note 7) Financial assets at fair value through other comprehensive income	\$ 240,202,525 54,115 568,150	12	\$ 239,176,841 373,351	12
Available-for-sale financial assets Financial assets at amortized cost	2,294,098	-	2,393,555	-
Hedging derivative financial assets (Note 8) Hedging financial assets (Note 8)	23,497	-	7,378	-
Notes and accounts receivable, net (Note 9) Receivables from related parties (Note 32)	36,685,389 86,452,584	2 4	26,655,427 92,141,837	2 5
Other receivables from related parties (Note 32) Inventories (Notes 5, 10 and 35)	1,234,662 98,088,160	5	3,143,872 70,297,445	- 4
Other financial assets (Notes 33 and 35) Other current assets (Note 14)	178,008 4,184,918		94,839 2,484,792	
Total current assets	469,966,106	23	436,769,337	23
NONCURRENT ASSETS Financial assets at fair value through other comprehensive income	963,610	-	-	-
Financial assets carried at cost			415,051	
Investments accounted for using equity method (Notes 5 and 11)	549,560,884	26	463,986,364	24
Property, plant and equipment (Notes 5 and 12) Intangible assets (Notes 5 and 13)	1,025,286,941 12,429,930	49 1	1,016,355,970 9,870,127	52
Deferred income tax assets (Notes 5 and 26)	15,586,674	1	10,829,473	1
Refundable deposits and others	1,666,863		1,163,069	
Total noncurrent assets	1,605,494,902	<u>77</u>	1,502,620,054	<u>77</u>
TOTAL  LIABILITIES AND EQUITY	\$ 2,075,461,008	100	\$ 1,939,389,391	100
LIABILITIES AND EQUITI				
CURRENT LIABILITIES				
Short-term loans (Notes 15 and 29)	\$ 91,982,340	4	\$ 63,766,850	3
Financial liabilities at fair value through profit or loss (Note 7) Hedging derivative financial liabilities (Note 8)	30,232	-	18,764 15,562	-
Hedging financial liabilities (Note 8)	1,941	-	15,562	-
Accounts payable	30,472,292	2	25,605,223	1
Payables to related parties (Note 32)	4,546,752	-	4,829,664	-
Salary and bonus payable	12,442,707	1	12,283,321	1
Accrued profit sharing bonus to employees and compensation to directors (Notes 20 and 28)	23,919,312	1	23,388,002	1
Payables to contractors and equipment suppliers Income tax payable (Notes 5 and 26)	41,279,910 38,706,990	2 2	50,363,976 32,950,667	3 2
Provisions (Notes 5 and 16)	36,700,990	-	13,174,825	1
Long-term liabilities - current portion (Note 17)	34,900,000	2	24,300,000	1
Accrued expenses and other current liabilities (Notes 5, 19, 21, 29 and 32)	49,778,042	2	57,686,386	3
Total current liabilities	328,060,518	16	308,383,240	16
NONCURRENT LIABILITIES	56,000,000	2	01 000 000	-
Bonds payable (Notes 17 and 29) Deferred income tax liabilities (Notes 5 and 26)	56,900,000 233,284	3	91,800,000 302,205	5
Net defined benefit liability (Notes 5 and 18)	9,651,405	1	8,850,704	1
Guarantee deposits (Notes 19 and 29)	3,346,648	-	7,582,479	-
Others	451,488		413,230	
Total noncurrent liabilities	70,582,825	4	108,948,618	6
Total liabilities	398,643,343		417,331,858	22
EQUITY ATTRIBUTABLE TO SHAREHOLDERS OF THE PARENT Capital stock (Note 20) Capital surplus (Note 20) Retained earnings (Note 20)	259,303,805 56,315,932	<u>12</u> <u>3</u>	259,303,805 56,309,536	<u>13</u>
Appropriated as legal capital reserve	276,033,811	13	241,722,663	12
Appropriated as special capital reserve Unappropriated earnings	26,907,527 1,073,706,503	1 <u>52</u>	991,639,347	51
Others (Note 20)	1,376,647,841 (15,449,913)	<u>66</u> (1)	1,233,362,010 (26,917,818)	<u>63</u> <u>(1)</u>
Total equity	1,676,817,665	80	1,522,057,533	78
TOTAL	<u>\$ 2,075,461,008</u>	100	<u>\$ 1,939,389,391</u>	_100

The accompanying notes are an integral part of the parent company only financial statements.

# PARENT COMPANY ONLY STATEMENTS OF COMPREHENSIVE INCOME (In Thousands of New Taiwan Dollars, Except Earnings Per Share)

	2018		2017	
	Amount	%	Amount	%
NET REVENUE (Notes 5, 21 and 32)	\$1,023,925,713	100	\$ 969,136,109	100
COST OF REVENUE (Notes 5, 10, 28, 32 and 35)	530,861,166	52	490,196,856	51
GROSS PROFIT BEFORE UNREALIZED GROSS PROFIT ON SALES TO SUBSIDIARIES AND ASSOCIATES	493,064,547	48	478,939,253	49
UNREALIZED GROSS PROFIT ON SALES TO SUBSIDIARIES AND ASSOCIATES	(109,046)		(1,562)	
GROSS PROFIT	492,955,501	48	478,937,691	<u>49</u>
OPERATING EXPENSES (Notes 5, 28, and 32) Research and development General and administrative Marketing	84,944,461 19,113,298 3,201,670	8 2 	79,887,723 20,049,405 3,048,781	8 2 1
Total operating expenses	107,259,429	<u>10</u>	102,985,909	11
OTHER OPERATING INCOME AND EXPENSES, NET (Notes 12, 22 and 28)	(1,668,234)		(1,261,665)	
INCOME FROM OPERATIONS	384,027,838	38	374,690,117	38
NON-OPERATING INCOME AND EXPENSES Share of profits of subsidiaries and associates (Note 11) Other income (Note 23) Foreign exchange gain, net (Note 37) Finance costs (Note 24) Other gains and losses (Note 25)	12,509,959 2,005,107 1,927,029 (2,903,454) (1,368,326)	1 - - -	18,757,236 1,696,595 (670,371) (2,749,640) 1,592,239	2
Total non-operating income and expenses	12,170,315	1	18,626,059	2
INCOME BEFORE INCOME TAX	396,198,153	39	393,316,176	40
INCOME TAX EXPENSE (Notes 5 and 26)	45,067,269	5	50,204,700	5
NET INCOME	351,130,884	_34	343,111,476 (Cor	35 ntinued)

# PARENT COMPANY ONLY STATEMENTS OF COMPREHENSIVE INCOME

(In Thousands of New Taiwan Dollars, Except Earnings Per Share)

	2018		2017	
	Amount	%	Amount	%
OTHER COMPREHENSIVE INCOME (LOSS) (Notes 5, 11, 18, 20 and 26) Items that will not be reclassified subsequently to profit or loss:				
Remeasurement of defined benefit obligation Unrealized loss on investments in equity instruments at fair value through other	\$ (861,162)	-	\$ (254,681)	-
comprehensive income	(1,189,957)	-	-	-
Gain on hedging instruments Share of other comprehensive loss of subsidiaries	40,975	-	-	-
and associates  Income tax benefit related to items that will not be	(2,135,880)	-	(20,853)	-
reclassified subsequently	195,729		30,562	
	(3,950,295)		(244,972)	
Items that may be reclassified subsequently to profit or loss:				
Exchange differences arising on translation of foreign operations Changes in fair value of available-for-sale	14,578,483	1	(28,270,770)	(3)
financial assets	-	-	(425,692)	-
Cash flow hedges Share of other comprehensive income (loss) of subsidiaries and associates Income tax expense related to items that may be	(794,057)	-	4,683 123,804	-
reclassified subsequently	13,784,426	<u> </u>	(3,536) (28,571,511)	<u></u> ( <u>3</u> )
Other comprehensive income (loss) for the year, net of income tax	9,834,131	1	(28,816,483)	(3)
TOTAL COMPREHENSIVE INCOME FOR THE YEAR	\$ 360,965,015	<u>35</u>	<u>\$ 314,294,993</u>	<u>32</u>
EARNINGS PER SHARE (NT\$, Note 27) Basic earnings per share Diluted earnings per share	\$ 13.54 \$ 13.54		\$ 13.23 \$ 13.23	

The accompanying notes are an integral part of the parent company only financial statements. (Concluded)

Taiwan Semiconductor Manufacturing Company Limited PARENT COMPANY ONLY STATEMENTS OF CHANGES IN EQUITY (In Thousands of New Taiwan Dollars, Except Dividends Per Share)

											Others				
	Capit	Canital Stock - Common Stock	fock		Retained Earnings	ini S		Foreign Currency	Unrealized Gain/Loss from Available-	Unrealized Gain (Loss) on Assets at Fair Value Through Other		Gain (Loss) on	Unearned Stock-Based		
	Shares (In Thousands)	Amount	Capital Surplus	Legal Capital Reserve	Special Capital Reserve	Unappropriated Earning	Total	Translation Reserve	for-sale Financial Assets	Comprehensive Income	Cash Flow Hedges Reserve	Hedging Instruments	Employee Compensation	Total	Total Equity
BALANCE, JANUARY 1, 2017	25,930,380	\$ 259,303,805	\$ 56,272,304	\$ 208,297,945		\$ 863,710,224	\$1,072,008,169	\$ 1,661,237	\$ 2,641		\$ 105			\$ 1,663,983	\$1,389,248,261
Appropriations of prior year's earnings Legal capital reserve Cash dividends to shareholders - NTS7 per share Total		1 1		33,424,718	1 1 1	(33,424,718) (181,512,663) (214,937,381)	(181,512,663) (181,512,663)						1 1		(181,512,663) (181,512,663)
Net income in 2017		•				343,111,476	343,111,476	,					٠		343,111,476
Other comprehensive income (loss) in 2017, net of income tax						(244,972)	(244,972)	(28,358,917)	(216,715)		4,121			(28,571,511)	(28,816,483)
Total comprehensive income (loss) in 2017					1	342,866,504	342,866,504	(28,358,917)	(216,715)		4,121			(28,571,511)	314,294,993
Adjustments to share of changes in equities of associates	٠	•	7,085	٠	٠	•	٠	٠	٠	٠	٠	٠	(10,290)	(10,290)	(3,205)
From share of changes in equities of subsidiaries			10,994												10,994
Donation from shareholders			19,153												19,153
BALANCE, DECEMBER 31, 2017	25,930,380	\$ 259,303,805	\$ 56,309,536	\$ 241,722,663	·	\$ 991,639,347	\$1,233,362,010	\$ (26,697,680)	\$ (214,074)		\$ 4,226		\$ (10,290)	\$ (26,917,818)	\$1,522,057,533
Effect of retrospective application		1				1,556,321	1,556,321		214,074	(524,915)	(4,226)	4,226		(310,841)	1,245,480
ADJUSTED BALANCE, JANUARY 1, 2018	25,930,380	259,303,805	56,309,536	241,722,663		993,195,668	1,234,918,331	(26,697,680)		(524,915)		4,226	(10,290)	(27,228,659)	1,523,303,013
Appropriations of prior year's earnings Legal capital reserve Special capital reserve Cash dividends to shareholders - NTS8 per share Total				34,311,148	26,907,527	(34,311,148) (26,907,527) (207,443,044) (268,661,719)	- (207,443,044) (207,443,044)								(207,443,044)
Net income in 2018					,	351,130,884	351,130,884								351,130,884
Other comprehensive income (loss) in 2018, net of income tax						(765.274)	(765,274)	14,655,333		(4,097,465)		41,537		10,599,405	9,834,131
Total comprehensive income (loss) in 2018						350,365,610	350,365,610	14,655,333	•	(4,097,465)		41,537		10,599,405	360,965,015
Disposal of investments in equity instruments at fair value through other comprehensive income	•	•	•			(1,193,056)	(1,193,056)	٠	٠	1,193,056			٠	1,193,056	
Basis adjustment for loss on hedging instruments		1	i		1			•				(22,162)		(22,162)	(22,162)
Adjustments to share of changes in equities of associates	•		(6,420)										8,447	8,447	2,027
From share of changes in equities of subsidiaries	ı	•	2,681	1	1	1	1			,	1	•			2,681
Donation from shareholders			10,135												10,135
BALANCE, DECEMBER 31, 2018	25,930,380	\$ 259,303,805	\$ 56,315,932	\$ 276,033,811	\$ 26,907,527	\$1,073,706,503	\$1,376,647,841	s (12,042,347)	S	\$ (3,429,324)	S	\$ 23,601	\$ (1,843)	\$ (15,449,913)	\$1,676,817,665

The accompanying notes are an integral part of the parent company only financial statements.

# PARENT COMPANY ONLY STATEMENTS OF CASH FLOWS

(In Thousands of New Taiwan Dollars)

	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES		
Income before income tax	\$ 396,198,153	\$ 393,316,176
Adjustments for:		
Depreciation expense	274,340,540	250,597,135
Amortization expense	4,352,847	4,325,028
Finance costs	2,903,454	2,749,640
Share of profits of subsidiaries and associates	(12,509,959)	(18,757,236)
Interest income	(1,847,202)	(1,554,792)
Loss on disposal or retirement of property, plant and equipment, net	557,598	1,008,989
Gain on disposal of intangible assets, net	(5,933)	(3,198)
Impairment loss on property, plant and equipment	423,468	-
Impairment loss on financial assets	-	6,137
Gain on financial instruments at fair value through profit or loss, net	(17,729)	-
Gain on disposal of available-for-sale financial assets, net	-	(115,690)
Unrealized gross profit on sales to subsidiaries and associates	109,046	1,562
Loss (gain) on foreign exchange, net	2,732,445	(9,118,776)
Dividend income	(157,905)	(141,803)
Changes in operating assets and liabilities:		
Financial instruments at fair value through profit or loss	301,714	(196,337)
Notes and accounts receivable, net	(15,821,089)	7,253,120
Receivables from related parties	5,689,253	(5,296,267)
Other receivables from related parties	216,794	(733,023)
Inventories	(27,790,715)	(23,793,099)
Other financial assets	(26,762)	2,029,903
Other current assets	(1,685,193)	510,739
Accounts payable	4,839,526	1,275,185
Payables to related parties	(282,912)	(10,337)
Salary and bonus payable	159,386	712,816
Accrued profit sharing bonus to employees and compensation to		
directors	531,310	593,231
Accrued expenses and other current liabilities	(21,092,059)	29,615,847
Provisions	-	(3,823,540)
Net defined benefit liability	(60,461)	44,615
Cash generated from operations	612,057,615	630,496,025
Income taxes paid	(43,956,272)	<u>(61,695,694</u> )
		<b>-</b> 40 0
Net cash generated by operating activities	568,101,343	568,800,331
		(Continued)

# PARENT COMPANY ONLY STATEMENTS OF CASH FLOWS

(In Thousands of New Taiwan Dollars)

	2018	2017
CASH FLOWS FROM INVESTING ACTIVITIES		
Acquisitions of:		
Held to maturity financial assets	\$ -	\$ (1,695,771)
Financial assets at amortized cost	(2,294,098)	-
Property, plant and equipment	(298,099,157)	(311,763,999)
Intangible assets	(6,885,163)	(4,351,050)
Proceeds from disposal or redemption of:		
Financial assets at fair value through other comprehensive income	651,971	-
Available-for-sale financial assets	-	140,395
Held-to-maturity financial assets	-	13,160,000
Property, plant and equipment	4,707,118	13,226,816
Intangible assets	15,881	27,409
Proceeds from return of capital of investments in equity instruments at	2.456	
fair value through other comprehensive income	3,456	14.000
Proceeds from return of capital of financial assets carried at cost	-	14,080
Derecognition of hedging derivative financial instruments  Derecognition of hedging financial instruments	57,954	38,097
Interest received	1,815,330	1,552,725
Other dividends received	157,905	141,803
Dividends received from investments accounted for using equity	137,703	141,005
method	3,769,150	5,005,132
Refundable deposits paid	(2,218,292)	(1,227,010)
Refundable deposits refunded	1,762,043	416,600
Net cash used in investing activities	(296,555,902)	(285,314,773)
CASH FLOWS FROM FINANCING ACTIVITIES		
Increase in short-term loans	27,154,770	10,394,485
Repayment of bonds	(24,300,000)	(38,100,000)
Interest paid	(2,957,663)	(2,916,969)
Guarantee deposits received	1,625,526	205,075
Guarantee deposits refunded	(120,717)	(89,507)
Cash dividends	(207,443,044)	(181,512,663)
Payment of partial acquisition of interests in subsidiaries	(64,633,400)	(82,433,287)
Proceeds from partial disposal of interests in subsidiaries	144,676	257,648
Donation from shareholders	10,095	7,938
Net cash used in financing activities	(270,519,757)	(294,187,280)
NET INCREASE (DECREASE) IN CASH AND CASH		
EQUIVALENTS	1,025,684	(10,701,722)
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	239,176,841	249,878,563
CASH AND CASH EQUIVALENTS, END OF YEAR	<u>\$ 240,202,525</u>	\$ 239,176,841
		(0 1 1 1 1

(Concluded)

The accompanying notes are an integral part of the parent company only financial statements.

# NOTES TO PARENT COMPANY ONLY FINANCIAL STATEMENTS FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017 (Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

#### 1. GENERAL

Taiwan Semiconductor Manufacturing Company Limited (the "Company" or "TSMC"), a Republic of China (R.O.C.) corporation, was incorporated on February 21, 1987. The Company is a dedicated foundry in the semiconductor industry which engages mainly in the manufacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing of masks.

On September 5, 1994, the Company's shares were listed on the Taiwan Stock Exchange (TWSE). On October 8, 1997, the Company listed some of its shares of stock on the New York Stock Exchange (NYSE) in the form of American Depositary Shares (ADSs).

The address of its registered office and principal place of business is No. 8, Li-Hsin Rd. 6, Hsinchu Science Park, Taiwan.

#### 2. THE AUTHORIZATION OF FINANCIAL STATEMENTS

The accompanying parent company only financial statements were approved and authorized for issue by the Board of Directors on February 19, 2019.

# 3. APPLICATION OF NEW AND REVISED INTERNATIONAL FINANCIAL REPORTING STANDARDS

a. Initial application of the amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the International Financial Reporting Standards (IFRS), International Accounting Standards (IAS), IFRIC Interpretations (IFRIC), and SIC Interpretations (SIC) (collectively, "IFRSs") endorsed and issued into effect by the Financial Supervisory Commission (FSC)

Except for the following, the initial application of the amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers and the IFRSs endorsed and issued into effect by the FSC did not have a significant effect on the Company's accounting policies:

#### 1) IFRS 9 "Financial Instruments" and related amendment

IFRS 9 supersedes IAS 39 "Financial Instruments: Recognition and Measurement", with consequential amendments to IFRS 7 "Financial Instruments: Disclosures" and other standards. IFRS 9 sets out the requirements for classification, measurement and impairment of financial assets and hedge accounting. Please refer to Note 4 for information relating to the relevant accounting policies.

# Classification, measurement and impairment of financial assets and financial liabilities

The Company elects not to restate prior reporting period when applying the requirements for the classification, measurement and impairment of financial assets and financial liabilities under IFRS 9 with the cumulative effect of the initial application recognized at the date of initial application.

The impact on measurement categories, carrying amount and related reconciliation for each class of the Company's financial assets and financial liabilities when retrospectively applying IFRS 9 on January 1, 2018 is detailed below:

		Measuren	ent Category		Carrying	Amount	
Financial Assets		IAS 39	IFR	S 9	IAS 39	IFRS 9	Note
Cash and cash equivaler Derivatives		and receivables r trading	Amortized co Mandatorily through pr (FVTPL)		\$ 239,176,841 373,351	\$ 239,176,841 373,351	(1)
Equity securities		g instruments ble-for-sale	Hedging inst Fair value th	rough other nsive income	7,378 2,808,606	7,378 3,377,145	(2)
Notes and accounts rece (including related par other receivables and refundable deposits		and receivables	Amortized co		123,199,044	123,443,817	(1)
Financial Liabiliti	es						
Derivatives		r trading g instruments	Held for trad Hedging inst		18,764 15,562	18,764 15,562	
Short-term loans, accour payable (including re parties), payables to contractors and equip suppliers, accrued exp and other current liab bonds payable and guarantee deposits	nts Amorti lated ment penses	zed cost	Amortized co		294,856,247	294,856,247	
Financial Assets	Carrying Amount as of December 31, 2017 (IAS 39)	Reclassifi- cations	Remea- surements	Carrying Amount as of January 1, 2018 (IFRS 9)	Retained Earnings Effect on January 1, 2018	Other Equity Effect on January 1, 2018	Note
FVTPL	\$ 373,351	\$ -	\$ -	\$ 373,351	\$ -	\$ -	
FVTOCI - Equity instruments Add: From available for sale  Amortized cost		2,808,606 2,808,606	568,539 568,539	3,377,145 3,377,145	534,270 534,270	34,269 34,269	(2)
Add: From loans and receivables	<u> </u>	362,375,885	244,773	362,620,658	244,773	<u> </u>	(1)
Hedging instruments	7,378	362,375,885	244,773	362,620,658 7,378	244,773		
Total	\$ 380,729	<u>\$ 365,184,491</u>	<u>\$ 813,312</u>	<u>\$366,378,532</u>	\$ 779,043	<u>\$ 34,269</u>	
		Carrying Amount as of December 31, 2017 (IAS 39)	Adjustments Arising from Initial Application	Carrying Amount as of January 1, 2018 (IFRS 9)		Other Equity Effect on January 1, 2018	Note
Investments accounted for u	using equity method	\$ 463,986,364	\$ 400,138	\$464,386,508	\$ 745,248	\$ (345,110)	(3)

- (1) Cash and cash equivalents, notes and accounts receivable (including related parties), other receivables and refundable deposits that were classified as loans and receivables under IAS 39 are now classified at amortized cost with assessment of future 12-month or lifetime expected credit loss under IFRS 9. As a result of retrospective application, the adjustments would result in a decrease in loss of allowance for accounts receivable of NT\$244,773 thousand and an increase in retained earnings of NT\$244,773 thousand on January 1, 2018.
- (2) As equity investments that were previously classified as available-for-sale financial assets under IAS 39 are not held for trading, the Company elected to designate all of these investments as at FVTOCI under IFRS 9. As a result, the related other equity-unrealized gain or loss on available-for-sale financial assets of NT\$206,015 thousand is reclassified to increase other equity unrealized gain or loss on financial assets at FVTOCI.

As equity investments previously measured at cost under IAS 39 are remeasured at fair value under IFRS 9, the adjustments would result in an increase in financial assets at FVTOCI of NT\$568,539 thousand and an increase in other equity-unrealized gain or loss on financial assets at FVTOCI of NT\$568,539 thousand on January 1, 2018.

For those equity investments previously classified as available-for-sale financial assets (including measured at cost financial assets) under IAS 39, the impairment losses that the Company had recognized have been accumulated in retained earnings. Since these investments were designated as at FVTOCI under IFRS 9 and no impairment assessment is required, the adjustments would result in a decrease in other equity - unrealized gain or loss on financial assets at FVTOCI of NT\$534,270 thousand and an increase in retained earnings of NT\$534,270 thousand on January 1, 2018.

(3) With the retrospective adoption of IFRS 9 by associates accounted for using equity method, the corresponding adjustments made by the Company would result in an increase in investments accounted for using equity method of NT\$400,138 thousand, a decrease in other equity-unrealized gain or loss on financial assets at FVTOCI of NT\$765,199 thousand, an increase in other equity- unrealized gain or loss on available-for-sale financial assets of NT\$420,089 thousand and an increase in retained earnings of NT\$745,248 thousand on January 1, 2018.

#### Hedge accounting

The Company prospectively applies the requirements for hedge accounting upon initial application of IFRS 9. In addition, due to the amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers, all derivative and non-derivative financial assets and financial liabilities which are designated as hedging instruments are presented as financial assets and financial liabilities for hedging starting 2018.

2) IFRS 15 "Revenue from Contracts with Customers" and related amendments

IFRS 15 establishes principles for recognizing revenue that apply to all contracts with customers, and will supersede IAS 18, "Revenue," IAS 11, "Construction Contracts," and a number of revenue-related interpretations. Please refer to Note 4 for information relating to the relevant accounting policies.

The Company elected only to retrospectively apply IFRS 15 to contracts that were not completed on January 1, 2018 and elected not to restate prior reporting period with the cumulative effect of the initial application recognized at the date of initial application.

The impact on assets, liabilities and equity when retrospectively applying IFRS 15 on January 1, 2018 is detailed below:

	Carrying Amount as of December 31, 2017 (IAS 18 and Revenue-related Interpretations)	Adjustments Arising from Initial Application	Carrying Amount as of January 1, 2018 (IFRS 15)	Note
Investments accounted for using equity method	\$ 463,986,364	\$ 32,030	\$ 464,018,394	(1)
Total effect on assets		\$ 32,030		
Provisions - current	13,174,825	\$ (13,174,825)	-	(2)
Accrued expenses and other current liabilities	57,686,386	13,174,825	70,861,211	(2)
Total effect on liabilities		<u>\$ -</u>		
Retained earnings	1,233,362,010	\$ 32,030	1,233,394,040	(1)
Total effect on equity		<u>\$ 32,030</u>		

- (1) Prior to the application of IFRS 15, the Company recognizes revenue based on the accounting treatment of the sales of goods. Under IFRS 15, certain subsidiaries and associates accounted for using equity method will change to recognize revenue over time because customers are deemed to have control over the products when the products are manufactured. As a result, the Company will adjust related investments and equity accordingly.
- (2) Prior to the application of IFRS 15, the Company recognized the estimation of sales returns and allowance as provisions. Under IFRS 15, the Company recognizes such estimation as refund liability (classified under accrued expenses and other current liabilities).

The following table shows the amount affected in the current period by the application of IFRS 15 as compared to IAS 18:

# Impact on Assets, Liabilities and Equity

	December 31, 2018
Increase in investments accounted for using equity method	\$ 31,791
Total effect on assets	<u>\$ 31,791</u>
Decrease in provisions - current Increase in accrued expenses and other current liabilities	\$ (21,199,032) 21,199,032
Total effect on liabilities	<u>\$</u> _
Increase in retained earnings	\$ 31,791
Total effect on equity	<u>\$ 31,791</u>

#### Impact on Total Comprehensive Income

	Year Ended December 31, 2018
Increase in share of the profit or loss of associates	<u>\$ 31,791</u>
Increase in net income for the year	<u>\$ 31,791</u>

- 3) Please refer to Note 29 for the disclosure of amendment to IAS 7 "Disclosure Initiative"
- b. Amendments to the Regulations Governing the Preparation of Financial Reports by Securities Issuers for application starting from 2019 and the IFRSs issued by IASB and endorsed by FSC with effective date starting 2019.

New, Amended or Revised Standards and Interpretations (the "New IFRSs")	Effective Date Announced by IASB (Note 1)
Annual Improvements to IFRSs 2015-2017 Cycle	January 1, 2019
Amendments to IFRS 9 "Prepayment Features with Negative	January 1, 2019 (Note 2)
Compensation"	
IFRS 16 "Leases"	January 1, 2019
Amendments to IAS 19 "Plan Amendment, Curtailment or	January 1, 2019 (Note 3)
Settlement"	
Amendments to IAS 28 "Long-term Interests in Associates and Joint	January 1, 2019
Ventures"	
IFRIC 23 "Uncertainty over Income Tax Treatments"	January 1, 2019

- Note 1: Unless stated otherwise, the above New IFRSs are effective for annual periods beginning on or after their respective effective dates.
- Note 2: The FSC permits the election for early adoption of the amendments starting from 2018.
- Note 3: The Company shall apply these amendments to plan amendments, curtailments or settlements occurring on or after January 1, 2019.

Except for the following items, the Company believes that the adoption of aforementioned standards or interpretations will not have a significant effect on the Company's accounting policies.

### 1) IFRS 16 "Leases"

IFRS 16 sets out the accounting standards for leases that will supersede IAS 17 "Leases", IFRIC 4 "Determining whether an Arrangement contains a Lease", and a number of related interpretations.

#### Definition of a lease

Upon initial application of IFRS 16, the Company will apply the guidance of IFRS 16 in determining whether contracts are, or contain, a lease only to contracts entered into (or changed) on or after January 1, 2019. Contracts identified as containing a lease under IAS 17 and IFRIC 4 will not be reassessed and will be accounted for in accordance with the transitional provisions under IFRS 16.

# The Company as lessee

Upon initial application of IFRS 16, except for payments for low-value asset and short-term leases which will be recognized as expenses on a straight-line basis, the Company will recognize right-of-use assets and lease liabilities for all leases on the parent company only balance sheets. On the parent company only statements of comprehensive income, the Company will present the depreciation expense charged on right-of-use assets separately from the interest expense accrued on lease liabilities and computed using the effective interest method. On the parent company only statements of cash flows, cash payments for both the principal portion and the interest portion of lease liabilities are classified within financing activities.

Upon initial application of IFRS 16, the Company will apply IFRS 16 retrospectively with the cumulative effect of the initial application recognized at the date of initial application but will not restate comparative information.

Leases agreements classified as operating leases under IAS 17, except for leases of low-value asset and short-term leases, will be measured at the present value of the remaining lease payments, discounted using the lessee's incremental borrowing rate on January 1, 2019. Right-of-use assets are measured at an amount equal to the lease liabilities, adjusted by the amount of any prepaid or accrued lease payments. Right-of-use assets are subject to impairment testing under IAS 36.

The Company will apply the following practical expedients to measure right-of-use assets and lease liabilities on January 1, 2019:

- a) The Company will apply a single discount rate to a portfolio of leases with reasonably similar characteristics to measure lease liabilities.
- b) The Company will account for those leases for which the lease term ends on or before December 31, 2019 as short-term leases.
- c) Except for lease payment, the Company will exclude incremental costs of obtaining the lease from the measurement of right-of-use assets on January 1, 2019.
- d) The Company will determine lease terms (e.g. lease periods) based on the projected status on January 1, 2019, to measure lease liabilities.

The weighted average lessee's incremental borrowing rate used by the Company to calculate lease liabilities recognized on January 1, 2019 is 1.25%. The reconciliation between the lease liabilities recognized and the future minimum lease payments of non-cancellable operating lease on December 31, 2018 is presented as follows:

The future minimum lease payments of non-cancellable operating lease on December 31, 2018  Less: Recognition exemption for short-term leases	\$ 18,721,881 (3,163,562)
Undiscounted gross amounts on January 1, 2019	\$ 15,558,319
Discounted using the incremental borrowing rate on January 1, 2019  Add: Adjustments as a result of a different treatment of extension and purchase	\$ 14,652,188
options	3,106,390
Lease liabilities recognized on January 1, 2019	<u>\$ 17,758,578</u>

# The Company as lessor

Except for sublease transactions, the Company will not make any adjustments for leases in which it is a lessor, and will account for those leases under IFRS 16 starting from January 1, 2019. On the basis of the remaining contractual terms and conditions on January 1, 2019, all of the Company's subleases will be classified as operating leases.

#### Impact on assets, liabilities and equity on January 1, 2019

	Carrying	Adjustments	Adjusted
	Amount as of	Arising from	Carrying
	December 31,	Initial	Amount as of
	2018	Application	January 1, 2019
Other current assets Right-of-use assets Refundable deposits and others	\$ 4,184,918	\$ (6,783)	\$ 4,178,135
	-	17,831,257	17,831,257
	1,666,863	(966)	1,665,897
Total effect on assets		<u>\$ 17,823,508</u>	
Accrued expenses and other current liabilities Lease liabilities - noncurrent Other noncurrent liabilities	49,778,042	\$ 2,347,167	52,125,209
	-	15,411,411	15,411,411
	451,488	64,930	516,418
Total effect on liabilities		<u>\$ 17,823,508</u>	
Total effect on equity		<u>\$</u>	

c. The IFRSs issued by IASB but not yet endorsed and issued into effect by FSC

New, Revised or Amended Standards and Interpretations	Effective Date Issued by IASB
Amendments to IFRS 3 "Definition of a Business" Amendments to IFRS 10 and IAS 28 "Sale or Contribution of Assets	January 1, 2020 (Note 1) To be determined by IASB
between an Investor and its Associate or Joint Venture" Amendments to IAS 1 and IAS 8 "Definition of Material"	January 1, 2020 (Note 2)

Note 1: The Company shall apply these 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, 2020 and to asset acquisitions that occur on or after the beginning of that period.

Note 2: The Company shall apply these amendments prospectively for annual reporting periods beginning on or after January 1, 2020.

As of the date the accompanying parent company only financial statements were issued, the Company continues in evaluating the impact on its financial position and financial performance as a result of the initial adoption of the aforementioned standards or interpretations. The related impact will be disclosed when the Company completes the evaluation.

#### 4. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

For the convenience of readers, the accompanying parent company only financial statements have been translated into English from the original Chinese version prepared and used in the R.O.C. If there is any conflict between the English version and the original Chinese version or any difference in the interpretation of the two versions, the Chinese-language parent company only financial statements shall prevail.

### **Statement of Compliance**

The accompanying parent company only financial statements have been prepared in conformity with the Regulations Governing the Preparation of Financial Reports by Securities Issuers (the "Accounting Standards Used in Preparation of the Parent Company Only Financial Statements").

#### **Basis of Preparation**

The accompanying parent company only financial statements have been prepared on the historical cost basis except for financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is generally based on the fair value of the consideration given in exchange for the assets.

When preparing the parent company only financial statements, the Company account for subsidiaries and associates by using the equity method. In order to agree with the amount of net income, other comprehensive income and equity attributable to shareholders of the parent in the consolidated financial statements, the differences of the accounting treatment between the parent company only basis and the consolidated basis are adjusted under the heading of investments accounted for using equity method, share of profits of subsidiaries and associates and share of other comprehensive income of subsidiaries and associates in the parent company only financial statements.

#### **Foreign Currencies**

In preparing the parent company only financial statements, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Such exchange differences are recognized in profit or loss in the year in which they arise. Non-monetary items measured at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Exchange differences arising on the retranslation of non-monetary items are included in profit or loss for the year except for exchange differences arising on the retranslation of non-monetary items in respect of which gains and losses are recognized directly in other comprehensive income, in which case, the exchange differences are also recognized directly in other comprehensive income. Non-monetary items that are measured in terms of historical cost in foreign currencies are not retranslated.

For the purposes of presenting parent company only financial statements, the assets and liabilities of the Company's foreign operations are translated into NT\$ using exchange rates prevailing at the end of each reporting period. Income and expense items are translated at the average exchange rates for the period. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity.

#### **Classification of Current and Noncurrent Assets and Liabilities**

Current assets are assets held for trading purposes and assets expected to be converted to cash, sold or consumed within one year from the end of the reporting period. Current liabilities are obligations incurred for trading purposes and obligations expected to be settled within one year from the end of the reporting period. Assets and liabilities that are not classified as current are noncurrent assets and liabilities, respectively.

### **Cash Equivalents**

Cash equivalents, for the purpose of meeting short-term cash commitments, consist of highly liquid time deposits and investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

#### **Financial Instruments**

Financial assets and liabilities shall be recognized when the Company becomes a party to the contractual provisions of the instruments.

Financial assets and liabilities are initially recognized at fair values. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognized immediately in profit or loss.

#### **Financial Assets**

The classification of financial assets depends on the nature and purpose of the financial assets and is determined at the time of initial recognition. Regular way purchases or sales of financial assets are recognized and derecognized on a trade date or settlement date basis for which financial assets were classified in the same way, respectively. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

#### a. Category of financial assets and measurement

#### 2018

Financial assets are classified into the following categories: financial assets at FVTPL, investments in debt instruments and equity instruments at FVTOCI, and financial assets at amortized cost.

#### 1) Financial asset at FVTPL

For certain financial assets which include debt instruments that do not meet the criteria of amortized cost or FVTOCI, it is mandatorily required to measure them at FVTPL. Any gain or loss arising from remeasurement is recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest earned on the financial asset.

### 2) Investments in debt instruments at FVTOCI

Debt instruments with contractual terms specifying that cash flows are solely payments of principal and interest on the principal amount outstanding, together with objective of collecting contractual cash flows and selling the financial assets, are measured at FVTOCI.

Interest income calculated using the effective interest method, foreign exchange gains and losses and impairment gains or losses on investments in debt instruments at FVTOCI are recognized in profit or loss. Other changes in the carrying amount of these debt instruments are recognized in other comprehensive income and will be reclassified to profit or loss when these debt instruments are disposed.

#### 3) Investments in equity instruments at FVTOCI

On initial recognition, the Company may irrevocably designate investments in equity investments that is not held for trading as at FVTOCI.

Investments in equity instruments at FVTOCI are subsequently measured at fair value with gains and losses arising from changes in fair value recognized in other comprehensive income and accumulated in other equity.

Dividends on these investments in equity instruments at FVTOCI are recognized in profit or loss when the Company's right to receive the dividends is established, unless the Company's rights clearly represent a recovery of part of the cost of the investment.

#### 4) Measured at amortized cost

Cash and cash equivalents, debt instrument investments, notes and accounts receivable (including related parties), other receivables and refundable deposits are measured at amortized cost.

Debt instruments with contractual terms specifying that cash flows are solely payments of principal and interest on the principal amount outstanding, together with objective of holding financial assets in order to collect contractual cash flows, are measured at amortized cost.

Subsequent to initial recognition, financial assets measured at amortized cost are measured at amortized cost, which equals to carrying amount determined by the effective interest method less any impairment loss.

#### 2017

Financial assets are classified into the following specified categories: Financial assets at FVTPL, available-for-sale financial assets, held-to-maturity financial assets and loans and receivables.

# 1) Financial asset at FVTPL

Financial assets are classified as at fair value through profit or loss when the financial asset is either held for trading or it is designated as at fair value through profit or loss.

Financial assets at fair value through profit or loss are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss.

#### 2) Available-for-sale financial assets

Available-for-sale financial assets are non-derivative financial assets that are either designated as available-for-sale or are not classified as (a) loans and receivables, (b) held-to-maturity financial assets or (c) financial assets at fair value through profit or loss.

Available-for-sale financial assets are measured at fair value. Interest income from available-for-sale monetary financial assets and dividends on available-for-sale equity investments are recognized in profit or loss. Other changes in the carrying amount of available-for-sale financial assets are recognized in other comprehensive income. When the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously recognized in other comprehensive income is reclassified to profit or loss.

Dividends on available-for-sale equity instruments are recognized in profit or loss when the Company's right to receive the dividends is established.

Available-for-sale equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured are measured at cost less any identified impairment losses at the end of each reporting period. Such equity instruments are subsequently remeasured at fair value when their fair value can be reliably measured, and the difference between the carrying amount and fair value is recognized in profit or loss or other comprehensive income.

#### 3) Held-to-maturity financial assets

Held-to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the Company has the positive intent and ability to hold to maturity. Subsequent to initial recognition, held-to-maturity financial assets are measured at amortized cost using the effective interest method less any impairment.

#### 4) Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables including cash and cash equivalents, notes and accounts receivable and other receivables are measured at amortized cost using the effective interest method, less any impairment, except for those loans and receivables with immaterial discounted effect.

#### b. Impairment of financial assets

#### 2018

At the end of each reporting period, a loss allowance for expected credit loss is recognized for financial assets at amortized cost (including accounts receivable) and for investments in debt instruments that are measured at FVTOCI.

The loss allowance for accounts receivable is measured at an amount equal to lifetime expected credit losses. For financial assets at amortized cost and investments in debt instruments that are measured at FVTOCI, when the credit risk on the financial instrument has not increased significantly since initial recognition, a loss allowance is recognized at an amount equal to expected credit loss resulting from possible default events of a financial instrument within 12 months after the reporting date. If, on the other hand, there has been a significant increase in credit risk since initial recognition, a loss allowance is recognized at an amount equal to expected credit loss resulting from all possible default events over the expected life of a financial instrument.

The Company recognizes an impairment loss in profit or loss for all financial instruments with a corresponding adjustment to their carrying amount through a loss allowance account, except for investments in debt instruments that are measured at FVTOCI, for which the loss allowance is recognized in other comprehensive income and does not reduce the carrying amount of the financial asset.

#### 2017

Financial assets, other than those carried at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Those financial assets are considered to be impaired when there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial assets, their estimated future cash flows have been affected.

For financial assets carried at amortized cost, such as trade receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. The Company assesses the collectability of receivables by performing the account aging analysis and examining current trends in the credit quality of its customers.

For financial assets carried at amortized cost, the amount of the impairment loss is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment loss was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the financial assets at the date the impairment loss is reversed does not exceed what the amortized cost would have been had the impairment loss not been recognized.

When an available-for-sale financial asset is considered to be impaired, cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss in the year.

In respect of available-for-sale equity instruments, impairment losses previously recognized in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to the recognition of an impairment loss is recognized in other comprehensive income and accumulated under the heading of unrealized gains or losses from available-for-sale financial assets.

For financial assets carried at cost, the amount of the impairment loss is measured as the difference between the asset's carrying amount and the present value of the estimated future cash flows discounted at the current market rate of return for a similar financial asset. Such impairment loss will not be reversed in subsequent periods.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade receivables, where the carrying amount is reduced through the use of an allowance account. When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account.

#### c. Derecognition of financial assets

#### 2018

The Company derecognizes a financial asset only when the contractual rights to the cash flows from the financial asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the financial asset to another entity.

On derecognition of a financial asset at amortized cost in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable is recognized in profit or loss. On derecognition of an investment in a debt instrument at FVTOCI, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income is recognized in profit or loss. However, on derecognizion of an investment in an equity instrument at FVTOCI, the cumulative gain or loss that had been recognized in other comprehensive income is transferred directly to retained earnings, without recycling through profit or loss.

#### 2017

The Company derecognizes a financial asset only when the contractual rights to the cash flows from the financial asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the financial asset to another entity.

On derecognition of a financial asset in its entirety, the difference between the financial asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

### **Financial Liabilities and Equity Instruments**

### Classification as debt or equity

Debt and equity instruments issued by the Company are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument.

#### **Equity instruments**

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Company are recognized at the proceeds received, net of direct issue costs.

#### Financial liabilities

Financial liabilities are subsequently measured either at amortized cost using effective interest method or at FVTPL.

Financial liabilities are classified as at fair value through profit or loss when the financial liability is either held for trading or is designated as at fair value through profit or loss.

Financial liabilities at fair value through profit or loss are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss.

Financial liabilities other than those held for trading purposes and designated as at FVTPL are subsequently measured at amortized cost at the end of each reporting period.

# Derecognition of financial liabilities

The Company derecognizes financial liabilities when, and only when, the Company's obligations are discharged, cancelled or they expire. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

#### **Derivative Financial Instruments**

Derivative financial instruments are initially recognized at fair value at the date the derivative contracts are entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is recognized in profit or loss immediately unless the derivative financial instrument is designated and effective as a hedging instrument, in which event the timing of the recognition in profit or loss depends on the nature of the hedge relationship.

### Financial Instruments Designated as at Fair Value through Profit or Loss

A financial instrument may be designated as at FVTPL upon initial recognition. The financial instrument forms part of a group of financial assets or financial liabilities or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Company's documented risk management or investment strategy, and information about the grouping is provided internally on that basis.

#### **Hedge Accounting**

#### Cash flow hedge

The Company designates certain hedging instruments, such as forward exchange contracts and foreign currency deposits, to partially hedge its foreign exchange rate risks associated with certain highly probable forecast transactions (capital expenditures). The effective portion of changes in the fair value of hedging instruments is recognized in other comprehensive income. When the forecast transactions actually take place, the associated gains or losses that were recognized in other comprehensive income are removed from equity and included in the initial cost of the hedged items. The gains or losses from hedging instruments relating to the ineffective portion are recognized immediately in profit or loss.

#### 2018

The Company prospectively discontinues hedge accounting only when the hedging relationship ceases to meet the qualifying criteria; for instance when the hedging instrument expires or is sold, terminated or exercised.

#### 2017

Hedge accounting was discontinued prospectively when the Company revoked the designated hedging relationship, when the hedging instrument expired or was sold, terminated, or exercised; or no longer met the criteria for hedge accounting.

#### **Inventories**

Inventories are stated at the lower of cost or net realizable value. Inventories are recorded at standard cost and adjusted to approximate weighted-average cost at the end of the reporting period. Net realizable value represents the estimated selling price of inventories less all estimated costs of completion and costs necessary to make the sale.

#### **Investments Accounted for Using Equity Method**

Investments accounted for using the equity method include investments in subsidiaries and associates.

#### Investment in subsidiaries

A subsidiary is an entity that is controlled by the Company.

Under the equity method, an investment in a subsidiary is initially recognized at cost and adjusted thereafter to recognize the Company's share of profit or loss and other comprehensive income of the subsidiary as well as the distribution received. The Company also recognized its share in the changes in the equity of subsidiaries.

Changes in the Company's ownership interests in subsidiaries that do not result in the Company losing control over the subsidiaries are accounted for as equity transactions. Any difference between the carrying amount of the subsidiary and the fair value of the consideration paid or received is recognized directly in equity.

When the Company loses control of a subsidiary, any retained investment of the former subsidiary is measured at the fair value at that date. A gain or loss is recognized in profit or loss and calculated as the difference between (a) the aggregate of the fair value of consideration received and the fair value of any retained interest at the date when control is lost; and (b) the previous carrying amount of the investments in such subsidiary. In addition, the Company shall account for all amounts previously recognized in other comprehensive income in relation to the subsidiary on the same basis as would be required if the subsidiary had directly disposed of the related assets and liabilities.

When the Company transacts with its subsidiaries, profits and losses resulting from the transactions with the subsidiaries are recognized in the Company's parent company only financial statements only to the extent of interests in the subsidiaries that are not owned by the Company.

#### Investment in associates

An associate is an entity over which the Company has significant influence and that is neither a subsidiary nor a joint venture. 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 operating results and assets and liabilities of associates are incorporated in these parent company only financial statements using the equity method of accounting. Under the equity method, an investment in an associate is initially recognized in the statement of financial position at cost and adjusted thereafter to recognize the Company's share of profit or loss and other comprehensive income of the associate as well as the distribution received. The Company also recognizes its share in the changes in the equities of associates.

Any excess of the cost of acquisition over the Company's share of the net fair value of the identifiable assets, liabilities and contingent liabilities of an associate recognized at the date of acquisition is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Company's share of the net fair value of the identifiable assets, liabilities and contingent liabilities over the cost of acquisition, after reassessment, is recognized immediately in profit or loss.

When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment as a single asset by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its carrying amount. Any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized to the extent that the recoverable amount of the investment subsequently increases.

The Company discontinues the use of the equity method from the date when the Company ceases to have significant influence over an associate. When the Company retains an interest in the former associate, the Company measures the retained interest at fair value at that date. The difference between the carrying amount of the associate at the date the equity method was discontinued, and the fair value of any retained interest and any proceeds from disposing of a part interest in the associate is included in the determination of the gain or loss on disposal of the associate. In addition, the Company shall account for all amounts recognized in other comprehensive income in relation to that associate on the same basis as would be required if the associate had directly disposed of the related assets or liabilities. If the Company's ownership interest in an associate is reduced as a result of disposal, but the investment continues to be an associate, the Company should reclassify to profit or loss only a proportionate amount of the gain or loss previously recognized in other comprehensive income.

When the Company subscribes to additional shares in an associate at a percentage different from its existing ownership percentage, the resulting carrying amount of the investment differs from the amount of the Company's proportionate interest in the net assets of the associate. The Company records such a difference as an adjustment to investments with the corresponding amount charged or credited to capital surplus. If the Company's ownership interest is reduced due to the additional subscription to the shares of associate by other investors, the proportionate amount of the gains or losses previously recognized in other comprehensive income in relation to that associate shall be reclassified to profit or loss on the same basis as would be required if the associate had directly disposed of the related assets or liabilities.

When the Company transacts with an associate, profits and losses resulting from the transactions with the associate are recognized in the Company's parent company only financial statements only to the extent of interests in the associate that are not owned by the Company.

# Property, Plant and Equipment

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment. Costs include any incremental costs that are directly attributable to the construction or acquisition of the item of property, plant and equipment.

Property, plant and equipment in the course of construction for production, supply or administrative purposes are carried at cost, less any recognized impairment loss. Such assets are classified to the appropriate categories of property, plant and equipment when completed and ready for intended use. Depreciation of these assets, on the same basis as other identical categories of property, plant and equipment, commences when the assets are available for their intended use.

Depreciation is recognized so as to write off the cost of the assets less their residual values over their useful lives, and it is computed using the straight-line method over the following estimated useful lives: buildings - 10 to 20 years; machinery and equipment - 2 to 5 years; and office equipment - 3 to 5 years. The estimated useful lives, residual values and depreciation method are reviewed at the end of each reporting period, with the effect of any changes in estimates accounted for on a prospective basis. Land is not depreciated.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the assets. Any gain or loss arising on the disposal or retirement of an item of property, plant and equipment is determined as the difference between the sales proceeds and the carrying amount of the asset and is recognized in profit or loss.

#### Leases

Leases are classified as finance lease whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

### The Company as lessor

Rental income from operating leases is recognized on a straight-line basis over the term of the relevant lease.

### The Company as lessee

Operating lease payments are recognized as an expense on a straight-line basis over the lease term.

### **Intangible Assets**

#### Goodwill

Goodwill arising on an acquisition of a business is carried at cost as established at the date of acquisition of the business less accumulated impairment losses, if any.

# Other intangible assets

Other separately acquired intangible assets with finite useful lives are carried at cost less accumulated amortization and accumulated impairment losses. Amortization is recognized using the straight-line method over the following estimated useful lives: Technology license fees - the estimated life of the technology or the term of the technology transfer contract; software and system design costs - 3 years or contract period; patent and others - the economic life or contract period. The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis.

# Impairment of Tangible and Intangible Assets

### Goodwill

Goodwill is not amortized and instead is tested for impairment annually, or more frequently when there is an indication that the cash generating unit may be impaired. For the purpose of impairment testing, goodwill is allocated to each of the Company's cash generating units or groups of cash-generating units that are expected to benefit. If the recoverable amount of a cash generating unit is less than its carrying amount, the difference is allocated first to reduce the carrying amount of any goodwill allocated to such cash-generating unit and then to the other assets of the cash generating unit pro rata based on the carrying amount of each asset in the cash generating unit. Any impairment loss for goodwill is recognized directly in profit or loss. An impairment loss recognized for goodwill is not reversed in subsequent periods.

### Other tangible and intangible assets

At the end of each reporting period, the Company reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss. When it is not possible to estimate the recoverable amount of an individual asset, the Company estimates the recoverable amount of the cash-generating unit to which the asset belongs. When a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units, or otherwise they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

Recoverable amount is the higher of fair value less costs to sell and value in use. 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 for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset or cash-generating unit is estimated to be less than its carrying amount, the carrying amount of the asset or cash-generating unit is reduced to its recoverable amount. An impairment loss is recognized immediately in profit or loss.

When an impairment loss subsequently reverses, the carrying amount of the asset or a cash-generating unit is increased to the revised estimate of its recoverable amount, but the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset or cash-generating unit in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

#### **Provision**

Provisions are recognized when the Company has a present obligation (legal or constructive) as a result of a past event, it is probable that the Company will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows.

# **Guarantee Deposit**

Guarantee deposit mainly consists of cash received under deposit agreements with customers to ensure they have access to the Company's specified capacity; and as guarantee of accounts receivable to ensure payment from customers. Cash received from customers is recorded as guarantee deposit upon receipt. Guarantee deposits are refunded to customers when terms and conditions set forth in the deposit agreements have been satisfied.

### **Revenue Recognition**

### 2018

The Company recognizes revenue when performance obligations are satisfied. The performance obligations are satisfied when customers obtain control of the promised goods which is generally when the goods are delivered to the customers' specified locations.

Revenue from sale of goods is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances. Estimated sales returns and other allowances is generally made and adjusted based on historical experience and the consideration of varying contractual terms to recognize refund liabilities, which is classified under accrued expenses and other current liabilities.

In principle, payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month of when the invoice is issued. Due to the short term nature of the receivables from sale of goods with the immaterial discounted effect, the Company measures them at the original invoice amounts without discounting.

### 2017

Revenue is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances.

### Sale of goods

Revenue from the sale of goods is recognized when the goods are delivered and titles have passed, at which time all the following conditions are satisfied:

- The Company has transferred to the buyer the significant risks and rewards of ownership of the goods;
- The Company retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- The amount of revenue can be measured reliably:
- It is probable that the economic benefits associated with the transaction will flow to the Company; and
- The costs incurred or to be incurred in respect of the transaction can be measured reliably.

In principle, payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month of when the invoice is issued. Due to the short term nature of the receivables from sale of goods with the immaterial discounted effect, the Company measures them at the original invoice amounts without discounting.

### Dividend and interest income

Dividend income from investments is recognized when the shareholder's right to receive payment has been established, provided that it is probable that the economic benefits will flow to the Company and the amount of income can be measured reliably.

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Company and the amount of income can be measured reliably. Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable.

### **Employee Benefits**

### Short-term employee benefits

Liabilities recognized in respect of short-term employee benefits are measured at the undiscounted amount of the benefits expected to be paid in exchange for service rendered by employees.

# Retirement benefits

For defined contribution retirement benefit plans, payments to the benefit plan are recognized as an expense when the employees have rendered service entitling them to the contribution. For defined benefit retirement benefit plans, the cost of providing benefit is recognized based on actuarial calculations.

Defined benefit costs (including service cost, net interest and remeasurement) under the defined benefit retirement benefit plans are determined using the Projected Unit Credit Method. Service cost (including current service cost), and net interest on the net defined benefit liability (asset) are recognized as employee benefits expense in the period they occur. Remeasurement, comprising actuarial gains and losses and the return on plan assets (excluding interest), is recognized in other comprehensive income in the period in which they occur. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not be reclassified to profit or loss.

Net defined benefit liability represents the actual deficit in the Company's defined benefit plan.

### **Taxation**

Income tax expense represents the sum of the tax currently payable and deferred tax.

### Current tax

Income tax on unappropriated earnings is expensed in the year the shareholders approved the appropriation of earnings which is the year subsequent to the year the earnings are generated.

Adjustments of prior years' tax liabilities are added to or deducted from the current year's tax provision.

### Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the parent company only financial statements and the corresponding tax bases used in the computation of taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences and tax credits for research and development expenses to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates, except where the Company is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments are only recognized to the extent that it is probable that there will be sufficient taxable profits against which to utilize the benefits of the temporary differences and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the deferred tax asset to be recovered. The deferred tax assets which originally not recognized is also reviewed at the end of each reporting period and recognized to the extent that it is probable that sufficient taxable profits will be available to allow all or part of the deferred tax asset to be recovered.

Deferred tax liabilities and assets are measured at the tax rates that are expected to apply in the year in which the liability is settled or the asset is realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Company expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

### Current and deferred tax for the year

Current and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case, the current and deferred tax are also recognized in other comprehensive income or directly in equity, respectively.

# 5. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION AND UNCERTAINTY

In the application of the aforementioned Company's accounting policies, the Company is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

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

### **Revenue Recognition**

The Company recognizes revenue when the conditions described in Note 4 are satisfied. The Company also records estimated future returns and other allowances in the same period the related revenue is recorded. Estimated sales returns and other allowances is generally made and adjusted based on historical experience and the consideration of varying contractual terms, and the Company periodically reviews the adequacy of the estimation used.

# Timing to commence depreciation of property, plant and equipment

As described in Note 4, depreciation of property, plant and equipment begins when the assets are available for use, and in the condition necessary for the assets to be capable of operating in the intended manner. The criteria to determine whether assets are available for their intended use vary within categories of assets as well as involve subjective judgments, thus validity of the timing to commence depreciation of property, plant and equipment could have a material impact on the Company's financial performance.

# Impairment of Tangible and Intangible Assets Other than Goodwill

In the process of evaluating the potential impairment of tangible and intangible assets other than goodwill, the Company is required to make subjective judgments in determining the independent cash flows, useful lives, expected future revenue and expenses related to the specific asset groups with the consideration of the nature of semiconductor industry. Any changes in these estimates based on changed economic conditions or business strategies could result in significant impairment charges or reversal in future years.

# **Impairment of Goodwill**

The assessment of impairment of goodwill requires the Company to make subjective judgment to determine the identified cash-generating units, allocate the goodwill to relevant cash-generating units and estimate the recoverable amount of relevant cash-generating units.

### **Impairment Assessment on Investment Using Equity Method**

The Company assesses the impairment of investments accounted for using the equity method whenever triggering events or changes in circumstances indicate that an investment may be impaired and carrying value may not be recoverable. The Company measures the impairment based on a projected future cash flow of the investees, including the underlying assumptions of sales growth rate and capacity utilization rate formulated by such investees' internal management team. The Company also takes into account market conditions and the relevant industry trends to ensure the reasonableness of such assumptions.

#### **Realization of Deferred Income Tax Assets**

Deferred tax assets are recognized to the extent that it is probable that future taxable profits will be available against which those deferred tax assets can be utilized. Assessment of the realization of the deferred tax assets requires subjective judgment and estimate, including the future revenue growth and profitability, tax holidays, the amount of tax credits can be utilized and feasible tax planning strategies. Any changes in the global economic environment, the industry trends and relevant laws and regulations could result in significant adjustments to the deferred tax assets.

### Valuation of Inventory

Inventories are stated at the lower of cost or net realizable value, and the Company uses judgment and estimate to determine the net realizable value of inventory at the end of each reporting period.

The Company estimates the net realizable value of inventory for obsolescence and unmarketable items at the end of reporting period and then writes down the cost of inventories to net realizable value. The net realizable value of the inventory is mainly determined based on assumptions of future demand within a specific time horizon.

### **Recognition and Measurement of Defined Benefit Plans**

Net defined benefit liability and the resulting defined benefit costs under defined benefit pension plans are calculated using the Projected Unit Credit Method. Actuarial assumptions comprise the discount rate, rate of employee turnover, and future salary increase rate. Changes in economic circumstances and market conditions will affect these assumptions and may have a material impact on the amount of the expense and the liability.

# 6. CASH AND CASH EQUIVALENTS

	December 31, 2018	December 31, 2017
Cash and deposits in banks Repurchase agreements collateralized by corporate bonds Commercial paper	\$ 238,473,857 1,229,600 499,068	\$ 239,176,841
	<u>\$ 240,202,525</u>	<u>\$ 239,176,841</u>

Deposits in banks consisted of highly liquid time deposits that were readily convertible to known amounts of cash and were subject to an insignificant risk of changes in value.

# 7. FINANCIAL ASSETS AND LIABILITIES AT FAIR VALUE THROUGH PROFIT OR LOSS

	December 31, 2018	December 31, 2017
Financial assets		
Mandatorily measured at FVTPL Forward exchange contracts Held for trading Forward exchange contracts	\$ 54,115 	\$ - 373,351 \$_373,351
Financial liabilities		
Held for trading Forward exchange contracts	<u>\$ 30,232</u>	<u>\$ 18,764</u>

The Company entered into derivative contracts to manage exposures due to fluctuations of foreign exchange rates. These derivative contracts did not meet the criteria for hedge accounting. Therefore, the Company did not apply hedge accounting treatment for these derivative contracts.

Outstanding forward exchange contracts consisted of the following:

	Maturity Date	Contract Amount (In Thousands)
<u>December 31, 2018</u>		
Sell NT\$/Buy EUR Sell NT\$/Buy JPY Sell US\$/Buy JPY Sell US\$/Buy NT\$	January 2019 to March 2019 January 2019 to March 2019 January 2019 January 2019	NT\$18,545,854/EUR527,000 NT\$4,757,858/JPY17,200,000 US\$162,834/JPY17,976,014 US\$110,000/NT\$3,386,459
December 31, 2017		
Sell NT\$/Buy EUR Sell NT\$/Buy JPY Sell US\$/Buy NT\$	January 2018 to February 2018 February 2018 January 2018	NT\$6,002,786/EUR169,000 NT\$996,294/JPY3,800,000 US\$1,643,000/NT\$49,120,205

# 8. HEDGING FINANCIAL INSTRUMENTS

2018

	December 31, 2018
Financial assets- current	
Cash flow hedges Forward exchange contracts	<u>\$ 23,497</u>
Financial liabilities- current	
Cash flow hedges Forward exchange contracts	<u>\$ 1,941</u>

The Company entered into forward exchange contracts and foreign currency deposits to partially hedge foreign exchange rate risks associated with certain highly probable forecast transactions (capital expenditures). The hedge ratio is adjusted in response to the changes in the financial market and capped at 100%. The forward exchange contracts have maturities of 12 months or less.

On the basis of economic relationships, the Company expects that the value of forward exchange contracts and foreign currency deposits and the value of hedged transactions will change in opposite directions in response to movements in foreign exchange rates.

The main source of hedge ineffectiveness in these hedging relationships is driven by the effect of the counterparty's own credit risk on the fair value of forward exchange contracts and foreign currency deposits. No other sources of ineffectiveness emerged from these hedging relationships. For the year ended December 31, 2018, refer to Note 20(d) for gain or loss arising from changes in the fair value of hedging instruments and the amount transferred to initial carrying amount of hedged items.

The following tables summarize the information relating to the hedges for foreign currency risk as of December 31, 2018.

Hedging Instruments	Contract Amount (in Thousands)	Maturity	Other (Cont	nce in Equity tinuing dges)
Forward exchange contracts	NT\$3,917,657/EUR112,000	February 2019 to April 2019	\$	23,601

The effect for the year ended December 31, 2018 is detailed below:

Hedged Items	Increase (Decrease) in Value Used for Calculating Hedge Ineffectiveness
ricugeu items	increctiveness
Hedging Instruments Forward exchange contracts	\$ 34,563
Foreign currency deposits	6,412
	<u>\$ 40,975</u>
Hedged Items	<b>4</b> (10 0 <b>-</b> 5)
Forecast transaction (capital expenditures)	<u>\$ (40,975)</u>

# 2017

The Company's hedging policies for 2017 are the same as those mentioned previously in 2018, the instruments employed are as follows:

	December 31, 2017
Financial assets- current	
Cash flow hedges Forward exchange contracts	<u>\$ 7,378</u>
Financial liabilities- current	
Cash flow hedges Forward exchange contracts	<u>\$ 15,562</u>

The Company entered into forward exchange contracts to partially hedge foreign exchange rate risks associated with certain highly probable forecast transactions (capital expenditures). These contracts have maturities of 12 months or less.

Outstanding forward exchange contracts consisted of the following:

	Maturity Date	Contract Amount (In Thousands)
<u>December 31, 2017</u>		
Sell NT\$/Buy EUR	February 2018 to May 2018	NT\$2,649,104/EUR75,000

# 9. NOTES AND ACCOUNTS RECEIVABLE, NET

	December 31, 2018	December 31, 2017
At amortized cost	Ф. 22.007.452	¢ 27.124.552
Notes and accounts receivable Less: Loss allowance	\$ 33,097,452 (7,132)	\$ 27,124,552 (469,125)
	33,090,320	26,655,427
At FVTOCI	3,595,069	
	\$ 36,685,389	\$ 26,655,427

The Company signed a contract with the bank to sell certain accounts receivable without recourse and transaction cost required. These accounts receivable are classified as at FVTOCI because they are held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets.

# 2018

In principle, the payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month when the invoice is issued. Aside from recognizing impairment losses on credit-impaired accounts receivable, the Company recognizes loss allowance based on the expected credit loss ratio of customers by different risk levels. Such risk levels are determined with factors of historical loss ratios and customers' financial conditions, competitiveness and business outlook. For accounts receivable past due over 90 days without collaterals or guarantees, the Company recognizes loss allowance at full amount.

### Aging analysis of notes and accounts receivable, net

	December 31, 2018
Not past due Past due	\$ 29,258,313
Past due Within 30 days Past due 31-60 days Past due 61-120 days Past due over 121 days	6,956,366 464,879 2,872 2,959
Movements of the loss allowance for accounts receivable	\$ 36,685,389
Balance at January 1, 2018 (IAS 39) Effect of retrospective application of IFRS 9 Balance at January 1, 2018 (IFRS 9) Provision (Reversal)	\$ 469,125 (244,773) 224,352 (217,220)
Balance at December 31, 2018	<u>\$ 7,132</u>

For the year ended December 31, 2018, the decrease in loss allowance was mainly due to the variations from accounts receivable balance of different risk levels.

# 2017

In principle, the payment term granted to customers is due 30 days from the invoice date or 30 days from the end of the month of when the invoice is issued. The allowance for doubtful receivables is assessed by reference to the collectability of receivables by performing the account aging analysis, historical experience and current financial condition of customers.

Except for those impaired, for the rest of the notes and accounts receivable, the account aging analysis at the end of the reporting period is summarized in the following table. There was no impairment concern for the accounts receivable that were past due without recognizing a specific allowance for doubtful receivables since there was no significant change in the credit quality of its customers after the assessment. In addition, the Company's subsidiary has obtained guarantee of NT\$2,427,548 thousand against certain receivables.

# Aging analysis of notes and accounts receivable, net

	December 31, 2017
Neither past due nor impaired	\$ 19,632,314
Past due but not impaired	
Past due within 30 days	5,169,209
Past due 31-60 days	929,672
Past due 61-120 days	582,821
Past due over 121 days	341,411
	\$ 26,655,427

### Movements of the allowance for doubtful receivables

	Individually Assessed for Impairment	Collectively Assessed for Impairment	Total
Balance at January 1, 2017 Reversal/Write-off	\$ - -	\$ 475,430 (6,305)	\$ 475,430 (6,305)
Balance at December 31, 2017	<u>\$</u>	<u>\$ 469,125</u>	<u>\$ 469,125</u>

#### 10. INVENTORIES

	December 31, 2018	December 31, 2017
Finished goods	\$ 10,920,351	\$ 9,596,837
Work in process	70,405,998	52,166,234
Raw materials	14,110,534	6,566,716
Supplies and spare parts	2,651,277	1,967,658
	<u>\$ 98,088,160</u>	<u>\$ 70,297,445</u>

Write-down of inventories to net realizable value (excluding computer virus outbreak losses) and reversal of write-down of inventories resulting from the increase in net realizable value in the amount of NT\$1,098,915 thousand and NT\$878,346 thousand, respectively, were included in the cost of revenue for the years ended December 31, 2018 and 2017. Please refer to computer virus outbreak losses in Note 35.

# 11. INVESTMENTS ACCOUNTED FOR USING EQUITY METHOD

Investments accounted for using the equity method consisted of the following:

	December 31, 2018	December 31, 2017
Subsidiaries Associates	\$ 531,717,913 17,842,971	\$ 446,148,086 
	<u>\$ 549,560,884</u>	\$ 463,986,364

# a. Investments in subsidiaries

Subsidiaries consisted of the following:

		Place of	Carrying Amount		Place of Carrying Amount			nip and Voting of the Company
Subsidiaries	Principal Activities	Incorporation and Operation	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017		
TSMC Global Ltd. (TSMC Global)	Investment activities	Tortola, British Virgin Islands	\$ 393,577,931	\$ 309,211,877	100%	100%		
TSMC China Company Limited (TSMC China)	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices	Shanghai, China	55,466,911	51,060,885	100%	100%		
TSMC Partners, Ltd. (TSMC Partners)	Investing in companies involved in the design, manufacture, and other related business in the semiconductor industry and other investment activities	Tortola, British Virgin Islands	52,339,094	49,684,287	100%	100%		
TSMC Nanjing Company Limited (TSMC Nanjing)	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices	Nanjing, China	20,601,413	26,493,740	100%	100%		
VisEra Technologies Company Ltd. (VisEra Tech)	Engaged in manufacturing electronic spare parts and in researching, developing, designing, manufacturing, selling, packaging and testing of color filter	Hsinchu, Taiwan	4,531,929	4,667,162	87%	87%		
TSMC North America	Selling and marketing of integrated circuits and other semiconductor devices	San Jose, California, U.S.A.	4,269,393	4,001,003	100%	100%		
TSMC Europe B.V. (TSMC Europe)	Customer service and supporting activities	Amsterdam, the Netherlands	445,828	407,324	100%	100%		
VentureTech Alliance Fund III, L.P. (VTAF III)	Investing in new start-up technology companies	Cayman Islands	194,660	152,836	98%	98%		
VentureTech Alliance Fund II, L.P. (VTAF II)	Investing in new start-up technology companies	Cayman Islands	128,758	320,533	98%	98%		
TSMC Japan Limited (TSMC Japan)	Customer service and supporting activities	Yokohama, Japan	141,136	129,446	100%	100%		
TSMC Korea Limited (TSMC Korea)	Customer service and supporting activities	Seoul, Korea	40,966	39,210	100%	100%		
TSMC Solar Europe GmbH	Selling of solar related products and providing customer service	Hamburg, Germany	(20,106)	(20,217)	100%	100%		
			\$ 531,717,913	<u>\$ 446,148,086</u>				

TSMC Solar Europe GmbH is under liquidation procedures.

In both 2018 and 2017, the Company continually increased its investment in TSMC Nanjing for the amount of NT\$2,361,320 thousand and NT\$21,724,892 thousand. This project was approved by the Investment Commission, Ministry of Economic Affairs, R.O.C. (MOEA).

To lower the hedging cost, in both of 2018 and 2017, the Company continually increased its investment in TSMC Global for the amount of NT\$62,272,080 thousand and NT\$60,683,010 thousand, respectively. This project was approved by the Investment Commission, MOEA.

### b. Investments in associates

Associates consisted of the following:

		Place of	Carryin	g Amount	% of Ownersl Rights Held by	nip and Voting of the Company
Name of Associate	Principal Activities	Incorporation and Operation	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017
Vanguard International Semiconductor Corporation (VIS)	Manufacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing and design service of masks	Hsinchu, Taiwan	\$ 9,006,126	\$ 8,568,344	28%	28%
Systems on Silicon Manufacturing Company Pte Ltd. (SSMC)	Manufacturing and selling of integrated circuits and other semiconductor devices	Singapore	5,772,815	5,677,640	39%	39%
Xintec Inc. (Xintec)	Wafer level chip size packaging and wafer level post passivation interconnection service	Taoyuan, Taiwan	1,764,607	2,292,100	41%	41%
Global Unichip Corporation (GUC)	Researching, developing, manufacturing, testing and marketing of integrated circuits	Hsinchu, Taiwan	1,299,423	1,300,194	35%	35%
			<u>\$ 17,842,971</u>	<u>\$ 17,838,278</u>		

As of December 31, 2018 and 2017, no investments in associates are individually material to the Company. Please refer to the parent company only statements of comprehensive income for recognition of share of both profit (loss) and other comprehensive income (loss) of associates that are not individually material.

The market prices of the investments accounted for using the equity method in publicly traded stocks calculated by the closing price at the end of the reporting period are summarized as follows. The closing price represents the quoted price in active markets, the level 1 fair value measurement.

Name of Associate	December 31, 2018	December 31, 2017
VIS	\$ 27,621,298	\$ 30,638,751
GUC	\$ 9,617,699	\$ 11,905,404
Xintec	\$ 3,783,585	\$ 9,180,759

# 12. PROPERTY, PLANT AND EQUIPMENT

	Land	Buildings	Machinery and Equipment	Office Equipment	Equipment under Installation and Construction in Progress	Total
Cost						
Balance at January 1, 2018 Additions (Deductions) Disposals or retirements	\$ 3,212,000	\$ 357,391,050 24,665,225 (410,891)	\$ 2,369,226,722 231,468,189 (15,065,446)	\$ 39,403,217 5,036,411 (716,942)	\$ 144,776,878 26,500,451	\$ 2,914,009,867 287,670,276 (16,193,279)
Balance at December 31, 2018	\$ 3,212,000	\$ 381,645,384	\$ 2,585,629,465	\$ 43,722,686	<u>\$ 171,277,329</u>	\$3,185,486,864
Accumulated depreciation and impairment						
Balance at January 1, 2018 Additions Disposals or retirements	\$ - - -	\$ 176,623,784 22,534,543 (398,955)	\$ 1,695,482,201 246,686,584 (11,102,618) 423,468	\$ 25,547,912 5,119,413 (716,409)	\$ - - -	\$ 1,897,653,897 274,340,540 (12,217,982) 423,468
Balance at December 31, 2018	<u>\$</u>	<u>\$ 198,759,372</u>	<u>\$1,931,489,635</u>	\$ 29,950,916	<u>s -</u>	\$ 2,160,199,923
Carrying amounts at December 31, 2018	<u>\$ 3,212,000</u>	<u>\$ 182,886,012</u>	\$ 654,139,830	<u>\$ 13,771,770</u>	<u>\$ 171,277,329</u>	<u>\$ 1,025,286,941</u>
Cost						
Balance at January 1, 2017 Additions (Deductions) Disposals or retirements	\$ 3,212,000	\$ 281,936,412 75,491,595 (36,957)	\$ 1,960,457,480 458,690,837 (49,921,595)	\$ 31,830,657 7,888,336 (315,776)	\$ 384,197,526 (239,420,648)	\$ 2,661,634,075 302,650,120 (50,274,328)
Balance at December 31, 2017	\$ 3,212,000	<u>\$ 357,391,050</u>	\$ 2,369,226,722	\$ 39,403,217	<u>\$ 144,776,878</u>	\$ 2,914,009,867
Accumulated depreciation and impairment						
Balance at January 1, 2017 Additions Disposals or retirements	\$ - - -	\$ 156,854,513 19,798,087 (28,816)	\$ 1,504,061,808 226,251,816 (34,831,423)	\$ 21,316,417 4,547,232 (315,737)	\$ - - -	\$ 1,682,232,738 250,597,135 (35,175,976)
Balance at December 31, 2017	<u>\$ -</u>	<u>\$ 176,623,784</u>	\$1,695,482,201	\$ 25,547,912	<u>\$</u>	\$ 1,897,653,897
Carrying amounts at December 31, 2017	<u>\$ 3,212,000</u>	\$ 180,767,266	<u>\$ 673,744,521</u>	<u>\$ 13,855,305</u>	<u>\$ 144,776,878</u>	<u>\$ 1,016,355,970</u>

The significant part of the Company's buildings includes main plants, mechanical and electrical power equipment and clean rooms, and the related depreciation is calculated using the estimated useful lives of 20 years, 10 years and 10 years, respectively.

For the year ended December 31, 2018, the Company recognized an impairment loss of NT\$423,468 thousand for certain machinery and equipment that was assessed to have no future use, and the recoverable amount of certain machinery and equipment was nil. Such impairment loss was recognized in other operating income and expenses.

# 13. INTANGIBLE ASSETS

	Goodwill	Technology License Fees	Software and System Design Costs	Patent and Others	Total
Cost					
Balance at January 1, 2018 Additions Disposals or retirements	\$ 1,567,756 - -	\$ 10,388,175 533,669	\$ 24,963,709 4,361,894 (185,592)	\$ 5,590,392 2,017,145	\$ 42,510,032 6,912,708 (185,592)
Balance at December 31, 2018	<u>\$ 1,567,756</u>	\$ 10,921,844	\$ 29,140,011	<u>\$ 7,607,537</u>	\$ 49,237,148
Accumulated amortization and impairment					
Balance at January 1, 2018 Additions Disposals or retirements	\$ - - -	\$ 7,639,775 1,063,616	\$ 20,282,457 2,766,396 (185,534)	\$ 4,717,673 522,835	\$ 32,639,905 4,352,847 (185,534)
Balance at December 31, 2018	<u>\$</u>	\$ 8,703,391	<u>\$ 22,863,319</u>	<u>\$ 5,240,508</u>	\$ 36,807,218
Carrying amounts at December 31, 2018	<u>\$ 1,567,756</u>	<u>\$ 2,218,453</u>	<u>\$ 6,276,692</u>	<u>\$ 2,367,029</u>	<u>\$ 12,429,930</u>
Cost					
Balance at January 1, 2017 Additions	\$ 1,567,756 	\$ 9,490,320 897,855	\$ 22,063,589 2,900,120	\$ 5,241,203 349,189	\$ 38,362,868 4,147,164
Balance at December 31, 2017	<u>\$ 1,567,756</u>	<u>\$ 10,388,175</u>	<u>\$ 24,963,709</u>	\$ 5,590,392	<u>\$ 42,510,032</u>
Accumulated amortization and impairment					
Balance at January 1, 2017 Additions	\$ <u>-</u>	\$ 6,091,513 1,548,262	\$ 17,991,500 2,290,957	\$ 4,231,864 485,809	\$ 28,314,877 4,325,028
Balance at December 31, 2017	<u>\$</u>	<u>\$ 7,639,775</u>	<u>\$ 20,282,457</u>	<u>\$ 4,717,673</u>	<u>\$ 32,639,905</u>
Carrying amounts at December 31, 2017	<u>\$ 1,567,756</u>	\$ 2,748,400	<u>\$ 4,681,252</u>	<u>\$ 872,719</u>	\$ 9,870,127

The Company's goodwill has been tested for impairment at the end of the annual reporting period and the recoverable amount is determined based on the value in use. The value in use was calculated based on the cash flow forecast from the financial budgets covering the future five-year period, and the Company used annual discount rates of 9.0% and 8.5% in its test of impairment as of December 31, 2018 and 2017, respectively, to reflect the relevant specific risk in the cash-generating unit.

For the years ended December 31, 2018 and 2017, the Company did not recognize any impairment loss on goodwill.

# 14. OTHER ASSETS

	December 31, 2018	December 31, 2017
Tax receivable	\$ 3,245,082	\$ 1,992,258
Prepaid expenses	939,176	492,247
Others	660	287
	<u>\$ 4,184,918</u>	<u>\$ 2,484,792</u>

# 15. SHORT-TERM LOANS

	December 31, 2018	December 31, 2017
Unsecured loans Related parties unsecured loans	\$ 88,754,640 3,227,700	\$ 63,766,850
Original loan content	<u>\$ 91,982,340</u>	<u>\$ 91,982,340</u>
US\$ (in thousands)	\$ 2,715,000	\$ 2,150,000
EUR(in thousands)	242,000	-
Annual interest rate	0.01%-3.22%	1.54%-1.82%
Maturity date	Due by April	Due by February
	2019	2018

The annual interest rate of short-term loans from related parties was not significantly different from those of sales to third parties.

# 16. PROVISIONS

The Company's current provisions were provisions for sales returns and allowances.

	Sales Returns and Allowances
Year Ended December 31, 2017	
Balance, beginning of year Provision Payment	\$ 16,991,612 44,244,876 (48,061,663)
Balance, end of year	<u>\$ 13,174,825</u>

Provisions for sales returns and allowances are estimated based on historical experience and the consideration of varying contractual terms, and are recognized as a reduction of revenue in the same year of the related product sales.

Starting from 2018, the Company recognizes the estimation of sales returns and allowance as refund liability (classified under accrued expenses and other current liabilities) upon initial application of IFRS 15.

# 17. BONDS PAYABLE

	December 31, 2018	December 31, 2017
Domestic unsecured bonds Less: Current portion	\$ 91,800,000 <u>(34,900,000)</u>	\$ 116,100,000 (24,300,000)
	<u>\$ 56,900,000</u>	<u>\$ 91,800,000</u>

The major terms of domestic unsecured bonds are as follows:

Issuance	Tranche	Issuance Period	Total Amount	Coupon Rate	Repayment and Interest Payment
100-1	В	September 2011 to September 2018	\$ 7,500,000	1.63%	Bullet repayment; interest payable annually
100-2	A	January 2012 to January 2017	10,000,000	1.29%	The same as above
	В	January 2012 to January 2019	7,000,000	1.46%	The same as above
101-1	Α	August 2012 to August 2017	9,900,000	1.28%	The same as above
	В	August 2012 to August 2019	9,000,000	1.40%	The same as above
101-2	A	September 2012 to September 2017	12,700,000	1.28%	The same as above
	В	September 2012 to September 2019	9,000,000	1.39%	The same as above
101-3	-	October 2012 to October 2022	4,400,000	1.53%	The same as above
101-4	A	January 2013 to January 2018	10,600,000	1.23%	The same as above
	В	January 2013 to January 2020	10,000,000	1.35%	The same as above
	C	January 2013 to January 2023	3,000,000	1.49%	The same as above
102-1	A	February 2013 to February 2018	6,200,000	1.23%	The same as above
	В	February 2013 to February 2020	11,600,000	1.38%	The same as above
	С	February 2013 to February 2023	3,600,000	1.50%	The same as above
102-2	A	July 2013 to July 2020	10,200,000	1.50%	The same as above
	В	July 2013 to July 2023	3,500,000	1.70%	The same as above
102-3	A	August 2013 to August 2017	4,000,000	1.34%	The same as above
	В	August 2013 to August 2019	8,500,000	1.52%	The same as above
102-4	В	September 2013 to September 2017	1,500,000	1.45%	The same as above
	C	September 2013 to March 2019	1,400,000	1.60%	Bullet repayment; interest payable annually (interest for the six months prior to maturity will accrue on the basis of actual days and be repayable at maturity)  (Continued)

Issuance	Tranche	Issuance Period	Total Amount	Coupon Rate	Repayment and Interest Payment
102-4	D	September 2013 to March 2021	\$ 2,600,000	1.85%	Bullet repayment; interest payable annually (interest for the six months prior to maturity will accrue on the basis of actual days and be repayable at maturity)
	E	September 2013 to March 2023	5,400,000	2.05%	The same as above
	F	September 2013 to September 2023	2,600,000	2.10%	Bullet repayment; interest payable annually (Concluded)

#### 18. RETIREMENT BENEFIT PLANS

# a. Defined contribution plans

The plan under the R.O.C. Labor Pension Act (the "Act") is deemed a defined contribution plan. Pursuant to the Act, the Company has made monthly contributions equal to 6% of each employee's monthly salary to employees' pension accounts. Accordingly, the Company recognized expenses of NT\$2,028,928 thousand and NT\$1,905,444 thousand for the years ended December 31, 2018 and 2017, respectively.

# b. Defined benefit plans

The Company has defined benefit plans under the R.O.C. Labor Standards Law that provide benefits based on an employee's length of service and average monthly salary for the six-month period prior to retirement. The Company contributes an amount equal to 2% of salaries paid each month to their respective pension funds (the Funds), which are administered by the Labor Pension Fund Supervisory Committee (the Committee) and deposited in the Committee's name in the Bank of Taiwan. Before the end of each year, the Company assesses the balance in the Funds. If the amount of the balance in the Funds is inadequate to pay retirement benefits for employees who conform to retirement requirements in the next year, the Company is required to fund the difference in one appropriation that should be made before the end of March of the next year. The Funds are operated and managed by the government's designated authorities; as such, the Company does not have any right to intervene in the investments of the Funds.

Amounts recognized in respect of these defined benefit plans were as follows:

	Years Ended December 31			
		2018		2017
Current service cost	\$	137,758	\$	145,026
Net interest expense		144,108		126,525
Components of defined benefit costs recognized in profit or loss		281,866		271,551
Remeasurement on the net defined benefit liability:				
Return on plan assets (excluding amounts included in net				
interest expense)		(71,288)		29,290
Actuarial loss arising from experience adjustments		334,630		483,846
Actuarial loss(gain) arising from changes in financial				
assumptions		597,820		(258,455)
Components of defined benefit costs recognized in other				
comprehensive income		861,162		254,681
Total	<u>\$ 1</u>	1,143,028	\$	526,232

The pension costs of the aforementioned defined benefit plans were recognized in profit or loss by the following categories:

	Years Ended December 31		
	2018	2017	
Cost of revenue	\$ 177,772	\$ 175,357	
Research and development expenses	79,143	75,340	
General and administrative expenses	20,591	16,669	
Marketing expenses	4,360	4,185	
	<u>\$ 281,866</u>	<u>\$ 271,551</u>	

The amounts arising from the defined benefit obligation of the Company were as follows:

	December 31, 2018	December 31, 2017	
Present value of defined benefit obligation Fair value of plan assets	\$ 13,662,684 (4,011,279)	\$ 12,774,593 (3,923,889)	
Net defined benefit liability	<u>\$ 9,651,405</u>	\$ 8,850,704	

Movements in the present value of the defined benefit obligation were as follows:

	Years Ended December 31		
	2018	2017	
Balance, beginning of year	\$ 12,774,593	\$ 12,480,480	
Current service cost	137,758	145,026	
Interest expense	207,804	185,561	
Remeasurement:			
Actuarial loss arising from experience adjustments	334,630	483,846	
Actuarial loss (gain) arising from changes in financial			
assumptions	597,820	(258,455)	
Benefits paid from plan assets	(274,326)	(261,865)	
Benefits paid directly by the Company	(115,595)		
Balance, end of year	<u>\$ 13,662,684</u>	<u>\$ 12,774,593</u>	

Movements in the fair value of the plan assets were as follows:

	Years Ended December 31		
	2018	2017	
Balance, beginning of year	\$ 3,923,889	\$ 3,929,072	
Interest income	63,696	59,036	
Remeasurement:			
Return on plan assets (excluding amounts included in net			
interest expense)	71,288	(29,290)	
Contributions from employer	226,732	226,936	
Benefits paid from plan assets	(274,326)	(261,865)	
Balance, end of year	<u>\$ 4,011,279</u>	\$ 3,923,889	

The fair value of the plan assets by major categories at the end of reporting period was as follows:

	December 31, 2018	December 31, 2017
Cash Equity instruments Debt instruments	\$ 756,126 2,148,040 1,107,113	\$ 707,477 1,993,336 1,223,076
	<u>\$ 4,011,279</u>	\$ 3,923,889

The actuarial valuations of the present value of the defined benefit obligation were carried out by qualified actuaries. The principal assumptions of the actuarial valuation were as follows:

	Measurei	Measurement Date		
	December 31, 2018	December 31, 2017		
Discount rate Future salary increase rate	1.30% 3.00%	1.65% 3.00%		

Through the defined benefit plans under the R.O.C. Labor Standards Law, the Company is exposed to the following risks:

- 1) Investment risk: The pension funds are invested in equity and debt securities, bank deposits, etc. The investment is conducted at the discretion of the government's designated authorities or under the mandated management. However, under the R.O.C. Labor Standards Law, the rate of return on assets shall not be less than the average interest rate on a two-year time deposit published by the local banks and the government is responsible for any shortfall in the event that the rate of return is less than the required rate of return.
- 2) Interest risk: A decrease in the government bond interest rate will increase the present value of the defined benefit obligation; however, this will be partially offset by an increase in the return on the debt investments of the plan assets.
  - Assuming a hypothetical decrease in interest rate at the end of the reporting period contributed to a decrease of 0.5% in the discount rate and all other assumptions were held constant, the present value of the defined benefit obligation would increase by NT\$921,750 thousand and NT\$890,116 thousand as of December 31, 2018 and 2017, respectively.
- 3) Salary risk: The present value of the defined benefit obligation is calculated by reference to the future salaries of plan participants. As such, an increase in the salary of the plan participants will increase the present value of the defined benefit obligation.

Assuming the expected salary rate increases by 0.5% at the end of the reporting period and all other assumptions were held constant, the present value of the defined benefit obligation would increase by NT\$901,629 thousand and NT\$873,801 thousand as of December 31, 2018 and 2017, respectively.

The sensitivity analysis presented above may not be representative of the actual change in the defined benefit obligation as it is unlikely that the change in assumptions would occur in isolation of one another as some of the assumptions may be correlated.

Furthermore, in presenting the above sensitivity analysis, the present value of the defined benefit obligation has been calculated using the projected unit credit method at the end of the reporting period, which is the same as that applied in calculating the defined benefit obligation liability.

The Company expects to make contributions of NT\$233,534 thousand to the defined benefit plans in the next year starting from December 31, 2018. The weighted average duration of the defined benefit obligation is 13 years.

### 19. GUARANTEE DEPOSITS

	December 31, 2018	December 31, 2017
Capacity guarantee Others	\$ 9,289,628 <u>205,020</u>	\$ 13,346,550 <u>282,572</u>
	\$ 9,494,648	\$ 13,629,122
Current portion (classified under accrued expenses and other current liabilities) Noncurrent portion	\$ 6,148,000 3,346,648	\$ 6,046,643 7,582,479
	<u>\$ 9,494,648</u>	\$ 13,629,122

Some of guarantee deposits were refunded to customers by offsetting related accounts receivable.

# 20. EQUITY

### a. Capital stock

	December 31, 2018	December 31, 2017
Authorized shares (in thousands)	28,050,000	28,050,000
Authorized capital	\$ 280,500,000	\$ 280,500,000
Issued and paid shares (in thousands)	25,930,380	25,930,380
Issued capital	<u>\$ 259,303,805</u>	<u>\$ 259,303,805</u>

A holder of issued common shares with par value of NT\$10 per share is entitled to vote and to receive dividends.

The authorized shares include 500,000 thousand shares allocated for the exercise of employee stock options.

As of December 31, 2018, 1,068,157 thousand ADSs of the Company were traded on the NYSE. The number of common shares represented by the ADSs was 5,340,787 thousand shares (one ADS represents five common shares).

### b. Capital surplus

	December 31, 2018	December 31, 2017
Additional paid-in capital	\$ 24,184,939	\$ 24,184,939
From merger	22,804,510	22,804,510
From convertible bonds	8,892,847	8,892,847
From share of changes in equities of subsidiaries	121,473	118,792
From share of changes in equities of associates	282,820	289,240
Donations	29,343	19,208
	\$ 56,315,932	\$ 56,309,536

Under the relevant laws, the capital surplus generated from donations and the excess of the issuance price over the par value of capital stock (including the stock issued for new capital, mergers and convertible bonds) may be used to offset a deficit; in addition, when the Company has no deficit, such capital surplus may be distributed as cash dividends or stock dividends up to a certain percentage of the Company's paid-in capital. The capital surplus from share of changes in equities of subsidiaries and associates and dividend of a claim extinguished by a prescription may be used to offset a deficit; however, when generated from issuance of restricted shares for employees, such capital surplus may not be used for any purpose.

# c. Retained earnings and dividend policy

The Company's Articles of Incorporation provide that, when allocating the net profits for each fiscal year, the Company shall first offset its losses in previous years and then set aside the following items accordingly:

- 1) Legal capital reserve at 10% of the profits left over, until the accumulated legal capital reserve equals the Company's paid-in capital;
- Special capital reserve in accordance with relevant laws or regulations or as requested by the authorities in charge;
- 3) Any balance left over shall be allocated according to the resolution of the shareholders' meeting.

TSMC's Articles of Incorporation provide the policy about the profit sharing bonus to employees, please refer to Note 28.

The Company's Articles of Incorporation also provide that profits of the Company may be distributed by way of cash dividend and/or stock dividend. However, distribution of earnings shall be made preferably by way of cash dividend. Distribution of earnings may also be made by way of stock dividend; provided that the ratio for stock dividend shall not exceed 50% of the total distribution.

Any appropriations of the profits are subject to shareholders' approval in the following year.

The appropriation for legal capital reserve shall be made until the reserve equals the Company's paid-in capital. The reserve may be used to offset a deficit, or be distributed as dividends in cash or stocks for the portion in excess of 25% of the paid-in capital if the Company incurs no loss.

Pursuant to existing regulations, the Company is required to set aside additional special capital reserve equivalent to the net debit balance of the other components of stockholders' equity, such as the accumulated balance of foreign currency translation reserve, unrealized valuation gain or loss from fair value through other comprehensive income financial assets, unrealized valuation gain or loss from available-for-sale financial assets, gain or loss from changes in fair value of hedging instruments in cash flow hedges, etc. For the subsequent decrease in the deduction amount to stockholders' equity, any special reserve appropriated may be reversed to the extent that the net debit balance reverses.

The appropriations of 2017 and 2016 earnings had been approved by the Company's shareholders in its meetings held on June 5, 2018 and June 8, 2017, respectively. The appropriations and dividends per share were as follows:

	Appropriatio	on of Earnings		Per Share T\$)
	For Fiscal Year 2017	For Fiscal Year 2016	For Fiscal Year 2017	For Fiscal Year 2016
Legal capital reserve Special capital reserve Cash dividends to shareholders	\$ 34,311,148 26,907,527 207,443,044	\$ 33,424,718 	\$8	\$7
	\$ 268,661,719	\$214,937,381		

The Company's appropriation of earnings for 2018 had been approved in the meeting of the Board of Directors held on February 19, 2019. The appropriation and dividends per share were as follows:

	Appropriation of Earnings	Dividends Per Share (NT\$)	
	For Fiscal Year 2018	For Fiscal Year 2018	
Legal capital reserve Special capital reserve Cash dividends to shareholders	\$ 35,113,088 (11,459,458) 	\$ 8	
	<u>\$ 231,096,674</u>		

The appropriation of earnings for 2018 is to be presented for approval in the Company's shareholders' meeting to be held on June 5, 2019 (expected).

# d. Others

Changes in others were as follows:

	Year Ended December 31, 2018				
	Foreign Currency Translation Reserve	Unrealized Gain (Loss) on Financial Assets at FVTOCI	Gain (Loss) on Hedging Instruments	Unearned Stock-Based Compensation	Total
Balance, beginning of year (IFRS 9) Exchange differences arising on translation of	\$ (26,697,680)	\$ (524,915)	\$ 4,226	\$ (10,290)	\$ (27,228,659)
foreign operations Unrealized gain (loss) on financial assets at FVTOCI	14,578,483	-	-	-	14,578,483
Equity instruments Cumulative unrealized gain (loss) of equity instruments transferred to retained	-	(1,189,957)	-	-	(1,189,957)
earnings due to disposal Gain (loss) arising on changes in the fair	-	1,193,056	-	-	1,193,056
value of hedging instruments Transferred to initial carrying amount of	-	-	40,975	-	40,975
hedged items Share of other comprehensive income (loss)	-	-	(22,162)	-	(22,162)
of associates Share of unearned stock-based employee	76,850	(2,999,336)	-	-	(2,922,486)
compensation of associates	-	-	-	8,447	8,447
Income tax effect	<del></del>	91,828	562	<del>_</del>	92,390
Balance, end of year	\$ (12,042,347)	\$ (3,429,324)	\$ 23,601	\$ (1,843)	\$(15,449,913)

	Year Ended December 31, 2017				
	Foreign Currency Translation Reserve	Unrealized Gain/Loss from Available-for- sale Financial Assets	Cash Flow Hedges Reserve	Unearned Stock-Based Employee Compensation	Total
Balance, beginning of year	\$ 1,661,237	\$ 2,641	\$ 105	\$ -	\$ 1,663,983
Exchange differences arising on translation of foreign operations	(28,270,770)	-	-	-	(28,270,770)
Changes in fair value of available-for-sale financial assets	-	(310,002)	-	-	(310,002)
Cumulative (gain)/loss reclassified to profit or loss upon disposal of available-for-sale financial assets		(115 600)			(115 600)
Gain/(loss) arising on changes in the fair value of hedging instruments	-	(115,690)	99,534	-	(115,690) 99,534
Transferred to initial carrying amount of	-	-	,	-	ŕ
hedged items Share of other comprehensive income (loss)	-	-	(94,851)	-	(94,851)
of associates Share of unearned stock-based employee	(88,147)	211,951	-	-	123,804
compensation of associates	-	-	-	(10,290)	(10,290)
Income tax effect		(2,974)	(562)	<del></del>	(3,536)
Balance, end of year	<u>\$ (26,697,680</u> )	<u>\$ (214,074)</u>	<u>\$ 4,226</u>	<u>\$ (10,290)</u>	<u>\$ 26,917,818</u>

The aforementioned other equity includes the changes in other equities of the Company and the Company's share of its subsidiaries and associates.

# 21. NET REVENUE

a. Disaggregation of revenue from contracts with customers

Product	Year Ended December 31, 2018
Wafer	\$ 906,992,422
Others	116,933,291
	<u>\$1,023,925,713</u>
Geography	Year Ended December 31, 2018
Taiwan	\$ 78,260,773
United States	626,493,249
China	175,794,228
Europe, the Middle East and Africa	71,068,438
Japan	58,125,879
Others	14,183,146
	<u>\$1,023,925,713</u>

The Company categorized the net revenue mainly based on the countries where the customers are headquartered.

	Application Type		Year Ended December 31, 2018
	Communication Industrial/Standard Computer Consumer		\$ 574,350,582 232,589,200 143,744,212 73,241,719
			\$1,023,925,713
	Resolution		Year Ended December 31, 2018
	7-nanometer 10-nanometer 16/20-nanometer 28-nanometer 40/45-nanometer 65-nanometer 90-nanometer 0.11/0.13 micron 0.15/0.18 micron 0.25 micron and above  Wafer revenue		\$ 81,146,571 96,600,008 209,828,511 177,484,309 101,481,881 75,734,952 36,543,823 20,638,247 80,886,264 26,647,856 \$ 906,992,422
b.	Contract balances	December 31, 2018	January 1, 2018
	Contract liabilities (classified under accrued expenses and other current liabilities)	\$ 2,740,649	\$ 31,078,331

The changes in the contract liability balances primarily result from the timing difference between the satisfaction of performance obligation and the customer's payment.

For the year ended December 31, 2018, the Company recognized NT\$30,742,181 thousand as revenue from the beginning balance of contract liability.

# c. Refund liabilities

Estimated sales returns and other allowances is made and adjusted based on historical experience and the consideration of varying contractual terms, which amounted to NT\$53,382,673 thousand for the year ended December 31, 2018. As of December 31, 2018, the aforementioned refund liabilities amounted to NT\$21,199,032 thousand (classified under accrued expenses and other current liabilities).

# 22. OTHER OPERATING INCOME AND EXPENSES, NET

	Years Ended December 31		
	2018	2017	
Loss on disposal or retirement of property, plant and equipment, net Impairment loss on property, plant and equipment, net Others	\$ (557,598) (423,468) (687,168)	\$ (1,008,989) - (252,676)	
	<u>\$ (1,668,234)</u>	<u>\$ (1,261,665)</u>	

# 23. OTHER INCOME

	Years Ended December 31		
	2018	2017	
Interest income			
Bank deposits	\$ 1,845,471	\$ 1,522,579	
Financial assets at amortized cost	1,731	-	
Held-to-maturity financial assets	-	32,213	
, and the second	1,847,202	1,554,792	
Dividend income	<u>157,905</u>	141,803	
	<u>\$ 2,005,107</u>	<u>\$ 1,696,595</u>	

# 24. FINANCE COSTS

	Years Ended December 31		
	2018	2017	
Interest expense			
Corporate bonds	\$ 1,485,486	\$ 1,967,750	
Bank loans	1,417,287	766,001	
Related parties	681	15,889	
	<u>\$ 2,903,454</u>	\$ 2,749,640	

# 25. OTHER GAINS AND LOSSES, NET

	Years Ended December 31	
	2018	2017
Net gain (loss) on financial instruments at FVTPL	• //	_
Mandatorily measured at FVTPL	\$ (1,498,856)	\$ -
Held for trading	-	1,252,759
Gain on disposal of financial assets, net		
Available-for-sale financial assets	-	115,690
Impairment loss on financial assets		
Financial assets carried at cost	-	(6,137)
Other gains, net	130,530	229,927
	<u>\$ (1,368,326)</u>	\$ 1,592,239

# **26. INCOME TAX**

a. Income tax expense recognized in profit or loss

Income tax expense consisted of the following:

	Years Ended December 31		
	2018	2017	
Current income tax expense			
Current tax expense recognized in the current year	\$ 50,511,247	\$ 55,187,468	
Income tax adjustments on prior years	(963,356)	(938,292)	
Other income tax adjustments	149,771	150,168	
,	49,697,662	54,399,344	
Deferred income tax benefit			
Effect of tax rate changes	(1,466,706)	-	
The origination and reversal of temporary differences	(3,163,687)	(4,194,644)	
	(4,630,393)	(4,191,644)	
Income tax expense recognized in profit or loss	\$ 45,067,269	\$ 50,204,700	

A reconciliation of income before income tax and income tax expense recognized in profit or loss was as follows:

	<b>Years Ended December 31</b>		
	2018	2017	
Income before tax	<u>\$ 396,198,153</u>	<u>\$ 393,316,176</u>	
Income tax expense at the statutory rate	\$ 79,239,631	\$ 66,863,750	
Tax effect of adjusting items:			
Nondeductible (deductible) items in determining taxable			
income	2,636,232	(1,438,813)	
Tax-exempt income	(54,234,074)	(16,467,720)	
Additional income tax under the Alternative Minimum Tax Act	21,455,854	-	
Additional income tax on unappropriated earnings	7,420,479	11,835,948	
Effect of tax rate changes on deferred income tax	(1,466,706)	-	
The origination and reversal of temporary differences	(3,163,687)	(4,194,644)	
Income tax credits	<u>(6,006,875</u> )	(5,605,697)	
	45,880,854	50,992,824	
Income tax adjustments on prior years	(963,356)	(938,292)	
Other income tax adjustments	149,771	150,168	
Income tax expense recognized in profit or loss	<u>\$ 45,067,269</u>	<u>\$ 50,204,700</u>	

For the year ended December 31, 2017, the Company applied a tax rate of 17% for entities subject to the R.O.C. Income Tax Law. In February 2018, the Income Tax Law in the R.O.C. was amended and, starting from 2018, the corporate income tax rate was adjusted from 17% to 20%. In addition, the tax rate for 2018 unappropriated earnings was reduced from 10% to 5%.

# b. Income tax expense recognized in other comprehensive income

	<b>Years Ended December 31</b>		
	2018	2017	
Deferred income tax benefit (expense) Related to remeasurement of defined benefit obligation	\$ 103,339	\$ 30,562	
Related to unrealized gain/loss on investments in equity instruments at FVTOCI	91,828	- (5.62)	
Related to gain/loss on cash flow hedges Related to unrealized gain/loss on available-for-sale financial	562	(562)	
assets	<del>_</del>	(2,974)	
	<u>\$ 195,729</u>	<u>\$ 27,026</u>	

# c. Deferred income tax balance

The analysis of deferred income tax assets and liabilities was as follows:

	December 31, 2018	December 31, 2017
Deferred income tax assets Temporary differences		
Depreciation	\$ 11,177,890	\$ 7,668,535
Refund liability	2,543,884	· , , , , -
Net defined benefit liability	1,084,874	975,324
Unrealized loss on inventories	723,835	604,635
Provision for sales returns and allowance	-	1,580,979
Investments in equity instruments at FVTOCI	<u>56,191</u>	<del>-</del>
	<u>\$ 15,586,674</u>	<u>\$ 10,829,473</u>
Deferred income tax liabilities		
Temporary differences	h (61 688)	Φ (1.60.400)
Unrealized exchange gains	\$ (61,677)	\$ (169,480)
Available-for-sale financial assets	(171 (07)	(95,421)
Others	(171,607)	(37,304)
	<u>\$ (233,284)</u>	<u>\$ (302,205)</u>

		Year Ended De	cember 31, 2018	
	Recognized in			
	Balance,		Other	D - 1
	Beginning of Year	Profit or Loss	Comprehensive Income	Balance, End of Year
Deferred income tax assets Temporary differences				
Depreciation	\$ 7,668,535	\$ 3,509,355	\$ -	\$ 11,177,890
Refund liability	1,580,979	962,905	-	2,543,884
Net defined benefit liability	975,324	6,211	103,339	1,084,874
Unrealized loss on inventories Investments in equity	604,635	119,200	-	723,835
instruments at FVTOCI			56,191	56,191
	<u>\$ 10,829,473</u>	<u>\$ 4,597,671</u>	<u>\$ 159,530</u>	<u>\$ 15,586,674</u>
Deferred income tax liabilities Temporary differences				
Unrealized exchange gains Investments in equity	\$ (169,480)	\$ 107,803	\$ -	\$ (61,677)
instruments at FVTOCI	(95,421)	-	95,421	-
Others	(37,304)	(75,081)	(59,222)	(111,823)
	<u>\$ (302,205)</u>	\$ 32,722	<u>\$ 36,199</u>	\$ (233,284)
			cember 31, 2017	
	ъ.	Recog	nized in	
	Balance, Beginning of Year	Profit or Loss	Other Comprehensive Income	Balance, End of Year
Deferred income tax assets Temporary differences				
Depreciation	\$ 3,284,735	\$ 4,383,800	\$ -	\$ 7,668,535
Provision for sales returns and	1 420 707	152 102		1 590 070
allowance Net defined benefit liability	1,428,787 939,543	152,192 5,219	30,562	1,580,979 975,324
Unrealized loss on inventories	698,858	(94,223)	50,502	604,635
Others	94,858	(94,858)	<del>-</del>	
	<u>\$ 6,446,781</u>	\$ 4,352,130	\$ 30,562	<u>\$ 10,829,473</u>
Deferred income tax liabilities				
Temporary differences Unrealized exchange gains	\$ (48,736)	\$ (120,744)	\$ -	\$ (169,480)
Available-for-sale financial	ψ (10,730)	ψ (120,/17)	ψ –	ψ (107,700)
assets	(92,447)	-	(2,974)	(95,421)
Others		(36,742)	(562)	(37,304)

d. The deductible temporary differences for which no deferred income tax assets have been recognized

<u>\$ (141,183)</u>

As of December 31, 2018 and 2017, the aggregate deductible temporary differences for which no deferred income tax assets have been recognized amounted to NT\$20,060,918 thousand and NT\$26,536,307 thousand, respectively.

<u>\$ (157,486)</u>

(3,536)

\$ (302,205)

# e. Unused tax-exemption information

As of December 31, 2018, the profits generated from the following projects of the Company are exempt from income tax for a five-year period:

# **Tax-exemption Period**

Construction and expansion of 2008	2015 to 2019
Construction and expansion of 2009	2018 to 2022

# f. The information of unrecognized deferred income tax liabilities associated with investments

As of December 31, 2018 and 2017, the aggregate taxable temporary differences associated with investments in subsidiaries not recognized as deferred income tax liabilities amounted to NT\$112,893,001 thousand and NT\$95,003,344 thousand, respectively.

# g. Income tax examination

The tax authorities have examined income tax returns of the Company through 2015. All investment tax credit adjustments assessed by the tax authorities have been recognized accordingly.

### 27. EARNINGS PER SHARE

	_	Years Ended December 31	
	_	2018	2017
Basic EPS Diluted EPS		\$13.54 \$13.54	\$13.23 \$13.23
EPS is computed as follows:			
	Amounts (Numerator)	Number of Shares (Denominator) (In Thousands)	EPS (NT\$)
Year Ended December 31, 2018			
Basic/Diluted EPS Net income available to common shareholders	\$ 351,130,884	25,930,380	<u>\$13.54</u>
Year Ended December 31, 2017			
Basic/Diluted EPS Net income available to common shareholders	<u>\$ 343,111,476</u>	25,930,380	<u>\$13.23</u>

# 28. ADDITIONAL INFORMATION OF EXPENSES BY NATURE

		Years Ended December 31	
		2018	2017
a.	Depreciation of property, plant and equipment		
	Recognized in cost of revenue Recognized in operating expenses Recognized in other operating income and expenses	\$ 251,292,565 23,020,118 27,857 \$ 274,340,540	\$ 231,042,615 19,490,010 64,510 \$ 250,597,135
b.	Amortization of intangible assets		
	Recognized in cost of revenue Recognized in operating expenses	\$ 2,018,702 2,334,145	\$ 2,119,899 2,205,129
		<u>\$ 4,352,847</u>	<u>\$ 4,325,028</u>
c.	Research and development costs expensed as incurred	<u>\$ 84,944,461</u>	\$ 79,887,723
d.	Employee benefits expenses		
	Post-employment benefits Defined contribution plans Defined benefit plans Other employee benefits	\$ 2,028,928 <u>281,866</u> 2,310,794 <u>93,694,021</u>	\$ 1,905,444 271,551 2,176,995 90,611,476
		<u>\$ 96,004,815</u>	<u>\$ 92,788,471</u>
	Employee benefits expense summarized by function Recognized in cost of revenue Recognized in operating expenses	\$ 57,733,597 38,271,218 \$ 96,004,815	\$ 55,902,877 36,885,594 \$ 92,788,471

According to the Company's Articles of Incorporation, the Company shall allocate compensation to directors and profit sharing bonus to employees of the Company not more than 0.3% and not less than 1% of annual profits during the period, respectively.

The Company accrued profit sharing bonus to employees based on a percentage of net income before income tax, profit sharing bonus to employees and compensation to directors during the period, which amounted to NT\$23,570,040 thousand and NT\$23,019,082 thousand for the years ended December 31, 2018 and 2017, respectively; compensation to directors was expensed based on estimated amount payable. If there is a change in the proposed amounts after the annual parent company only financial statements are authorized for issue, the differences are recorded as a change in accounting estimate.

The Company's profit sharing bonus to employees and compensation to directors in the amounts of NT\$23,570,040 thousand and NT\$349,272 thousand in cash for 2018, respectively, profit sharing bonus to employees and compensation to directors in the amounts of NT\$23,019,082 thousand and NT\$368,919 thousand in cash for 2017, respectively, and profit sharing bonus to employees and compensation to directors in the amounts of NT\$22,418,339 thousand and NT\$376,432 thousand in cash for 2016, respectively, had been approved by the Board of Directors of the Company held on February 19, 2019, February 13, 2018 and February 14, 2017, respectively. There is no significant difference between the

aforementioned approved amounts and the amounts charged against earnings of 2018, 2017 and 2016, respectively.

The information about the appropriations of the Company's profit sharing bonus to employees and compensation to directors is available at the Market Observation Post System website.

### 29. CASH FLOW INFORMATION

Reconciliation of liabilities arising from financing activities

			Non-cash changes		
	Balance as of January 1, 2018	Financing Cash Flow	Foreign Exchange Movement	Other Changes (Note)	Balance as of December 31, 2018
Short-term loans Guarantee deposits Bonds payable	\$ 63,766,850 13,629,122 116,100,000	\$ 27,154,770 1,504,809 (24,300,000)	\$ 1,060,720 396,617	\$ - (6,035,900) 	\$ 91,982,340 9,494,648 91,800,000
Total	<u>\$ 193,495,972</u>	<u>\$ 4,359,579</u>	<u>\$ 1,457,337</u>	<u>\$ (6,035,900)</u>	<u>\$ 193,276,988</u>

Note: Other changes include guarantee deposits refunded to customers by offsetting related accounts receivable.

# 30. CAPITAL MANAGEMENT

The Company requires significant amounts of capital to build and expand its production facilities and acquire additional equipment. In consideration of the industry dynamics, the Company manages its capital in a manner to ensure that it has sufficient and necessary financial resources to fund its working capital needs, capital asset purchases, research and development activities, dividend payments, debt service requirements and other business requirements associated with its existing operations over the next 12 months.

### 31. FINANCIAL INSTRUMENTS

### a. Categories of financial instruments

	December 31, 2018
Financial assets FVTPL (Note 1) FVTOCI (Note 2) Hedging financial assets Amortized cost (Note 3)	\$ 54,115 5,126,829 23,497 365,119,060
Financial liabilities FVTPL (Note 4) Hedging financial liabilities Amortized cost (Note 5)	\$ 370,323,501 \$ 30,232 1,941 310,265,696
	<u>\$ 310,297,869</u>

- Note 1: Financial assets mandatorily measured at FVTPL.
- Note 2: Including notes and accounts receivable, net and equity investments.
- Note 3: Including cash and cash equivalents, financial assets at amortized cost, notes and accounts receivable (including related parties), other receivables and refundable deposits.
- Note 4: Held for trading.
- Note 5: Including short-term loans, accounts payable (including related parties), payables to contractors and equipment suppliers, accrued expenses and other current liabilities, bonds payable, and guarantee deposits.

	December 31, 2017
Financial assets	
FVTPL	\$ 373,351
Available-for-sale financial assets (Note 6)	2,808,606
Hedging derivative financial assets	7,378
Loans and receivables (Note 7)	362,375,885
	<u>\$ 365,565,220</u>
Financial liabilities	
FVTPL	\$ 18,764
Hedging derivative financial liabilities	15,562
Amortized cost (Note 8)	294,856,247
	<u>\$ 294,890,573</u>

- Note 6: Including financial assets carried at cost.
- Note 7: Including cash and cash equivalents, notes and accounts receivable (including related parties), other receivables and refundable deposits.
- Note 8: Including short-term loans, accounts payable (including related parties), payables to contractors and equipment suppliers, accrued expenses and other current liabilities, bonds payable and guarantee deposits.

# b. Financial risk management objectives

The Company seeks to ensure sufficient cost-efficient funding readily available when needed. The Company manages its exposure to foreign currency risk, interest rate risk, equity price risk, credit risk and liquidity risk with the objective to reduce the potentially adverse effects the market uncertainties may have on its financial performance.

The plans for material treasury activities are reviewed by Audit Committees and/or Board of Directors in accordance with procedures required by relevant regulations or internal controls. During the implementation of such plans, Corporate Treasury function must comply with certain treasury procedures that provide guiding principles for overall financial risk management and segregation of duties.

### c. Market risk

The Company is exposed to the financial market risks, primarily changes in foreign currency exchange rates, interest rates and equity investment prices. A portion of these risks is hedged.

### Foreign currency risk

Most of the Company's revenues and expenditures are denominated in foreign currencies. Consequently, the Company is exposed to foreign currency risk. To protect against reductions in value and the volatility of future cash flows caused by changes in foreign exchange rates, the Company uses derivative financial instruments, such as forward exchange contracts and cross currency swaps, and non-derivative financial instruments, such as foreign currency-denominated debt, to partially hedge the Company's existing and certain forecasted currency exposure. These hedges will offset only a portion of, but do not eliminate, the financial impact from movements in foreign currency exchange rates.

The Company's sensitivity analysis of foreign currency risk mainly focuses on the foreign currency monetary items and the derivatives financial instruments at the end of the reporting period. Assuming an unfavorable 10% movement in the levels of foreign exchanges relative to the New Taiwan dollar, the net income for the years ended December 31, 2018 and 2017 would have decreased by NT\$489,326 thousand and NT\$849,248 thousand, respectively, and the other comprehensive income for the years ended December 31, 2018 and 2017 would have decreased by NT\$315,571 thousand and NT\$265,875 thousand, respectively.

# Interest rate risk

The Company is exposed to interest rate risk primarily related to its outstanding debt and investments in fixed income securities. All of the Company's bonds payable have fixed interest rates and are measured at amortized cost. As such, changes in interest rates would not affect the future cash flows.

The Company classified its investments in fixed income securities as financial assets at amortized costs starting from 2018; as held-to-maturity financial assets in 2017. Because financial assets at amortized costs and held-to-maturity fixed income securities are measured at amortized cost, changes in interest rates would not affect the fair value.

### Other price risk

The Company is exposed to equity price risk for 2018 and 2017 arising from financial assets at FVTOCI and available-for-sale equity investments, respectively.

Assuming a hypothetical decrease of 5% in prices of the equity investments at the end of the reporting period for the years ended December 31, 2018 and 2017, the other comprehensive income would have decreased by NT\$65,097 thousand and NT\$120,835 thousand, respectively.

# d. Credit risk management

Credit risk refers to the risk that a counterparty will default on its contractual obligations resulting in financial losses to the Company. The Company is exposed to credit risks from operating activities, primarily trade receivables, and from investing activities, primarily deposits, fixed-income investments and other financial instruments with banks. Credit risk is managed separately for business related and financial related exposures. As of the end of the reporting period, the Company's maximum credit risk exposure is equal to the carrying amount of financial assets.

# Business related credit risk

The Company's trade receivables are from its customers worldwide. The majority of the Company's outstanding trade receivables are not covered by collaterals or guarantees. While the Company has procedures to monitor and manage credit risk exposure on trade receivables, there is no assurance such procedures will effectively eliminate losses resulting from its credit risk. This risk is heightened during periods when economic conditions worsen.

As of December 31, 2018 and 2017, the Company's ten largest customers accounted for 76% and 74% of accounts receivable, respectively. The Company believes the concentration of credit risk is not material for the remaining accounts receivable.

# Financial credit risk

The Company mitigates its financial credit risk by selecting counterparties with investment-grade credit ratings and by limiting the exposure to any individual counterparty. The Company regularly monitors and reviews the limit applied to counterparties and adjusts the limit according to market conditions and the credit standing of the counterparties.

The risk management of expected credit loss for financial assets at amortized cost and investments in debt instruments at FVTOCI is as follows:

The Company only invests in debt instruments that are rated as investment grade or higher. The credit rating information is supplied by external rating agencies. The Company assesses whether there has been a significant increase in credit risk since initial recognition by reviewing changes in external credit ratings, financial market conditions and material information of the bond-issuers.

The Company assesses the 12-month expected credit loss and lifetime expected credit loss based on the probability of default and loss given default provided by external credit rating agencies. The current credit risk assessment policies are as follows:

Category	Description	Basis for Recognizing Expected Credit Loss	Expected Credit Loss Ratio
Performing	Credit rating on trade date and valuation date: (1) Within investment grade (2) Between BB+ and BB-	12 months expected credit loss	0%
Doubtful	Credit rating on trade date and valuation date:  (1) From investment grade to non-investment grade  (2) From BB+~BB- to B+~CCC-	Lifetime expected credit loss-not credit impaired	-
In default	Credit rating CC or below	Lifetime expected credit loss-credit impaired	-
Write-off	There is evidence indicating that the debtor is in severe financial difficulty and the Company has no realistic prospect of recovery	Amount is written off	-

For the year ended December 31, 2018, the Company recognizes the expected credit loss NT\$0, mainly attributed to asset allocation to debt investments of higher credit rating.

# e. Liquidity risk management

The objective of liquidity risk management is to ensure the Company has sufficient liquidity to fund its business operations over the next 12 months. The Company manages its liquidity risk by maintaining adequate cash and cash equivalent, debt investment at FVTPL, financial assets at FVTOCI-current, and financial assets amortized at cost-current.

The table below summarizes the maturity profile of the Company's financial liabilities based on contractual undiscounted payments, including principal and interest.

	Less Than 1 Year	2-3 Years	4-5 Years	5+ Years	Total
December 31, 2018					
Non-derivative financial liabilities					
Short-term loans Accounts payable (including related	\$ 92,039,118	\$ -	\$ -	\$ -	\$ 92,039,118
parties) Payables to contractors and equipment suppliers	35,019,044 41,279,910	- -	- -	-	35,019,044 41,279,910
Accrued expenses and other current liabilities Bonds payable Guarantee deposits (including those classified under accrued expenses	40,888,712 36,039,935	35,340,742	22,979,426	:	40,889,712 94,360,103
and other current liabilities)	6,148,000 251,414,719	2,884,933 38,225,675	461,715 23,441,141	<u> </u>	9,494,648 313,081,535
Derivative financial instruments					
Forward exchange contracts Outflows Inflows	35,608,273 (35,681,524) (73,251) \$ 251,341,468	\$ 38,225,675	\$ 23,441,141		35,608,273 (35,681,524) (73,251) \$ 313,008,284
December 31, 2017					
Non-derivative financial liabilities					
Short-term loans Accounts payable (including related parties)	\$ 63,801,977 30,434,887	\$ -	\$ - -	\$ - -	\$ 63,801,977 30,434,887
Payables to contractors and equipment suppliers	50,363,976	-	-	-	50,363,976
Accrued expenses and other current liabilities Bonds payable Guarantee deposits (including those classified under accrued expenses	20,561,411 25,791,842	68,378,787	7,777,715	18,203,601	20,561,411 120,151,945
and other current liabilities)	6,046,643 197,000,736	7,498,840 75,877,627	83,639 7,861,354	18,203,601	13,629,122 298,943,318
Derivative financial instruments					
Forward exchange contracts Outflows Inflows	48,169,933 (48,530,989) (361,056)	<u>.</u>	<u> </u>	<u> </u>	48,169,933 (48,530,989) (361,056)
	<u>\$ 196,639,680</u>	\$ 75,877,627	\$ 7,861,354	\$ 18,203,601	<u>\$ 298,582,262</u>

# f. Fair value of financial instruments

1) Fair value measurements recognized in the parent company only balance sheets

Fair value measurements are grouped into Levels 1 to 3 based on the degree to which the fair value is observable:

- Level 1 fair value measurements are those derived from quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2 fair value measurements are those derived from inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and
- Level 3 fair value measurements are those derived from valuation techniques that include inputs for the asset or liability that are not based on observable market data (unobservable inputs).
- 2) Fair value of financial instruments that are measured at fair value on a recurring basis

# Fair value hierarchy

The following table presents the Company's financial assets and liabilities measured at fair value on a recurring basis:

	December 31, 2018			
	Level 1	Level 2	Level 3	Total
Financial assets at FVTPL  Mandatorily measured at FVTPL Forward exchange contracts  Financial assets at FVTOCI	<u>\$</u> _	<u>\$ 54,115</u>	<u>\$</u>	<u>\$ 54,115</u>
Investments in equity instruments Non-publicly traded equity investments Publicly traded stocks Notes and accounts receivable, net	\$ - 568,150 - \$ 568,150	\$ - - 3,595,069 \$ 3,595,069	\$ 963,610 - - \$ 963,610	\$ 963,610 568,150 3,595,069 \$ 5,126,829
Hedging financial assets				
Cash flow hedges Forward exchange contracts Financial liabilities at FVTPL	<u>\$</u>	<u>\$ 23,497</u>	<u>\$</u>	<u>\$ 23,497</u>
Held for trading Forward exchange contracts  Hedging financial liabilities	<u>\$</u> _	\$ 30,232	<u>s</u> -	\$ 30,232
Cash flow hedges Forward exchange contracts	<u>\$</u> _	<u>\$ 1,941</u>	<u>\$</u>	<u>\$ 1,941</u>

	<b>December 31, 2017</b>			
	Level 1	Level 2	Level 3	Total
Financial assets at FVTPL				
Held for trading Forward exchange contracts	<u>\$ -</u>	<u>\$ 373,351</u>	<u>\$</u> _	<u>\$ 373,351</u>
Available-for-sale financial assets				
Publicly traded stocks	\$ 2,393,555	<u>\$</u>	<u>\$ -</u>	<u>\$ 2,393,555</u>
Hedging derivative financial assets				
Cash flow hedges Forward exchange contracts	<u>\$ -</u>	<u>\$ 7,378</u>	<u>\$</u>	<u>\$ 7,378</u>
Financial liabilities at FVTPL				
Held for trading Forward exchange contracts	<u>\$ -</u>	<u>\$ 18,764</u>	<u>\$</u>	<u>\$ 18,764</u>
Hedging derivative financial liabilities				
Cash flow hedges Forward exchange contracts	<u>\$ -</u>	<u>\$ 15,562</u>	<u>\$</u>	<u>\$ 15,562</u>

# Reconciliation of Level 3 fair value measurements of financial assets

The financial assets measured at Level 3 fair value were equity investments classified as financial assets at FVTOCI. Reconciliations for the year ended December 31, 2018 were as follows:

Balance at January 1, 2018	\$ 983,590
Recognized in other comprehensive income	(16,524)
Disposals and proceeds from return of capital of investments	(3,456)
Balance at December 31, 2018	\$ 963,610

# Valuation techniques and assumptions used in Level 2 fair value measurement

The fair values of financial assets and financial liabilities are determined as follows:

- Forward exchange contracts are measured using forward exchange rates and the discounted yield curves that are derived from quoted market prices.
- The fair value of accounts receivables classified as at FVTOCI are determined by the present value of future cash flows based on the discount rate that reflects the credit risk of counterparties.

# Valuation techniques and assumptions used in Level 3 fair value measurement

The fair values of non-publicly traded equity investments are mainly determined by using the asset approach and market approach.

To determine the fair value, the Company utilizes the asset approach and takes into account the net asset value measured at the fair value by independent parties.

The market approach is used to arrive at their fair value, for which the recent financing activities of investees, the market transaction prices of the similar companies and market conditions are considered.

### 3) Fair value of financial instruments that are not measured at fair value

Except as detailed in the following table, the Company considers that the carrying amounts of financial instruments in the parent company only financial statements that are not measured at fair value approximate their fair values.

# Fair value hierarchy

The table below sets out the fair value hierarchy for the Company's assets and liabilities which are not required to measure at fair value:

		l	December 31, 2018	}	
	Carrying		Fair \	Value	
	Amount	Level 1	Level 2	Level 3	Total
Financial assets					
Financial assets at amortized costs Commercial paper	\$ 2,294,098	<u>\$</u>	\$ 2,296,188	<u>\$</u>	\$ 2,296,188
Financial liabilities					
Financial liabilities at amortized costs Bonds payable	\$ 91,800,000	<u>\$</u> _	<u>\$ 93,171,255</u>	<u>\$</u>	<u>\$ 93,171,255</u>
		l	December 31, 2017	1	
	Carrying		Fair \	Value	
	Amount	Level 1	Level 2	Level 3	Total
Financial liabilities at amortized costs Bonds payable	<u>\$116,100,000</u>	<u>\$ -</u>	<u>\$ 118,020,699</u>	<u>\$</u>	<u>\$118,020,699</u>

# Valuation techniques and assumptions used in Level 2 fair value measurement

The fair value of commercial paper is determined by the present value of future cash flows based on the discounted curves that are derived from the quoted market prices.

The fair value of the Company's bonds payable is determined by quoted market prices provided by third party pricing services.

# 32. RELATED PARTY TRANSACTIONS

The significant transactions between the Company and its related parties, other than those disclosed in other notes, are summarized as follows:

# a. Related party name and categories

Related Party Name	Related Party Categories
TSMC Global	Subsidiaries
TSMC China	Subsidiaries
TSMC Nanjing	Subsidiaries
VisEra Tech	Subsidiaries
TSMC North America	Subsidiaries
TSMC Europe	Subsidiaries
TSMC Japan	Subsidiaries
TSMC Korea	Subsidiaries
TSMC Solar Europe GmbH	Subsidiaries
TSMC Design Technology Canada Inc. (TSMC Canada)	Indirect Subsidiaries
TSMC Technology, Inc. (TSMC Technology)	Indirect Subsidiaries
WaferTech, LLC (WaferTech)	Indirect Subsidiaries
GUC	Associates
VIS	Associates
SSMC	Associates
Xintec	Associates
TSMC Education and Culture Foundation	Other related parties
TSMC Charity Foundation	Other related parties

# b. Net revenue

		Years Ended December 31	
		2018	2017
<u>Item</u>	Related Party Name/Categories		
Net revenue from sale of goods	TSMC North America Associates Other subsidiaries Other related parties	\$ 650,432,820 6,762,827 150,407 330	\$ 650,351,537 6,941,089 487,112 133
		<u>\$ 657,346,384</u>	<u>\$ 657,779,871</u>
<u>Item</u>	Related Party Categories		
Net revenue from royalties	Associates Subsidiaries	\$ 362,259 568	\$ 482,537 264
		\$ 362,827	<u>\$ 482,801</u>

# c. Purchases

			Years Ended December 31	
			2018	2017
	Related Party Categories			
	Subsidiaries Associates		\$ 34,136,678 8,809,394	\$ 30,843,591 <u>9,903,917</u>
			<u>\$ 42,946,072</u>	\$ 40,747,508
d.	Receivables from related parties			
			December 31, 2018	December 31, 2017
	<u>Item</u>	Related Party Name/Categories		
	Receivables from related parties	TSMC North America Associates Other subsidiaries	\$ 86,057,097 375,184 20,303	\$ 91,329,510 777,730 34,597
			<u>\$ 86,452,584</u>	<u>\$ 92,141,837</u>
	Other receivables from related parties	TSMC North America TSMC Nanjing Associates Other subsidiaries	\$ 1,035,465 89,334 64,203 45,660	\$ 1,246,101 1,754,484 127,459 15,828
			<u>\$ 1,234,662</u>	\$ 3,143,872
e.	Payables to related parties			
			December 31, 2018	December 31, 2017
	<u>Item</u>	Related Party Name/Categories		
	Payables to related parties	TSMC China WaferTech Xintec SSMC VIS Other subsidiaries Other associates Other related parties	\$ 1,299,072 1,092,785 649,812 362,564 357,080 778,396 7,043	\$ 1,440,141 1,328,094 817,876 406,959 409,950 405,127 9,517 12,000
			<u>\$ 4,546,782</u>	<u>\$ 4,829,664</u>

# f. Accrued expenses and other current liabilities

			December 31, 2018	December 31, 2017
	<u>Item</u>	Related Party Name/Categories		
	Accrued expenses and other current liabilities	TSMC Nanjing Other subsidiaries	\$ 199,638 681	\$ - -
			<u>\$ 200,319</u>	<u>\$</u>
g.	Disposal of property, plant and e	equipment		
			Proc	eeds
			Years Ended	December 31
			2018	2017
	Related Party Name/Categories			
	TSMC Nanjing Other subsidiaries Associates		\$ 2,839,622 25,380	\$ 14,336,846 120,790 
			\$ 2,865,002	<u>\$ 14,458,991</u>
			Ga	ins
			Years Ended	December 31
			2018	2017
	Related Party Name/Categories			
	TSMC Nanjing Other subsidiaries Associates		\$ 386,239 64,964	\$ 81,272 50,361 1,355
			<u>\$ 451,203</u>	<u>\$ 132,988</u>
				from Disposal of and Equipment December 31, 2017
	Related Party Name/Categories			
	TSMC Nanjing Other subsidiaries		\$ 234,810 	\$ 574,633 192,554
			<u>\$ 387,780</u>	<u>\$ 767,187</u>

# h. Others

		<b>Years Ended December 31</b>	
		2018	2017
<u>Item</u>	Related Party Name/Categories		
Manufacturing expenses	Associates Subsidiaries	\$ 2,876,216 35,603	\$ 2,098,141 <u>9,318</u>
		\$ 2,911,819	<u>\$ 2,107,459</u>
Research and development expenses	Subsidiaries Associates	\$ 2,407,068 83,145	\$ 2,205,906 69,841
		<u>\$ 2,490,213</u>	<u>\$ 2,275,747</u>
Marketing expenses - commission	TSMC Europe Other subsidiaries	\$ 463,093 402,973	\$ 437,561 370,243
		\$ 866,066	<u>\$ 807,804</u>
General and administrative expenses	Other related parties Subsidiaries	\$ 120,756 3,426	\$ 101,500 3,910
		<u>\$ 124,182</u>	<u>\$ 105,410</u>

The sales prices and payment terms to related parties were not significantly different from those of sales to third parties. For other related party transactions, price and terms were determined in accordance with mutual agreements.

The Company leased factory and office from associates. The lease terms and prices were both determined in accordance with mutual agreements. The rental expenses were paid to associates monthly; the related expenses were both classified under manufacturing expenses.

The Company deferred the disposal gain or loss derived from sales of property, plant and equipment to related parties using equity method, and then recognized such gain or loss over the depreciable lives of the disposed assets.

# i. Compensation of key management personnel

The compensation to directors and other key management personnel for the years ended December 31, 2018 and 2017 were as follows:

	Years Ended December 31		
	2018	2017	
Short-term employee benefits Post-employment benefits	\$ 1,906,266 3,041	\$ 2,071,171 3,375	
	<u>\$ 1,909,307</u>	\$ 2,074,546	

The compensation to directors and other key management personnel were determined by the Compensation Committee of the Company in accordance with the individual performance and the market trends.

# 33. SIGNIFICANT OPERATING LEASE ARRANGEMENTS

The Company's major significant operating leases are arrangements on several parcels of land and machinery and equipment.

The Company expensed the lease payments as follows:

	Years Ended	December 31
	2018	2017
Minimum lease payments	\$ 3,773,364	<u>\$ 1,748,190</u>

Future minimum lease payments under the above non-cancellable operating leases are as follows:

	December 31, 2018	December 31, 2017
Not later than 1 year Later than 1 year and not later than 5 years Later than 5 years	\$ 5,510,729 4,957,770 8,253,382	\$ 2,622,896 4,340,428 7,849,690
	<u>\$ 18,721,881</u>	\$ 14,813,014

# 34. SIGNIFICANT CONTINGENT LIABILITIES AND UNRECOGNIZED COMMITMENTS

Significant contingent liabilities and unrecognized commitments of the Company as of the end of the reporting period, excluding those disclosed in other notes, were as follows:

- a. Under a technical cooperation agreement with Industrial Technology Research Institute, the R.O.C. Government or its designee approved by the Company can use up to 35% of the Company's capacity provided the Company's outstanding commitments to its customers are not prejudiced. The term of this agreement is for five years beginning from January 1, 1987 and is automatically renewed for successive periods of five years unless otherwise terminated by either party with one year prior notice. As of December 31, 2018, the R.O.C. Government did not invoke such right.
- b. Under a Shareholders Agreement entered into with Philips and EDB Investments Pte Ltd. on March 30, 1999, the parties formed a joint venture company, SSMC, which is an integrated circuit foundry in Singapore. The Company's equity interest in SSMC was 32%. Nevertheless, in September 2006, Philips spun-off its semiconductor subsidiary which was renamed as NXP B.V. Further, the Company and NXP B.V. purchased all the SSMC shares owned by EDB Investments Pte Ltd. pro rata according to the Shareholders Agreement on November 15, 2006. After the purchase, the Company and NXP B.V. currently own approximately 39% and 61% of the SSMC shares, respectively. The Company and NXP B.V. are required, in the aggregate, to purchase at least 70% of SSMC's capacity, but the Company alone is not required to purchase more than 28% of the capacity. If any party defaults on the commitment and the capacity utilization of SSMC falls below a specific percentage of its capacity, the defaulting party is required to compensate SSMC for all related unavoidable costs. There was no default from the aforementioned commitment as of December 31, 2018.

- c. In May 2017, Uri Cohen filed a complaint in the U.S. District Court for the Eastern District of Texas alleging that the Company, TSMC North America and other companies infringe four U.S. patents. Cohen's case was transferred to and consolidated with the responsive declaratory judgment case for non-infringement of Cohen's asserted patents filed by the Company and TSMC North America in the U.S. District Court for the Northern District of California. In July 2018, all pending litigations between the parties in the U.S. District Court for the Northern District of California were dismissed.
- d. On September 28, 2017, the Company was contacted by the European Commission (the "Commission"), which has asked us for information and documents concerning alleged anti-competitive practices in relation to semiconductor sales. We are cooperating with the Commission to provide the requested information and documents. In light of the fact that this proceeding is still in its preliminary stage, it is premature to predict how the case will proceed, the outcome of the proceeding or its impact.
- e. The Company entered into long-term purchase agreements of material with multiple suppliers. The relative minimum purchase quantity and price are specified in the agreements.
- f. The Company entered into a long-term purchase agreement of equipment. The relative purchase quantity and price are specified in the agreement.
- g. The Company entered into long-term energy purchase agreements with multiple suppliers. The relative purchase period, quantity and price are specified in the agreements.
- h. As of December 31, 2018, the Company provided endorsement guarantees of NT\$2,557,977 thousand to its subsidiary, TSMC North America, in respect of providing endorsement guarantees for office leasing contract.

# 35. SIGNIFICANT LOSSES FROM DISASTERS

The Company experienced a computer virus outbreak on August 3, 2018, which affected a number of computer systems and fab tools, and consequently impacted wafer production in Taiwan. All the impacted tools have been recovered by August 6, 2018. The Company recognized a loss of NT\$2,596,046 thousand related to this incident for the three months ended September 30, 2018, which was included in cost of revenue.

# **36. SIGNIFICANT SUBSEQUENT EVENTS**

On January 19, 2019, the Company discovered a wafer contamination issue in a fab in Taiwan caused by a batch of unqualified photoresist materials. After investigation, the Company immediately stopped using the unqualified materials. As of the date the accompanying parent company only financial statements were issued, a preliminary estimated loss of NT\$6,100,000 thousand will be recognized in cost of revenue for the three months ended March 31, 2019.

# 37. EXCHANGE RATE INFORMATION OF FOREIGN-CURRENCY FINANCIAL ASSETS AND LIABILITIES

The following information was summarized according to the foreign currencies other than the functional currency of the Company. The exchange rates disclosed were used to translate the foreign currencies into the functional currency. The significant financial assets and liabilities denominated in foreign currencies were as follows:

	Foreign Currencies (In Thousands)	Exchange Rate (Note)	Carrying Amount (In Thousands)
<u>December 31, 2018</u>			
Financial assets			
Monetary items USD EUR JPY Non-monetary items HKD	\$ 4,527,578 2,171 235,512 144,567	30.740 35.22 0.2783	\$ 139,177,748 76,462 65,543 568,150
<u>Financial liabilities</u>			
Monetary items USD EUR JPY  December 31, 2017	4,147,398 471,127 33,416,236	30.740 35.22 0.2783	127,491,021 16,593,099 9,299,738
<u>Financial assets</u>			
Monetary items USD EUR JPY Non-monetary items HKD	5,494,191 236,279 34,012,314 285,336	29.659 35.45 0.2629 3.80	162,952,207 8,376,078 8,941,837 1,084,276
Financial liabilities			
Monetary items USD EUR JPY	3,880,441 410,686 35,365,911	29.659 35.45 0.2629	115,090,012 14,558,807 9,297,698

Note: Exchange rate represents the number of N.T. dollars for which one foreign currency could be exchanged.

Please refer to the parent company only statements of comprehensive income for the total of realized and unrealized foreign exchange gain and loss for the years ended December 31, 2018 and 2017, respectively. Since there were varieties of foreign currency transactions of the Company, the Company was unable to disclose foreign exchange gain (loss) towards each foreign currency with significant impact.

# 38. ADDITIONAL DISCLOSURES

Following are the additional disclosures required by the Securities and Futures Bureau for the Company:

- a. Financings provided: Please see Table 1 attached;
- b. Endorsement/guarantee provided: Please see Table 2 attached;
- c. Marketable securities held (excluding investments in subsidiaries and associates): Please see Table 3 attached;
- d. Marketable securities acquired and disposed of at costs or prices of at least NT\$300 million or 20% of the paid-in capital: Please see Table 4 attached;
- e. Acquisition of individual real estate properties at costs of at least NT\$300 million or 20% of the paid-in capital: Please see Table 5 attached;
- f. Disposal of individual real estate properties at prices of at least NT\$300 million or 20% of the paid-in capital: None;
- g. Total purchases from or sales to related parties of at least NT\$100 million or 20% of the paid-in capital: Please see Table 6 attached;
- h. Receivables from related parties amounting to at least NT\$100 million or 20% of the paid-in capital: Please see Table 7 attached;
- i. Information about the derivative financial instruments transaction: Please see Notes 7 and 8;
- j. Names, locations, and related information of investees over which the Company exercises significant influence (excluding information on investment in mainland China): Please see Table 8 attached;
- k Information on investment in mainland China
  - 1) The name of the investee in mainland China, the main businesses and products, its issued capital, method of investment, information on inflow or outflow of capital, percentage of ownership, income (losses) of the investee, share of profits/losses of investee, ending balance, amount received as dividends from the investee, and the limitation on investee: Please see Table 9 attached.
  - 2) Significant direct or indirect transactions with the investee, its prices and terms of payment, unrealized gain or loss, and other related information which is helpful to understand the impact of investment in mainland China on financial reports: Please see Note 32.

# 39. OPERATING SEGMENTS INFORMATION

The Company has provided the operating segments disclosure in the consolidated financial statements.

# Taiwan Semiconductor Manufacturing Company Limited and Investees

FINANCINGS PROVIDED

FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	nancing sany's Total sing Amount Limits te 1 and 2)	55,586,818	393,577,931
i	Comp Financ	€9	
	Financing Limits Company's Total Borrowing Financing Amount Company (Note I and 2)	\$ 55,586,818 \$	393,577,931
Collateral	Value	· 69	1
Colla	Item		
	Allowance for Bad Debt	· ·	
	Reason for Financing Allowance for Bad (Note 4)	- Operating capital	- Operating capital
	Transaction Amounts	<del>59</del>	
	Interest Rate Nature for Financing Transaction (Note 4)	1.30%-1.96% The need for short-term and long-term	financing The need for short-term financing
	Interest Rate	1.30%-1.96	2.53%
	Ending Balance   Amount Actually	\$ 30,829,260 (RMB 6,000,000) &	(US\$ 129,000) 3,227,700 (US\$ 105,000)
	Ending Balance (foreign currencies in Thousands) (Note 3)	\$ 46,065,560 (RMB 7,000,000) &	(US\$ 479,000) 46,110,000 (US\$ 1,500,000)
Maximum	Balance for the Period (foreign currencies in Thousands) (Note 3)	\$ 52,859,100 (RMB 7,000,000)&	(US\$ 700,000) 46,110,000 (US\$ 1,500,000)
	Related Party	Yes	Yes
	Financial Statement Related Account Party	Other receivables from related parties	TSMC Other receivables from Yes (USS 700,000) (USS 479,000) (USS 129,000) (USS 1,20,000) (USS 1,500,000) (USS 1,500,000) (USS 1,500,000) (USS 1,500,000) (USS 1,500,000) (USS 1,500,000)
	Counter-party Fina		
	Financing Company	TSMC China	TSMC Global
	ž	_	2

The total amount available for lending purpose shall not exceed the net worth of TSMC China. The total amount for lending to a short-term period shall not exceed ten percent (10%) of the net worth of TSMC China. The total amount lendable to any one borrower shall be no more than the net worth of TSMC China. The above restriction does not apply to the beseve voing shares are 10% owned, clinicately, by TSMC. However, the total amount lendable to any such subsidiaries whose voing shares are 10% owned, clinicately are 10% owned, clinicately or indirectly, by TSMC. Also of the hortwore's restriction set forth in the above paragraph of this Article. Notwithstanding the foregoing, the aggregate amount available for lending to such borrowers and the total amount lendable to each of such borrowers still shall not exceed the net worth of TSMC China. Note 1:

The total amount available for lending purpose shall not exceed the net worth of TSMC Global. The total amount for lending for a short-term period shall not exceed the net worth of TSMC Global. The total amount lendable to any one borrowers shall not exceed the net worth of TSMC Global. Notwithstanding the foregoing, the aggregate amount for lending to TSMC Global. Notwithstanding the foregoing, the aggregate amount for lending to Taiwan companies other than TSMC shall not exceed forty percent (40%) of the net worth of TSMC Global. Note 2:

The maximum balance for the period and ending balance represent the amounts approved by the Board of Directors. Note 3: The restriction of the term of each loan for funding not exceeding one year shall not apply to inter-company loans for funding between of Shore subsidiaries in which the Company holds, directly or indirectly, 10% of the voting shares. Note 4:

Taiwan Semiconductor Manufacturing Company Limited and Investees

ENDORSEMENTS/GUARANTEES PROVIDED
FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	Guarantee Provided to Subsidiaries in Mainland China	No	No
	Guarantee Provided by A Subsidiary	N <sub>o</sub>	N <sub>o</sub>
	Guarantee Provided by Parent Company	Yes	Yes
	Maximum Endorsement/ Guarantee Amount Allowable (Note 2)	\$ 419,204,416	419,204,416
Dotio of	Amount of Accumulated Charantee Guarantee to Net Collateralized by Equity per Properties Latest Financial Statements	ı	0.15%
	Amount of Endorsement/ Guarantee Collateralized by Properties	· ·	ı
	Ending Balance Amount Actually (USS in Drawn Thousands) (USS in (Note 3) Thousands)	-	2,557,977 (US\$ 83,213)
	Ending Balance (USS in Thousands) (Note 3)	- -	2,557,977 2,557,977 (US\$ 83,213)
	Maximum Balance for the Period (USS in Thousands)	419,204,416 \$ 35,351,000	419,204,416 (US\$ 83,213)
Limits on	Endorsement Guarantee Amount Provided to Each Guaranteed Party (Notes 1 and 2)	\$ 419,204,416	419,204,416
Guaranteed Party	Nature of Relationship	Subsidiary	Subsidiary
Guarant	Name	TSMC Global Subsidiary	TSMC North Subsidiary America
	No. Guarantee Provider	TSMC	
	No.	0	

Note 1: The total amount of the guarantee provided by TSMC to any individual entity shall not exceed ten percent (10%) of TSMC's net worth, or the net worth of such entity. However, subsidiaries whose voting shares are 100% owned, directly or indirectly, by TSMC are not subject to the above restrictions after the approval of the Board of Directors.

Note 2: The total amount of guarantee shall not exceed twenty-five percent (25%) of TSMC's net worth.

Note 3: The maximum balance for the period and ending balance represent the amounts approved by the Board of Directors.

Taiwan Semiconductor Manufacturing Company Limited and Investees

MARKETABLE SECURITIES HELD
DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

					Decem	December 31, 2018		
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair Value (Foreign Currencies in Thousands)	Note
TSMC	Commercial paper Taiwan Power Company CPC Corporation, Taiwan		Financial assets at amortized cost	180	\$ 1,795,261 498,837	N/A N/A	\$ 1,797,107	
	Non-publicly traded equity investments United Industrial Gases Co., Ltd.		Financial assets at fair value through other	21,230	493,225	10	493,225	
	Shin-Eisu Handotai Taiwan Co., Ltd. Global Investment Holding Inc. W.K. Technology Fund IV Crimson Asia Capital Horizon Ventures Fund		comprehensive income	10,500 11,124 806	379,176 78,430 5,747 4,554 2,477	7 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	379,176 78,430 5,747 4,554 2,477	
	Publicly traded stocks Semiconductor Manufacturing International Corporation		Financial assets at fair value through other comprehensive income	21,105	568,150		568,150	
TSMC Partners	Non-publicly traded equity investments Shanghai Walden Venture Capital Enterprise		Financial assets at fair value through other		US\$ 8,904	9	US\$ 8,904	
	China Walden Venture Investments II, L.P. China Walden Venture Investments III, L.P. Tela Innovations Meube Inc. Sonics, Inc.		comprehensive income	- 10,440 6,333 6337	US\$ 8,175	9 2 5 4 4 9 9 9 9 9 9 9	US\$ 8,175 US\$ 1,486	
TSMC Global	Corporate bond Bank of America Corp JPMorgan Chase & Co Morgan Stanley Goldman Sachs Group Inc/The Citigroup inc CVS Health Corp AT&T Inc Comeast Communications Inc HSBC Holdings PLC BAT Capital Corp Apple Inc PNC Bank NA Nordea Bank Abp AbbVie Inc		Financial assets at fair value through other comprehensive income  " " " " " " " " " " " " " " " " " "		USS 44,755 USS 44,291 USS 40,237 USS 23,464 USS 23,123 USS 23,123 USS 15,927 USS 15,927 USS 12,584 USS 12,585		USS 44,755 USS 40,237 USS 32,464 USS 27,238 USS 23,123 USS 18,894 USS 18,894 USS 15,597 USS 12,584	
						_		(Continued)

or Figure and Name         Retailmensity with the Company         Figure and Name         Shares/United (In Thousands)         Characteristics (In Thousands)	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies) USS 11,159 USS 10,737 USS 10,096 USS 10,008 USS 9,547 USS 9,547 USS 8,641 USS 8,641 USS 8,641 USS 8,645 USS 7,448 USS 7,464 USS 7,464 USS 7,462 USS 7,462 USS 7,463 USS 7,463 USS 7,463 USS 7,463 USS 7,463 USS 7,463	N/A   N/A	ir Va
United Technologies Corp Anatonian International Corp International International Corp In				
BAY  The state of				
BAY				
BAY THE				<del></del>
				_
A89				
BAY				
BAY				
PBV				
ABY ABY AND				
BAY				
BAY				
BA A B A B A B A B A B A B A B A B A B			V V V V V V V V V V V V V V V V V V V	
BAV				
BAY			N N N N N N N N N N N N N N N N N N N	
N84			<u> </u>	
18 Note BV			4 4 4 8 2 2 2 2	
180 Note BV				
1.00 By Part of the Control of the C			A/N	
The BV				
10ce BV			- V	
Dec BV			V.X	
Dee BV			N/A	
Toe BV		•	N/A	US\$ 7,270
The BN and the state of the sta			N/A	
			N/A	
			N/A	
	O		N/A	
	0 - "		N/A	
	O	0.05 1.05 1.05 1.05 1.05 1.05 1.05 1.05	A/A	566'9 \$SO
			N/A	
			N/A	706'9 \$50
			Y A/N	
	0 -		V/A	
	n - "		N/A	US\$ 6,644
	n - "		N/A	
	n - "		N/A	
	n - "		N/A	
	n - "		N/A	
	Ω - "		N/A	
	n - "		N/A	
	O -		N/A	
			N/A	
			N/A	
Fight Manager 1 1766		6,049	V & X	055 6,049
			W/NI	

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies	y Value urrencies	Percentage of Ownership (%)	Fair (Foreign 6	Fair Value (Foreign Currencies	Note
TSMC Global	Northrop Grumman Corp		Financial assets at fair value through other	ı	\$SN	6,036	N/A	\$SO	6,036	
	Variform		comprehensive income		3511	900 5	VIN	3511	200	
	SMBC Aviation Capital Finance DAC			' '	8811	5 806	V V/N	\$5.1 1.88	5.806	
	Santander UK Group Holdings PLC	,	: =	'	SSI	5.782	V/A	SSII	5.782	
	UBS AG/London	,	: "	•	SSO	5.772	A/N	SSO	5.772	
	DowDuPont Inc	•	"	'	SSO	5,757	N/A	NS\$	5.757	
	BPCE SA	•	"		SSO	5,709	N/A	NS\$	5,709	
	AXA Equitable Holdings Inc		"	•	\$SO	5,662	N/A	\$SO	5,662	
	Aviation Capital Group LLC	•	"	•	ns\$	5,657	N/A	NS\$	5.657	
	BP Capital Markets America Inc	•	"	•	SSO	5.616	N/A	NS\$	5,616	
	Reckitt Benckiser Treasury Services PLC	•	"	•	\$SO	5,611	N/A	SSO.	5,611	
	Enterprise Products Operating LLC		"		\$SO	5,589	N/A	\$SO	5,589	
	Santander UK PLC		"	•	\$SO	5,568	N/A	\$SO	5,568	
	Oracle Corp	•	"	•	\$SO	5,521	N/A	SSO O	5,521	
	Penske Truck Leasing Co Lp / PTL Finance Corp	•	"	•	\$SO	5,399	N/A	\$SO	5,399	
	ITC Holdings Corp		"		\$SO	5,350	N/A	\$SO	5,350	
	Capital One NA		"		\$SO	5,305	N/A	\$SO	5,305	
	Western Union Co/The		"	•	\$SO	5,218	N/A	\$SO	5,218	
	International Bank for Reconstruction & Development	•	"	•	\$SO	5,186	N/A	SSO O	5,186	
	Sompo International Holdings Ltd		"	•	\$SO	5,092	N/A	SSO.	5,092	
	Jackson National Life Global Funding		"	•	\$SO	5,069	N/A	\$SO	5,069	
	Manufacturers & Traders Trust Co	•	"	•	\$SO	5,049	N/A	\$SO	5,049	
	Sun Trust Banks Inc	•	"	•	\$SO	5,044	N/A	\$SO	5,044	
	Toronto-Dominion Bank/The		"	•	\$SO	5,000	N/A	\$SO	5,000	
	UBS AG/Stamford CT	,	"	•	\$SO	4,972	N/A	\$SO	4,972	
	Cigna Holding Co	•	"	•	\$SO	4,917	N/A	SSO.	4,917	
	Marriott International Inc/MD		"	•	\$SO	4,799	N/A	SSO	4,799	
	Cox Communications Inc		"	•	\$SO	4,791	N/A	SSO	4,791	
	Ryder System Inc		"	•	\$SO	4,778	N/A	SSO .	4,778	
	NextEra Energy Capital Holdings Inc		"	•	SSO	4,706	N/A	SSO	4,706	
	US Bank NA/Cincinnati OH	•	"	•	SSO.	4,644	V/A	SO	4,644	
	Five Corners Funding Trust	•	"		SSO C	4,624	N/A	SSO COS	4,624	
	Credit Suisse Group Funding Guernsey Ltd	•	"		CSS CO	4,564	N/A	SSO COS	4,564	
	American Express Co	•	"		200	4,547	A/N N	SSO DSS	4,547	
	BINF Famous SA		,, :	•	\$20	066,4	N/A	\$50	066,4	
	AEP Texas Inc				SSI	4,522	K/N	SSI	4,502	
	New York Life Global Funding	•		•	SSO	4,448	A/N	nss	4,448	
	Barclays PLC	•	"	,	\$SO	4,216	N/A	\$SO	4,216	
	Credit Agricole SA/London		"	•	\$SO	4,118	N/A	\$SO	4,118	
	Vodafone Group PLC		"	i	\$SO	4,040	N/A	\$SO	4,040	
	Fifth Third Bank/Cincinnati OH	•	"	•	\$SO	4,031	N/A	SSO.	4,031	
	Banque Federative du Credit Mutuel SA	•	"	•	SSO	4,028	N/A	SSO.	4,028	
	Exelon Generation Co LLC	•	"	•	\$SO	3,969	N/A	\$SO	3,969	
	European Investment Bank		"	•	\$SO	3,903	N/A	\$SO	3,903	
	Bank of Nova Scotia/The		"	•	\$SO	3,862	N/A	\$SO	3,862	
	Air Liquide Finance SA		"	•	\$SO	3,827	N/A	SSO	3,827	
	Edison International	,	"	1	SSO	3,762	N/A	\$SO	3,762	
	Alimentation Couche-Lard Inc	•	"		SSO I	3,656	N/A	SSO	3,656	
	Macquarie Bank Ltd	•	"	•	\$\$O	5,645	N/A	\$\$ \tag{8}	3,043	
										(Continued)
										(communed)

The Color of the	pany Name		Financial Statement Account	Shares/Units	Carryii (Foreign	ng Value Currencies	Percentage of	Fair	Value Currencies	Note
Second Stringer   Little   Second Stringer   Competition of the water brough of the water broad growth   Little   Second Stringer   Little   Second Stringer   Little   Second Stringer   Little   Second Stringer   Little   Litt				(In Thousands)	ii Tho	neande)	Ownership (%)	(F0renga	(spuds)	1011
Page	Barclays Bank PLC Asian Development Bank Canadian Impressed Bank of Commerce Branch Banking & Trust Co Royal Bank of Canada Keurig Dr Pepper Inc Capital One Financial Corp BAWW US Capital LLC Enel Finance International Holdings Netherlands BV Lyondellassel Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Evarsource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank LLONew York Express Scripts Holdings Inc Charles Schwab Corp/The National Australia Bank LLONew York Express Scripts Holdings LC Shell International Finance BU ING Groep NV Nestel Holdings Inc McCormick & Co Inc/ND PartnerRe Finance B LLC Sprint Spectrum Co III LLC Sprint Spect		Financial assets at fair value through other		\$SN	3,638	N/A	\$SO	3,638	
heritands BV    Color	Asian Development Bank Canadian Imperial Bank of Commerce Branch Banking & Trust Co Royal Bank of Canada Reurig Dr Pepper Inc Capital One Financial Corp BMW US Capital LLC Enel Financia International Holdings Netherlands BV Lyondellascal International Holdings Netherlands BW Lyondellascal International Holdings Corp Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank LudNew York Express Scripts Holdings Co State Street Corp State Street Corp Fevress Scripts Holding Co Shell International Finance BW ING Groep NV NG Groep NV NG Groep NV NG Groep NV NG Steptum Co ILLC / Sprint Spectrum Co III LLC Sprint Spectrum Co III LLC Sprint Spectrum Co III LC Sprint Spectrum Co III LLC Sprint Spectrum		comprehensive income		3811	3 621	ø/N	3511	3 621	
Through Trast  Throug	Canadian Imperial Bank of Commerce Branch Banking & Trust Co Royal Bank of Canada Keurig DP Pepper Inc Capital One Financial Corp BMW US Capital LLC Enel Financial Industrics NV LoyandellBasell Industrics NV LoyandellBasell Industrics NV Lloyas Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montare In Skandianviska Enskilda Banken AB Schlumberger Holdings Corp Standianviska Enskilda Banken AB Schlumberger Holdings Corp Standianviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holdings Co Shell International Finance B V ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partnerf & Finance B LLC Sprint Spectrum Co III.LC Sprint Spectrum Co III.LC Sprint Spectrum Co III.LC Sprint Spectrum Co III.C Sprint Spectrum Co NC Technology Co Eld Ari Lines 2007-1 Class A Pass Through Trust Lann Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El dan Research Corp Ventas Realty LP NiSource Inc DXC Technology Co El dan Research Media I.LC Lloyds Bank PLC Cinas Corp No 2 Sumitomo Mitsui Banking Corp Glaed Stenece Sinc Front Standian Bank Lid Nicola Sank PLC Cinas Corp		: =		SSO	3.594	K K	SSD	3.594	
horinack BVA	Branch Banking & Trust Co Royal Bank of Canada Keujal Dr Pepper Inc Capital One Financial Corp BMW US Capital LLC Enel Finance International NV Mondelez International Holdings Netherlands BV LyondellBasel Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ltd/New York Express Scrips Holding Co Sharles Schwab Corp/The National Australia Bank Ltd/New York Express Scrips Holding Co Sharles Schwab Corp/The National Australia Bank Ltd/New York Express Scrips Holding Co Sharles Schwab Corp. Deartnerke Finance B LLC Sprint Spectum Co LLC Sprint Spectum Co LLC Sprint Spectum Co LLC Sprint Spectum Co WR Berkley Corp UNS Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co Et du Pont de Nemours & Co Et du Bort de Nemo	•		•	SSO	3.586	A/N	SSO	3,586	
herinads BV	Royal Bank of Canada Keurig Dr Pepper Inc Capital One Financial Corp BMW US Capital LLC Enel Finance International NV Mondelez International Holdings Netherlands BV LyondellaBasell Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ltd/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV NG Groep NV NG Groep IV NG Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co III LLC / Sprint Spectrum Co III LC Lloyds Bank Ld Nods Bank Ld Nods Bank Ld Nods Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp	•	"		SSO.	3,489	N/A	\$SO	3,489	
Through Trust  Throug	Keurig Dr Pepper Inc Capital One Financial Corp BMW US Capital LLC Enel Finance International NU Mondelez International Holdings Netherlands BV LyondellBasel Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scrips Holding Co Shell International Finance BV ING Groep NV Neste Holdings Inc McCormie & Co III LLC Sprint Spectrum Co LLC / Sprint Spectrum Co III LLC Sprint Spectrum Co III LC Lloyds Bank LC Clintas Corp No 2 Sumitomo Mitsui Banking Corp Glidad Sciences Inc Glidad Sciences Inc		"	•	\$SO	3,484	N/A	\$SO	3,484	
hedinads BV	Capital One Financial Corp BMW US Capital LLC Enel Finance International NV Mondelez International Holdings Netherlands BV LyondellBasell Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV ING Berkley Corp Detarter Finance B LLC Sprint Spectrum Co III LLC Sprint Spectrum Co III LLC Spectrum Co III LLC Spectrum Co III LLC Sprint Spectrum Corp Detar Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Detar Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Detar Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp NiSource Inc DXC Technology Co Ef du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBUFG Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitono Mitsui Banking Corp Gilada Sciences Inc Gilada Sciences Inc		"	•	SSO O	3,480	N/A	\$SO	3,480	
hefunds BV	BMW US Capital LLC Enel Finance International NV Mondelez International NV Mondelez International Holdings Netherlands BV LyondellBasel Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partner Re Finance B LLC Sprint Spectrum Co LLC Sprint Spectrum Co II LLC Sprint Spectrum Co Spectrum Co III LLC Sprint Spectrum Co WR Berkley Corp Dela Air Lines 2007-I Class A Pass Through Trust Lam Research Corp Dela Air Lines 2007-I Class A Pass Through Trust Lam Research Corp Nisource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ld NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Glidad Sciences Inc Prod Serimen Corp		"	•	SSO	3,426	N/A	\$SO	3,426	
heritands BV	Enel Finance International NV  Mondelez International Holdings Netherlands BV Lyondelels Industries NV Lyondellassell Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ltd/New York Express Scripts Holding Co Shell International Finance BV NG Groep NV NG Groep NV NG Groep NV NG Berkley Corp Pertant Realty LP / Ventas Capital Corp Spectrum Co III LC / Sprint Spectrum Co III LC / Sprint Spectrum Co III LC / Sprint Spectrum Co III LC Sprint Spectrum Co III CC Sprint Spectrum Co III LC Lloyds Bank Ltd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Missui Banking Corp Gilead Steinere Con Prod Searmence Com Prod Searmence Con Sprint Spectrum Co III LC Sprint Spectrum Co III LC Sprint Spectrum Co III LC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Missui Banking Cop		"	•	SSO	3,406	N/A	\$SO	3,406	
heritads PV	Mondelez International Holdings Netherlands BV LyondelBasell Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank LtdNew York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings International Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co III LLC Sprint Spectrum Co III LC Sprint Spectrum Co III LC Sprint Spectrum Co III LC Spectrum Co III LLC Sprint Spectrum Co III C Spectrum Co III LLC Sprint Spectrum Co III C Spectrum Co III LLC Sprint Spectrum Co III LC Spectrum Co III LLC Sprint Spectrum Co III LC Lloyds Bank Ltd NBCUniversal Media LLC Lloyds Bank LtC Clintas Corp No 2 Sumitomo Mitsui Banking Corp Glead Sciences Con Prod Sesurance Conn Prod Sesurance Conn		"	•	SSO.	3,385	N/A	\$SO	3,385	
return Coll LLC / Sprint Coll	LyondelBasell Industries NV Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthern Inc Charles Schwab Corp/The National Australia Bank Lid/New York Express Scripts Holdings Co Shell International Finance BV ING Groep NV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD PartnerRe Finance B LLC Sprint Spectrum Co LLC/ Sprint Spectrum Co III.LC Sprint Spectrum Co III.C Sprint Spectrum Co III.LC Chings Bank Ltd NUC Grintas Corp No 2 Sumitorno Mitsui Banking Corp Glidas Gsiences Inc Broksenrance Com Proksenrance C		"	•	SSO	3,382	N/A	\$SO	3,382	
rkt  Though Tust	Lloyds Banking Group PLC Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Ine Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV ING Groep NV ING Groep IV ING Sprint Spectrum Co LLC Sprint Spectrum Co II LLC Sprint Spectrum Co LLC Sprint Spectrum Co II LLC Sprint Spectrum Co III LLC Sprint Spectrum Co III LC Spectrum Co III LLC Sprint Spectrum Co III LC Spectrum Co III LLC Sprint Spectrum Co III LC Sprint Spectrum Co III LC Sprint Spectrum Co III LC Sprint Spectrum Co WR Berkley Corp Delfa Air Lines 2007-I Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Lld NBUFG Bank Lld NBUFG Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Inc Gilada Gsiences Inc		"	•	SSO	3,366	N/A	\$SO	3,366	
rth	Inter-American Development Bank Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ltd/New York Express Scrips Holding Co Shell International Finance BV ING Groep NV NG Groep NV NG Groep NV NG Holding She McCormick & Co Inc/MD Partner Re Finance B LLC Sprint Spectum Co LLC Sprint Spectrum Co II LLC / Sprint Spectrum Co II LC Sprint Spectrum Co III LC / Sprint Spectrum Co III LO / Sprint Spectrum Co III LO / Sprint Spectrum Co III LC / Lloyds Bank LLC / Lloyds Bank PLC / Cintax Corp No 2 Sumitomo Mitsui Banking Corp Glidas Gienece Inc Glidad Science Inc	•	"	•	SSO.	3,222	N/A	\$SO	3,222	
rectume CollLLC/Sprint	Digital Realty Trust LP Bank of Montreal Walgreens Boots Alliance Inc Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp Fortsource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank LtdNew York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Co Shell International Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co III LLC Sprint Spectrum Co III LC Sprint Spectrum Co III LLC Sprint Spectrum Co III LC Lloyds Bank Ltd NBCUniversal Media LLC Lloyds Bank LC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilad Sciences Inc ProAssurance Com ProAssurance Com ProAssurance Com	•	"	•	\$SO	3,118	N/A	\$SO	3,118	
Through Trust  Throug	Bank of Montreal Walgreens Boots Alliance Inc Skadinavsika Enskilda Banken AB Schlumberger Holdings Corp Beversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Lid/New York Express Scripts Holding Co Shell International Finance BV ING Groep IV ING Groep IV Nestle Holdings Inc McCormick & Co Inc/MD Parmerke Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co III LLC Sprint Spectrum Co LLC / Sprint Spectrum Co III LC Sprint Spectrum Co III LC Berkshire Hathaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBUFG Bank Ltd NBUFG Bank PLC Lioyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Girdas Gsiences Inc Grad Sciences Inc		"	•	SSO.	3,102	N/A	\$SO	3,102	
rk	Walgreens Boots Alliance Inc Skandrianviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV ING Groep NV ING Groep NV ING Sprint Spectrum Co LLC/ Sprint Spectrum Co LLC/ Sprint Spectrum Co LLC/ Sprint Spectrum Co III LLC Lloyds Bank Ltd NBUFG Bank Ltd NBUFG Bank Ltd NBUFG Bank Ltd NBUFG Bank PLC Lloyds Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitorno Mitsui Banking Corp Glidad Sciences Inc ProAssurance Corn ProAssurance Corn	•	"	•	SSO.	3,086	N/A	\$SO	3,086	
Through Trust         " " " " " " " " " " " " " " " " " " "	Skandinaviska Enskilda Banken AB Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Ltd/New York Express Scrips Holding Co Shell International Finance BV ING Groep NV NG Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partner Re Finance B LLC Sprint Spectum Co LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co III LC / Sprint Spectum Co III LC / Lloyds Bank Ltd / III Loyds Bank Ltd / III Loyds Bank PLC / Lloyds Bank PLC / Lloyds Bank PLC / Lloyds Bank PLC / Cintax Corp No 2 Sumitomo Mitsui Banking Corp Gilada Gsienece Inc / Drods Science Con III Loyds Bank PLC / Lloyds Bank PLC / Lloyds Bank PLC / Cintax Corp No 2 Sumitomo Mitsui Banking Corp Gilada Corpus Corpus	•	"	•	\$SO	3,075	N/A	\$SO	3,075	
VORK <td>Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank LidNew York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings in Co Sprint Spectrum Co LLC Sprint Spectrum Co II LLC Sprint Spectrum Co III LC Spectrum Co III LC Sprint Spectrum Co III LC Spectrum Co III LC Sprint Spectrum Co III LC I Loyds Bank Ltd NBCUniversal Media LLC Lloyds Bank LC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilead Sciences Inc ProAssurance Corn</td> <td>•</td> <td>"</td> <td>•</td> <td>SSO.</td> <td>3,058</td> <td>N/A</td> <td>\$SO</td> <td>3,058</td> <td></td>	Schlumberger Holdings Corp State Street Corp Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank LidNew York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings in Co Sprint Spectrum Co LLC Sprint Spectrum Co II LLC Sprint Spectrum Co III LC Spectrum Co III LC Sprint Spectrum Co III LC Spectrum Co III LC Sprint Spectrum Co III LC I Loyds Bank Ltd NBCUniversal Media LLC Lloyds Bank LC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilead Sciences Inc ProAssurance Corn	•	"	•	SSO.	3,058	N/A	\$SO	3,058	
v York   <	State Street Corp Eversource Energy Anthem Inc. Charles Schwab Corp/The National Australia Bank Ltd/New York Express Scrips Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick & Co Inc./MD Partner Fe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co III LC Berkshire Hathaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Ene ProAssurance Corn		"	•	SSO	3,019	N/A	\$SO	3,019	
Page of the component of the compo	Eversource Energy Anthem Inc Charles Schwab Corp/The National Australia Bank Lid/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partner Re Finance B LLC Sprint Spectrum Co LLC/ Sprint Spectrum Co II LLC Sprint Spectrum Co LLC/ Sprint Spectrum Co III LC Sprint Spectrum Co III LC Berkshire Hathaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBUFG Bank Ltd Sylem Inc/NY MUFG Bank PLC Lloyds Bank PLC Lloyds Bank PLC Simias Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Inc	•	"	•	SSO.	3,007	N/A	\$SO	3,007	
v York         . <td>Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick &amp; Co Inc/MD Partner Re Finance B LLC Sprint Spectum Co LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co LLC / Sprint Spectrum Co LLC / Sprint Spectrum Co III LLC Spretchun Co III LLC Sprint Spectrum Co III LLC Company Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co EI du Pont de Nemours &amp; Co Xylem Inc/NY MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Inc ProAssurance Corn</td> <td>•</td> <td>"</td> <td>•</td> <td>SSO.</td> <td>2,915</td> <td>N/A</td> <td>\$SO</td> <td>2,915</td> <td></td>	Anthem Inc Charles Schwab Corp/The National Australia Bank Ld/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partner Re Finance B LLC Sprint Spectum Co LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co LLC / Sprint Spectrum Co LLC / Sprint Spectrum Co III LLC Spretchun Co III LLC Sprint Spectrum Co III LLC Company Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co EI du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Inc ProAssurance Corn	•	"	•	SSO.	2,915	N/A	\$SO	2,915	
YORK         .	Charles Schwab Cop/The National Australia Bank LtdNew York Express Scrips Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD PartnerRe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC Sprint Spectrum Co III LC End Research Corp NiSource Inc DXC Technology Co Ed tu Port de Nemours & Co Xylem Inc/NY MUFG Bank Ld NBCUniversal Media LLC Lloyds Bank LC Lloyds Bank LC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilead Sciences Con ProAssurance Corn	•	"	•	SSO.	2,843	N/A	\$SO	2,843	
v York         . <td>National Australia Bank Lid/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCornick &amp; Co Inc/MD PartnerRe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co IILLC / Sprint Spectrum Co IIL LC Berkshire Hathaway Energy Co WR Backley Corn Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours &amp; Co Xylem Inc/NY MUFG Bank Ltd NBUFG Bank PLC Lloyds Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Misui Banking Corp Gilada Sciences Con ProAssurance Corn</td> <td>•</td> <td>"</td> <td>•</td> <td>SSO.</td> <td>2,793</td> <td>N/A</td> <td>\$SO</td> <td>2,793</td> <td></td>	National Australia Bank Lid/New York Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCornick & Co Inc/MD PartnerRe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co IILLC / Sprint Spectrum Co IIL LC Berkshire Hathaway Energy Co WR Backley Corn Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBUFG Bank PLC Lloyds Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Misui Banking Corp Gilada Sciences Con ProAssurance Corn	•	"	•	SSO.	2,793	N/A	\$SO	2,793	
Spectrum Co II LLC / Sprint   Spectrum Co II LLC / Spectrum Co I	Express Scripts Holding Co Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partnerke Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co Spectrum Co LLC / Sprint Spectrum Co III LC Berkshire Hathaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBC Clintas Corp No 2 Sumitomo Mitsui Banking Corp Girdas Gsiences Inc ProAssurance Corn	•	"	•	SSO.	2,741	N/A	\$SO	2,741	
Section Collection C	Shell International Finance BV ING Groep NV Nestle Holdings Inc McCormick & Co Inc/MD Partner Re Finance B LLC Sprint Spectum Co LLC / Sprint Spectrum Co II LLC Sprint Spectum Co LLC / Sprint Spectrum Co II LLC Spectrum Co III LLC Berkshire Hathaway Energy Co WR Berkley Corp Dela Ari Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUriversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Inc ProAssurance Corn	•	"	•	SSO	2,727	N/A	\$SO	2,727	
Page	ING Groep NV Nestle Holdings N Nestle Holdings R AcCormick & Co Inc/MD PartnerRe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC Sprint Spectrum Co III LC Sperist Spectrum Co III LC Sperist Spectrum Co III LC Berkshire Haltaway Energy Co WR Berkley Corp Delta Ari Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Port de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank LC Cintas Corp No 2 Sumitomo Misui Banking Corp Gilead Sciences Inc ProAssurance Corn		"	•	SSO.	2,718	N/A	\$SO	2,718	
Spectrum Coll LLC / Sprint	Nestle Holdings Inc McCormick & Co inc/MD Partner Fe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co ILLC / Sprint Spectrum Co ILLC / Sprint Spectrum Co II LLC Berkshire Hathaway Energy Co WR Berkey Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co EI du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Simnitomo Misui Banking Corp Gilada Sciences Inc ProAssurance Corn		"	•	SSO	2,664	N/A	SSO	2,664	
Sample   S	McCormick & Co Inc/MD PanterRe Finance B LLC Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC Berkshire Hathaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCTOUNIVERAI Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Ginas Corp ProAssurance Corn		"	•	SSO	2,611	N/A	\$SO	2,611	
Spectrum Co II II.C / Sprint	PartnerRe Finance B LLC Sprint Spectrum Co LLC/ Sprint Spectrum Co II LLC Spreitum Co LLC/ Sprint Spectrum Co II LLC Berkshire Hathaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUriversal Media LLC Lloyds Bank PLC Clingas Corp No 2 Sumitomo Mitsui Banking Corp Gintas Corp No 2 Sumitomo Mitsui Banking Corp Gintas Giered Sienere En		"	•	SSO.	2,595	N/A	\$SO	2,595	
Spectrum Co II LLC / Sprint	Sprint Spectrum Co LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co II LLC / Sprint Spectrum Co III Compoured Research Corp Ventas Realty LP / Ventas Capital Corp Visiource Inc DXC Technology Co Ed up to the Nemours & Co Ed up to the New York Servance Compours & Co Ed up to the Nemours & Co Ed up to the Nemo		"	•	SSO.	2,568	N/A	\$SO	2,568	
Pass Through Trust	Spectrum Co III LLC Berkshire Hathway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co EI du Pont de Nemours & Co Xylem Inc/NY MUFG Bank LLC Lloyds Bank PLC Lloyds Bank PLC Cintas Corp No 2 Sumitorno Missui Banking Corp Ginas Corp No 2 Sumitorno Missui Banking Corp Ginas Corp ProAssurance Corn	7 / Sprint	"	•	\$SO	2,502	N/A	\$SO	2,502	
Paractiment	Detashine radiaway Energy Co WR Berkley Corp Delta Air Lines 2007-1 Class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp NiSource Inc DXC Technology Co EI du Pont de Nemours & Co Xylem IncNY MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank RLC Cintas Corp No 2 Sumitomo Misui Banking Corp Girada Sciences Inc		:		1100	103 0	4/1/	9011	103.0	
Pass Through Trust	We be because your class A Pass Through Trust Lam Research Corp Ventas Realty LP / Ventas Capital Corp Nisource Inc DXC Technology Co El du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Ltd NBCUTCOLIVIERSIA Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Mitsui Banking Corp Gilada Sciences Inc ProAssurance Corn	•	<i>"</i>	•	660	2,301	V/V	660	2,301	
al Corp	Loyds Bank DC  Ling Sesurano Com  Ventas Realty LP / Ventas Capital Corp  Ventas Realty LP / Ventas Capital Corp  Nisource Inc  DXC Technology Co  El du Pont de Nmours & Co  Xylem Inc/NY  MUFG Bank Ltd  NBCUniversal Media LLC  Lloyds Bank PLC  Cintas Corp No 2  Sumitomo Mitsui Banking Corp  Gilead Sciences Inc  ProAssurano Corn  ProAssurano Corn	•	<i>"</i>	•	660	2,484	V/V	660	2,484	
al Corp	Lan Meseatarin Copp Ventias Realty LP / Ventias Capital Corp NiSource Inc DXC Technology Co El du Pont de Nemours & Co Xylein Inc/NY MUFG Bank Ltd NBCUniversi Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Misui Banking Corp Gilada Sciences Inc ProAssurance Com		<i>"</i>	•	660	2,463	Y/N	660	2,463	
- USS 2,345 N/A USS 2,345 N/A USS 2,346 N/A	NiSource Inc.  DXC Technology Co  Ef du Pont de Nemours & Co  Xylem Inc/NY  MUFG Bank Ltd  NBCUniversal Media LLC  Lloyds Bank PLC  Cintas Corp No 2  Sumitorno Misui Banking Corp  Glieda Sciences Inc  ProAssurance Corn				\$50	2,462	K V	\$80	2,462	
1	DXC Technology Co EI du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Lufd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitorno Mitsui Banking Corp Gilada Sciences Inc Gilada Sciences Corn		: =	•	SSII	2,377	V/N	SSI	2,377	
1	EI du Pont de Nemours & Co Xylem Inc/NY MUFG Bank Lud NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitorno Misui Banking Corp Gilead Sciences Inc			•	SSO.	2,345	N/A	ns\$	2,345	
1	Xylem Inc/NY MUFG Bank Lid NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitomo Misui Banking Corp Gilead Sciences Inc	•	"	•	\$SO	2,326	N/A	\$SO	2,326	
1	MUFG Bank Ltd NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitorno Mitsui Banking Corp Gilead Sciences Inc		"	•	\$SO	2,319	N/A	SSO	2,319	
	NBCUniversal Media LLC Lloyds Bank PLC Cintas Corp No 2 Sumitono Mitsui Banking Corp Gliead Sciences Inc		"	•	SSO	2,296	N/A	SSO	2,296	
. USS 2,219 N/A USS 2,219 N/A USS 2,219 N/A USS 2,219 N/A USS 2,104 N/A USS 2,104 N/A USS 2,104 N/A USS 2,044 N/A	Lloyds Bank PLC Cintas Corp No 2 Sumitono Mitsui Banking Corp Gliead Sciences Inc ProAssurance Corn		"	•	\$SO	2,252	N/A	\$SO	2,252	
- USS 2,165 N/A USS 2,164 N/A	Cuntas Corp No 2 Sumitono Mitsui Banking Corp Gilead Sciences Inc Prod Assurance Corn	•	"	•	SSO	2,219	V/N	SSO	2,219	
1.05   2.164   N/A   USS   U	Sumitomo Mitsui Banking Corp Giebad Sciences Inc ProAssurance Com		"	•	SSO .	2,165	A/N	SSO	2,165	
- USS 2,101 N/A USS 2,04 N/A USS 2,094 N/A U	Gilead Sciences Inc ProAssurance Com	•	"	•	SSO .	2,164	V/A	SSO I	2,164	
Of America Finance LLC USS 2,094 N/A USS USS 2,094 N	Pro Assurance ( Orn		"	•	SSO .	2,101	<b>V</b> /N	SSO	2,101	
Sen Group of America Finance LLC	dio commentati		11		SSO	2,094	Ψ/X	SSO	2,094	
CO V/N 470,7 7,029 - 1,029	HCP Inc	•	"	•	SSO	2,039	V/N	\$S ()	2,039	
	volkswagen Group of America Finance EEC	•	"	•	660	4,024	W.A	es o	7,074	

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies	g Value Jurrencies	Percentage of Ownership (%)	Fair Value (Foreign Currence in Thousands)	Fair Value (Foreign Currencies	Note
TSMC Global	EOG Resources Inc		Financial assets at fair value through other	,	\$SO	2,003	N/A	\$SO	2,003	
	Roche Holdings Inc	,	comprehensive income	•	8511	1 999	A/N	SSII	1 999	
	British Telecommunications PLC	,	: =	•	SSO	1.997	A/N	SSO	1.997	
	Aetna Inc	•	"	'	SSO.	1.997	N/A	SSO.	1,997	
	Realty Income Corp		"	•	\$SO	1,959	N/A	\$SO	1,959	
	Caterpillar Financial Services Corp	•	"	'	\$SO	1,938	N/A	\$SO	1,938	
	American Airlines 2013-2 Class A Pass Through Trust	•	"	•	\$SO	1,925	N/A	\$SO	1,925	
	Huntington Bancshares Inc/OH	1	"	•	\$SO	1,912	N/A	\$SO	1,912	
	Duke Realty LP		"	•	\$SO	1,895	N/A	\$SO	1,895	
	Dow Chemical Co/The	•	"	•	\$SO	1,881	N/A	\$SO	1,881	
	Societe Generale SA		"	•	\$SO	1,819	N/A	\$SO	1,819	
	General Mills Inc		"	'	\$SO	1,818	N/A	\$SO	1,818	
	Simon Property Group LP		"	•	SSO.	1,781	N/A	SSO	1,781	
	Visa Inc	1	"	•	SSO	1,755	Ψ/N,	SSO	1,755	
	UnitedHealth Group Inc	•	"	•	SSO TEST	1,752	N/A	SSO 1	1,732	
	Westkock KK I Co	•	"		SSO I	1,/46	N/A	\$20	1,/46	
	Brambles USA Inc	•	"	'	SSO	1,740	Y/X	SSO	1,740	
	Page Power LLC	•		•	980	1,730	N/A	600	1,730	
	Dominion Energy Gas Holdings LLC	1	"	•	SSO	1,726	A/N	SSO	1,726	
	Mickesson Corp		"	•	\$20	1,/0/	N/A	\$50 128	1,/0/	
	Danske Bank A/S	•	"	'	SSO.	1,68/	N/A	\$\$O	1,68/	
	Standard Chartered PLC	•	#	•	SSO TEST	1,680	N/A	SSO	1,680	
	Wisconsin Public Service Corp	•	"	'	\$20	8/9/1	N/A	880	1,6/8	
	Regions Financial Corp		" :	•	\$20	1,658	N/A	\$20	1,658	
	Amazon com inc			•	660	1,381	N/A	\$50 1168	1,561	
	Tincipal Life Global Funding II	•		'	951	1,304	¥/N/	9511	1,564	
	General Flectric Co				\$S11	1 552	V V/N	351	1,551	
	American Flectric Power Co Inc				\$S11	1,526	V V	3511	1,526	
	Weverhaenser Co	,	: =	•	SSI	1 537	V V	SSII	1,537	
	Lincoln National Com	,	: =	•	\$S1	1,536	V/N	SSII	1.536	
	AIG Global Funding	•		•	SSD	1.491	Y X	SSO	1,491	
	Harley-Davidson Financial Services Inc	•	"	'	\$SO	1,490	N/A	SSO.	1,490	
	Compass Bank		"	•	\$SO	1,483	N/A	\$SO	1,483	
	O'Reilly Automotive Inc	•	"	'	\$SO	1,470	N/A	\$SO	1,470	
	John Deere Capital Corp	•	"	•	\$SO	1,470	N/A	\$SO	1,470	
	Nissan Motor Acceptance Corp		"	•	\$SO	1,466	N/A	\$SO	1,466	
	Guardian Life Global Funding	ı	"	•	\$SO	1,459	Ψ/X	\$SO	1,459	
	Figury 1nc			•	880 178	1,457	V/N	880	1,45/	
	FISCIVILIC Oesterreichische Kontrollbank AG	•		•	3511	144	A/N	351	1,43	
	TransCanada Pinel ines 1td				SSI	1 436	V V	SSI	1,441	
	HSBC Bank PLC	,	: =	•	SSI	1 434	V/N	SSII	1,130	
	Eastman Chemical Co	•	: "		\$SO	1,433	N/A	\$SO	1,433	
	CBS Corp		"	•	\$SO	1,420	N/A	\$SO	1,420	
	Takeda Pharmaceutical Co Ltd	•	"	'	\$SO	1,412	N/A	\$SO	1,412	
	IBM Credit LLC	•	"	•	\$SO	1,407	N/A	\$SO	1,407	
	Monongahela Power Co		"	•	SSO	1,387	N/A	SSO	1,387	
	Cboe Global Markets Inc	•	"	•	SSO	1,368	V/A	nss N	1,368	
	l exas Eastern Transmission LP	•	"	1	SSO	1,363	N/A	\$\$O	1,363	
										(Continued)

						Decembe	December 31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryi (Foreign in Tho	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair (Foreign 6 in Tho	Fair Value (Foreign Currencies in Thousands)	Note
TSMC Global	Georgia-Pacific LLC	•	Financial assets at fair value through other	,	\$SO	1,346	N/A	\$SO	1,346	
	Kreditanstalt fuer Wiederaufbau	•		٠	SSO OS	1,331	N/A	\$SO	1,331	
	Rockwell Collins Inc	,	"	•	\$SO	1,321	N/A	\$SO	1,321	
	GATX Corp	•	"	•	\$SO	1,265	N/A	SSO.	1,265	
	Entergy Arkansas LLC		"		\$SO	1,262	N/A	\$SO	1,262	
	CNA Financial Corp		"		ns\$	1,249	N/A	\$SO	1,249	
	Entergy Corp		"		\$SO	1,226	N/A	SSO.	1,226	
	CenterPoint Energy Inc		"		\$SO	1,224	N/A	\$SO	1,224	
	Consolidated Edison Inc	•	"	•	SSO	1,203	N/A	SSO	1,203	
	Glencore Funding LLC	•	"		OS\$	1,190	A/A	SSO	1,190	
	GlaxoSmithKline Capital PLC		"		ns\$	1,182	N/A	SSO	1,182	
	Regions Bank/Birmingham AL		"	•	SSO.	1,157	N/A	SSO	1,157	
	Magellan Midstream Partners LP		"		\$SO	1,149	N/A	SSO.	1,149	
	Woolworths Group Ltd		"		\$SO	1,099	N/A	SSO.	1,099	
	Commonwealth Bank of Australia/New York NY		"		SSO.	1,094	N/A	\$SO	1,094	
	Interpublic Group of Cos Inc/The	•	"		\$SO	1,086	N/A	SSO	1,086	
	Swedbank AB	,	"		\$SO	1,061	N/A	\$SO	1,061	
	Reinsurance Group of America Inc	•	"	•	$\Omega$	1,037	N/A	\$SO	1,037	
	Quest Diagnostics Inc	,	"		\$SO	1,026	N/A	SSO.	1,026	
	Prudential Financial Inc	•	"	•	\$SO	1,026	N/A	SSO.	1,026	
	Glencore Finance Canada Ltd	•	"	•	\$SO	1,022	N/A	SSO.	1,022	
	Athene Global Funding	,	"	•	\$SO	1,020	N/A	\$SO	1,020	
	Commonwealth Edison Co	,	"		\$SO	1,014	N/A	\$SO	1,014	
	DNB Bank ASA		"	•	\$SO	1,014	N/A	SSO.	1,014	
	Scentre Group Trust 1/Scentre Group Trust 2	•	"		\$SO	1,014	N/A	\$SO	1,014	
	Mitsubishi UFJ Trust & Banking Corp	,	"	•	\$SO	1,013	N/A	\$SO	1,013	
	DTE Energy Co	•	"		\$SO	1,010	N/A	SSO.	1,010	
	Union Pacific Corp	•	"	•	\$SO	1,008	N/A	\$SO	1,008	
	Commonwealth Bank of Australia		"		\$SO	1,003	N/A	\$SO	1,003	
	Philip Morris International Inc		"		SSO.	1,00,1	N/A	\$SO	1,001	
	Equinor ASA		"	•	SSO	995	N/A	SSO.	995	
	Southern California Edison Co	•	"	•	SSO	994	N/A	SSO	994	
	Laboratory Corp of America Holdings		"		\$SO	993	N/A	SSO.	993	
	Biogen Inc	•	"		SSO.	992	A/A	OS\$	992	
	Halliburton Co	•	"	•	SSO .	686	V/A	SS C	686	
	Sysco Corp	1	"		SSO	988	Ψ/N	\$SO	888	
	Onum Group	•		•	951	106	N/A	9511	/06	
	Otange 3A BOC Aviation Ltd				SSI	985	C &	SSI	985	
	Pricoa Global Funding I	,	: "		SSO	985	N/A	SSO	985	
	Entergy Texas Inc		"	•	\$SO	982	N/A	\$SO	982	
	Protective Life Global Funding		"	•	\$SO	626	N/A	\$SO	626	
	Moody's Corp		"		SSO.	846	N/A	SSO.	826	
	Holcim US Finance Sarl & Cie SCS	•	"	•	\$SO	973	N/A	SSO.	973	
	Healthcare Trust of America Holdings LP	,	"	•	\$SO	970	N/A	\$SO	970	
	State Grid Overseas Investment 2016 Ltd	•	"	•	\$SO	896	N/A	\$SO	896	
	Loews Corp	•	"	•	SSO	965	V/A	SSO	965	
	Citibank NA		"	•	\$SO	954	V/X	SSO	954	
	Bunge Ltd Finance Corp	•	" :	•	SSO 1	953	e s	\$20	953	
	Anneuser-Busch Inbev worldwide inc		*	•	680	176	N/A	20	176	
										(Continued)

Held Company Name	Moultofold Committee Tomo and Name	D-1-4-11:		: 15	Carrying value	z value		Fair value	ame	
	Marketable Securities Type and Maine	Keiauonsnip with the Company	Financial Statement Account	Shares/Units (In Thousands)	(Foreign Currencies in Thousands)	urrencies sands)	Percentage of Ownership (%)	(Foreign Currencies in Thousands)	urrencies sands)	Note
TSMC Global	Coca-Cola Femsa SAB de CV		Financial assets at fair value through other	•	\$SO	892	N/A	\$SO	892	
	Toolstood Montine		comprehensive income		3311	000	A) IV	3011	000	
	CNOOF Finance 2011 I td				9511	600	V/N	9511	690	
			2 2		351	857	V/N	351	857	
	Mouch & Mol onnon Con Inc			•	3511	653	V/N	951	953	
	With the Michellian Cos Inc	ı		•	500	050	A/M	9 5 1	000	
	Viterra Inc	•	"	•	OSS CO	850	A/N	22	820	
	Baker Hughes a GE Co LLC/Baker Hughes Co-Obligor Inc	1	"	•	\$SO	823	V/A	SSO	823	
	Intesa Sanpaolo SpA		"		\$SO	804	V/A	\$SO	804	
	Aon PLC	•	"	•	\$SO	800	N/A	\$SO	800	
	Alterra Finance LLC	•	"		\$SO	787	N/A	\$SO	787	
	ONEOK Partners LP		"	•	SSII	783	A/N	SSII	783	
	Activision Blizzard Inc	•	**		3511	774	V/N	\$511	774	
	S			•	957	1 7	AVIV	9 5 1	1 7	
	Suncorp-Metway Ltd	•	"		680	4//	N/A	\$20	4//	
	AXIS Specialty Finance LLC	•	"	•	SSO.	771	N/A	\$SO	771	
	Sinopec Capital 2013 Ltd		"	•	SSO	771	N/A	\$SO	771	
	Nomura Holdings Inc		li li	•	SSII	692	A/N	SSII	692	
	Mountific Engage				9311	150	N/A	9011	092	
	Manual Financial Colp		*	•	0.00	69/	A/NI	600	69/	
	Incitec Pivot Finance LLC		"	•	SSO	167	N/A	SS ()	167	
	Warner Media LLC		"		\$SO	758	N/A	\$SO	758	
	AutoZone Inc	•	"		NS\$	753	A/N	SSO.	753	
	Baidu Inc	•	**	•	\$511	745	A/N	\$511	745	
	Wolmont Inc				3311	144	V/N	3311	777	
	Wallingtillic		*	•	0.55	+ 6	A/VI	0.00	† ·	
	Metropolitan Lite Global Funding I	•	"		CSS C	/38	N/A	\$2 	/38	
	Pinnacle West Capital Corp	•	"		\$SO	734	N/A	\$SO	734	
	WEC Energy Group Inc		"	•	SSO	733	N/A	\$SO	733	
	Phillips 66	•	"		nss	701	A/N	SSO	701	
	Thermo Fisher Scientific Inc	•		•	3511	701	A/N	3511	701	
	Anetralia & Naw Zaaland Banking Groun I td/Naw Vorb MV				3511	509	V/N	3511	509	
	2Der Inc		:		9511	505	NI/A	9311	503	
	ebay IIIc		**		600	660	W/NI	200	260	
	APT Pipelines Ltd		"	•	SSO	695	N/A	SS ()	695	
	Baker Hughes a GE Co LLC	1	"	•	SSO.	169	N/A	\$SO	169	
	Textron Inc		"	•	\$SO	685	N/A	SSO	685	
	Reynolds American Inc	•		•	3511	029	A/N	3511	029	
	Vornado Realty I P	•	: =	•	\$511	699	V/N	\$311	699	
	Doobsetor Coc & Disotrio Com				3511	699	V/N	3311	699	
	Nocilester Gas & Electric Corp		**	•	660	000	W/W	200	000	
	National Oilwell Varco Inc	•	"		SSO	629	V/A	\$S ()	629	
	Norfolk Southern Railway Co		"	•	SSO	959	N/A	\$SO	959	
	Ohio Power Co	•	"	•	\$SO	635	N/A	SSO	635	
	Toledo Edison Co/The	•	"	•	\$SO	630	N/A	\$SO	630	
	Wm Wrigley Jr Co		"	•	\$SO	624	N/A	\$SO	624	
	ERP Operating LP	•	"	•	NS\$	623	N/A	NS\$	623	
	Alexandria Real Estate Equities Inc		"		NS\$	618	N/A	NS\$	819	
	RBCTISA Holden Com	·	: *	•	3511	618	√ N	3511	819	
	Citizone Eineneial Groun Inc	•		•	3511	613	V/N	951	613	
	Citizens Financial Group Inc	•		•	10.5	613	N/A	600	613	
	Grupo Bimbo SAB de C.v			•	680	210	N/A	200	710	
	Liberty Property LP		"	•	SSO	612	N/A	SSO	612	
	Nutrien Ltd		"		\$SO	610	V/A	\$SO	019	
	Continental Airlines 2000-1 Class A-1 Pass Through Trust	1	"	•	SSO.	605	N/A	\$SO	909	
	Continental Airlines 2007-1 Class A Pass Through Trust		"	•	\$SO	009	N/A	SSO	009	
	Daiwa Securities Group Inc	•	"	•	ns\$	599	N/A	SSO OS	599	
						-				

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies	Value	Percentage of Ownership (%)	Fair Value (Foreign Currencies	alue urrencies	Note
					nou I III	sanus)			samus)	
TSMC Global	MUFG Union Bank NA		Financial assets at fair value through other	1	\$SO	298	N/A	\$SO	865	
	OneBeacon US Holdings Inc	•	" " " " " " " " " " " " " " " " " " "	•	\$SO	597	N/A	\$SO	597	
	US Bancorp	•	"	•	\$SO	595	N/A	SSO	595	
	Ontario Teachers' Cadillac Fairview Properties Trust	•	"	•	\$SO	594	N/A	\$SO	594	
	BAT International Finance PLC	•	"	•	\$SO	591	N/A	\$SO	591	
	Kimco Realty Corp	•	"	•	SSO	589	N/A	\$SO	589	
	Life Technologies Corp	•	"	•	\$SO	585	N/A	\$SO	585	
	AXIS Specialty Finance PLC	•	"	•	\$SO	574	N/A	\$SO	574	
	Nationwide Financial Services Inc		"	•	SSO	569	N/A	\$SO	569	
	ABC Inc		"	•	\$SO	268	N/A	\$SO	268	
	Host Hotels & Resorts LP		"	•	\$SO	564	N/A	\$SO	564	
	AvalonBay Communities Inc	•	"	•	\$SO	563	N/A	\$SO	563	
	Duke Energy Progress LLC		"	•	SSO	551	N/A	\$SO	551	
	Church & Dwight Co Inc		"	•	\$SO	525	N/A	SSO	525	
	Sempra Energy		"	•	\$SO	518	N/A	SSO	518	
	Fulton Financial Corp		"	•	\$SO	510	N/A	\$SO	510	
	ASB Bank Ltd		"	•	\$SO	501	N/A	\$SO	501	
	Regency Centers Corp		"	•	SSO	498	N/A	\$SO	498	
	TD Ameritrade Holding Corp		"	•	\$SO	497	N/A	\$SO	497	
	Sumitomo Mitsui Trust Bank Ltd	•	"	•	SSO I	496	N/A	SSO	496	
	Highwoods Realty LP	•	"	•	SSO	493	N/A	SSO	493	
	ORIX Corp	•	"	•	\$SO	490	N/A	SSO	490	
	International Paper Co		"	•	SSO	478	N/A	\$SO	478	
	MassMutual Global Funding II		"	•	SSO	477	N/A	\$SO	477	
	Diageo Capital PLC		"	•	\$SO	475	N/A	SSO	475	
	Comerica Inc	ı	"	•	SSO (	473	V/A	SSO	473	
	Eni SpA	•	"		SSO I	472	A/A	SSO	472	
	Spire Inc	•	"	•	0.55 1.05	459	N/A	\$20	604	
	Narragansett Electric Co/ Ine	•	"	•	SSO I	456	A/N	\$80	456	
	United Overseas Bank Ltd	•	"	•	SSO	454	V/A	SSO	454	
	Duke Energy Carolinas LLC	•	"	•	SSO I	453	Ψ/N X	SSO	453	
	Eaton Corp	•	"	•	\$ CO	104	N/A	\$20	104	
	Fublic Service Enterprise Group Inc	•		•	\$ CO	449	N/A	\$20	449	
	Dudington Morthorn South En LT	•		•	951	0440	A/N	9511	9 5	
	Duttington Motine in Santa re LLC	1		•	1156	674	V/N	\$50	674	
	Canadian Pacific Railway Co				\$S.1	t 4 C14	K K/N	881	424	
	Marathon Petroleum Corp	,	: =	•	SSO	412	A/N	SSO	412	
	Valero Energy Corp	•	"	•	\$SO	412	N/A	\$SO	412	
	Texas-New Mexico Power Co		"	•	\$SO	406	N/A	\$SO	406	
	Eaton Electric Holdings LLC	1	"	•	\$SO	403	N/A	\$SO	403	
	Markel Corp	•	"	•	\$SO	400	N/A	SSO	400	
	Tanger Properties LP	•	"	•	\$SO	393	N/A	\$SO	393	
	Southern Power Co	•	"	•	\$SO	388	N/A	\$SO	388	
	Continental Airlines 2012-1 Class A Pass Through Trust	•	"	•	SSO	385	N/A	\$SO	385	
	StanCorp Financial Group Inc	•	"	•	\$SO	379	N/A	\$SO	379	
	Aon Corp	•	"	•	\$SO	377	N/A	\$SO	377	
	First Niagara Financial Group Inc		"	•	\$SO	364	N/A	SSO	364	
	CenterPoint Energy Resources Corp	1	"	•	SSO.	355	<b>V</b> /V	SSO	355	
	American Honda Finance Corp		"	•	\$SO	554	N/A	\$\$O	334	
										(Continued)
										(communed)

Particular   Par	December 1985   December 1985   December 1985   December 2085   December 2085   December 2085   December 3085   December 308	Poeusche Bank AG  Cooperatieve Rabobank UA Seblumberger Finance Canada Ltd Eli Lilly & Cooperatieve Rabobank UA Seblumberger Finance Canada Ltd Eli Lilly & Cooperatieve Rabobank UA BAES systems blodings Inc Home Depot IncThe EMD Finance LLC Archer-Damiels-Midland Co Hartford Financial Services Group IncThe Rolls-Royce PLC ING Bank NV Fidelity National Information Services Inc Equifix Inc Packaging Corp of America Schneider Electric SE Wells Frago & Co IPMorgan Chase & C IPMO					December 31, 2018	31, 2018			
Principle about A District Browning and A District Browning botter in its value from plants of the Company of	Describe Death ACT Described Death ACT Describ		Relationship w	Financial Statement Account	Shares/Units (In Thousands)	Carryin (Foreign C in Tho	g Value Jurrencies Isands)	Percentage of Ownership (%)	Fair V; (Foreign Ct in Thous	alue ırrencies ands)	Note
Confricted transfer in control of the control of th	Confidence according to the control of the control	Cooperative Rabobank UA Schumberge Finance Canada Ltd Eli Liliy & Co Arabband Corp BARS Statum Holdings Inc HARS System Holdings Inc HARS System Holdings Inc HARS System Holdings Inc HARS Desirate HLC Arabbande LLC Arabdrad Counter Milliand Co Hartford Financial Services Group Inc/The Rolls-Roye PLC Protective Life Corp Westfacek MWV LLC ING Bank WV ING Bank WO ING Bank WO ING Bank WO ING Bank WO ING Sant Research Commonwealth Bank of Australia Antonal Australia Bank Bank Of Nova Scotia Industrial and Commercial Bank of China Googramment Day Coultment Sachs of Australia And Googramment International Bond United States Treasury Note Bond United States Treasury Bank of China Government International Bond Andersory bonds Assenty Bonds Association Freddie Mae REMICS Freddie Mae BRINGS Freddie Mae Bring Roll Freddi		Financial assets at fair value through other	•	\$SN	348	N/A	\$SO	348	
Certificentes  Comprehensive income i	Certificates  Financial assets at fair value through brills or 158 1376 NA 108 1370 NA 108	Cooperative Kalobank UA Schulmberger Kalobank UA HILLIJI'R & CO Amphenol Com Amphenol Com Amphenol Com Amphenol Com Home Daniels Midinal Go Hartford Financial Services Group IncThe Rolls-Royce PLC Productive Life Corp WestRock MW ULC Worlds Bank NV Fidelity National Information Services Inc Equifix Inc Packaging Corp of America Schneider Electric SE Wolls Farge & Co Westpace Banking Corp. Fidelity National Information Services Inc Equifix Inc Schneider Electric SE Wolls Farge & Co Westpace Banking Corp. Goldman Scales Group, Inc. Commonwealth Bank of Australia Ranke of Navastralia Bank of Australia Androad States Treasary Poating Rate Note Abut Officed States Treasary Poating Rate Note Abut Dabah Government International Bond United States Treasary Poating Rate Note Abut Dabah Government International Bond United States Treasary Bill Qoan Covernment International Bond Agency bonds/Ageney mortgage-basked securities Freddie Mae Strip Freddie Mae Strip Freddie Mae Strip Freddie Mae Strip Freddie Mae Strips Freddie Mae Strips Freddie Mae Strips Freddie Mae Strips Freddie Mae REMICS Government National Mortgage Association Freddie Mae Rank Remice Government National Mortgage Association Freddie Mae Remices Government National Mortgage Association Freddie Mae Rank Remices Government National Mortgage Association		comprehensive income		9		3	0	9	
Certificates  Ce	Certificates  Ce	Sentimote of the Chain and Amphenol Coop  RAPE Systems Holdings Inc  RAPE Systems Holdings Inc  RAPE Systems Holdings Inc  Horne Depot Inc/The  EADD Farmace LLC  Arch Farmace LLC  Arch Farmace LLC  Rolls Roye PLC  Protective Life Corp  Westpace MWV LLC  ING Bank NV  Fidelity National Information Services Inc  Equifix hor  Racking & Co.  Westpace RCO:  Westpace RCO		" :	•	\$20	340	V/A	\$20	300	
Certificates  Financial assets at fair value through other comprehensive income comprehensive income through other comprehensive income come come come come come come come	Certificates  Financial seeds at fair value through Order  Financial seeds at fair value through Order  Certificates  Certificate	Amphenol Corp  Amphenol Corp  BAE Systems Holdings Inc  Home Depot Incrit and John Barb  Rolls-Royer PLC  Archer-Damiels-Midland Co  Hardroft Financial Esvices Group Inc/The  Rolls-Royer PLC  Rolls-Royer PLC  Not Bark NV LLC  ING Bark NV VLC  WestRock MWV LLC  WestRock MRV Rower  Barbing Corp  Rolls Royer  Coldman Stehs Corpup Inc  Coldman Stehs Corpus Inc  Coldman Stehs Cold Pool  Fredde Mac Gold Pool  Fredde Mac Gold Pool  Fredde Mac Gold Pool  Fredde Mac REMICS  Government Maioral Mortgage Association  Fredde Mac REMICS  Government Maioral Mortgage Association  Fredde Mac Handrol  Fredde Mac Gold Pool  Fredde	ים דעת		•	920	293	V/N	950	283	
Conficutes   Completenese at after value through other   CISS   137   CISS	Conficiences    1.88   252   10   10   10   10   10   10   10   1	Be Systems Holdings Inc Home Depot InoThe EMD Finance LLC EAR Tender Damiels Midland Co Hardrod Finance LLC Rolls Royce PLC Rolls Royce Rolls Roll Rolls Royce Bank Not Rolls Fargo & Co. Weipper Banking Coup. Inc. Commonwealth Bank of Mastralia Rolls Royce Banking Coup. Inc. Commonwealth Bank of Mastralia Rolls Royce Banking Coup. Inc. Commonwealth Bank of China Government bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Quard Covernment International Bond Roll Royce Roll Royce Reddie Mae REMICS Government Maioral Morgage Association Freddie Mae ReMICS Government National Royce Freddie Mae REMICS Government National Morgage Association Freddie Mae REMICS Government National Royce Freddie Mae REMICS Government National Royce Freddie Mae REMICS Government National Morgage Association Freddie Mae REMICS Government National Royce Freddie Mae REMICS Government National Royce Freddie Mae Remice Remiced Freddie Mae Remore Remiced Freddie Mae Remiced Government National Royce Government Royce Go	•		•	9511	707	V/N	\$50	207	
Configures  Config	Certificates  Ce	How Early and Depto In Ordings Inc. How Depto In Fording Inc. How Depto Inc. Archer-Daniels Midland Co Hardord Financial Services Group Inc.The Rolls-Royee PLC Rolls-Royee PLC Rolls-Royee PLC Rolls-Royee PLC Rolls-Royee PLC Rolls-Royee Co How Group Man Information Services Inc Equifix Inc Equifix Inc Packaging Corp of America Schender Electric SE Wells Farges & Co JPMOgram Chase & C JPMO	•		•	950	280	A/N	950	260	
Financial assets at fair value through other   USS   137   NA	Conficients  Controlled tasset at fire value through other  Controlled t	Home Deport in the Inches EMD Finance LLC  Archer-Daniels-Midland Co  Harford Financial Services Group Inc/The  Rolls-Royce PLC  Protective Life Corp  Westlock MIVY LLC  Westlock MIVY LLC  Fidelity National Information Services Inc  Equitist Ince  Equition  Equition		"	•	\$20 511	787	N/A	820	787	
Financial assets at fair value through other   155 247   NA	Certificates  Confidence  Conf	Arban Pinniace Lock Arbanic S-Maland Co Hartford Finnacial Services Group IncThe Rolls-Royee ILC Protective Life Corp WestRock MAV LLC ING Bank NV Fidelity National Information Services Inc Fidelity Sation Corp of America Schneider Electric SE Wells Bank of Organic Corp Of America Schneider Electric SE Wells Bank of Corp Goldman Scales Coro, Inc Oromovealth Bank of Australia National Anstralia Bank of China Government Bond United States Treasury Bill Orate States Treasury Bill Orate States Treasury Bill Orate Government International Bond United States Treasury Bill Orate Government International Bond Tredde Mac REMICS Government National Mortgage Association Freedde Mac Waltiffamily Structured Pass Through Certificates Freedde Mac REMICS Government National Mortgage Association Freedde Mac REMICS Gomine Mac REMICS Freedde Mac REMICS Gomine Mac REMICS Gomine Mac REMICS Gomine Mac REMICS Freedde Mac REMICS Freedde Mac REMICS Freedde Mac REMICS Gomine Mac Remice Freedde Mac REMICS		"		\$20	717	N/A	\$20	//7	
Certificates   Cert	Certificates	Archer-Daniels-Midland Co Harforder-Daniels-Midland Co Harforder Elic Corp Protective Life Corp WestReck MWY LLC ING Bank NWY LLC Fidelity National Information Services Inc Fidelity Service Structure St. Wells Parge & Co. Westpace Banking Corp. Godman Sachs Group, Inc. Godwann Sachs Group, Inc.		"		\$20	717	N/A	\$20	//7	
1.05   2.28   NVA	Certification  Financial assets at fair value through Porfit or  Financial asset at fair value through Porfit o	Hartford Financial Services Group Inc/The Rolls Rock MWV LLC ING Bank NV Fidelity National Information Services Inc Equifia Inc Reducing Corp of America Schneider Electric SE Schneider Electric SE Wells Farge & Co. IPMorgan Chase Revented Informational Bond United States Treasury Bill United States Through Certificates Fredde Mae Multifamily Structured Pass Through Certificates Fredde Mae Waltifamily Structured Pass Through Certificates Fredde Mae Waltifamily Structured Pass Through Certificates Fredde Mae Waltifamily Structured Pass Through Certificates Fredde Mae REMICS Government National Morgage Association Fredde Mae REMICS Gomine Mae Incerts Strip Fredde Mae REMICS Gomine Mae REMICS Gomine Mae Incerts Strip Fredde Mae REMICS		"	•	\$SO	250	N/A	SSO	250	
1	Certificates  Ce	Rolls-Royce PLC Protective Life Corp WestRock MavV LLC ING Bank NV Fidelity National Information Services Inc Equitish to Packaging Corp of America Schneider Electric SE Wells Farga & Co JyMorgan Chas & Co. Westpace Banking Corp. Goldman Sachs Group, Inc. Commonwealth Bank of Australia National Australia Bank of Australia Industrial and Commercial Bank of China Government Bank of China Government International Bond United States Treasury Floating Rate Note Abu Uhair Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agenex morgage-backed securities Freddie Mae REMICS Freddie Mae REMICS Freddie Mae Gold Pool Frent Mae Pintitianily Structured Pass Through Certificates Freddie Mae Gold Pool Frent Mae REMICS Government National Mortgage Association Freddie Mae Strips Freddie Mae Strips Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae REMICS	Group Inc/The	"	•	\$SO	228	N/A	\$SO	228	
Certificates   Cert	Certificates	Protective Life Corp WestRock MWV LLC ING Bank Navy LLC Ridelity National Information Services Inc Equifax Inc Equifax Inc Packaging Corp of America Schneider Electric SE Wells Fargo & Co. JPMorgan Class & Co. Goldman Sachs Group, Inc. Goldman Sachs Group, Inc. Goldman Sachs Group, Inc. Gontronwealth Bank of Australia Marional Australia Bank Bank of Nova Scotia Industrial and Commercial Bank of China Government Linemational Bond United States Treasury Bill Quar Government International Bond United States Treasury Bill Quar Government International Bond United States Treasury Bill Quar Government International Bond United States Treasury Bill Peader Mac REMICS Frantie Mac REMICS Government National Mortgage Association Freddie Mac Strips Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Ginnie Mac II Pool Famin Embal RIPOOl		"	•	\$SO	221	N/A	\$SO	221	
Certificates   Cert	Certificates   Comprehensive intervals other   Comprehensive intervals   Comprehensive	WestRock MWV LLC ING Bank NV Fidelity Misonal Information Services Inc Equifax Inc Packaging Corp of America Schneider Electric SE Wells Fargo & Co JyMorgan Chase & Co. Westprea Banking Corp. Commonwealth Bank of Australia Antional Australia Bank Bank of Your Scotia Industrial and Commercial Bank of China Government bond United States Treasury Floating Rate Note Abu Dhah Government International Bond United States Treasury Floating Rate Note Abu Dhah Government International Bond United States Treasury Floating Rate Note Abu Dhah Government International Bond United States Treasury Storing Rate Note Abusency bonds/Ageney mortgage-backed securities Freddie Mac REMICS Famire Mac REMICS Government National Mortgage Association Famire Mac Strips Freddie Mac REMICS Government National Mortgage Association Framite Mac REMICS Government Mortgage Association Freddie Mac REMICS Government Remit Remite Mac REMICS Government Remite Mac REMICS Government Remite Mac REMICS Government Remite Mac REMICS Government Remite Mac REMICS		"		\$SO	216	N/A	\$SO	216	
Financial assets at fair value through other   USS 137   NA	Certificates	Fidelity National Information Services Inc Equitian Inc Equitian Information Services Inc Equitian Inc Equitian Inc Equitian Inc Equitian Inc Equitian Inc Equitian Inc Expended Electric SE Wells Farges & Co IPMorgan Chase & Co. Westpoe Banking Cop. Goldman Sealest Group. Inc Commonwealth Bank of Australia National Australia Bank Bank of Nowa Scotic Industrial Bank of China Government Bank of China Government Industrial Bank of China United States Treasury Floating Rate Note Abu Diabid Government International Bond United States Treasury Bill Qatar Government International Bond United States Treasury Bill Qatar Government International Bond Chined States Treasury Bill Qatar Government National Mortgage Association Freddie Mac REMICS Government National Mortgage Association Freddie Mac Strips Freddie Mac Strips Freddie Mac Strips Freddie Mac Strips Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Ginnie Mat I Pool Framie Mate REMICS Ginnie Mat I Pool Framie Mate REMICS Ginnie Mate I Pool Framie Mate REMICS		"		\$SO	210	N/A	NS\$	210	
Certificates	Certificates   Comprehensive income   Compr	Fidelity National Information Services Inc Equitax Inc Packaging Cop America Schneider Electric SE Welspace Bardia Cop.  Westpace Bardia Cop.  Goldman Sachs Group, Inc.  Commonwealth Bank of Australia National Australia Bank of China Bank of Nova Scotia Industrial and Commercial Bank of China Government bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond United States Treasury Bill Qatar Government International Bond Freddie Mac REMICS Freddie Mac REMICS Freddie Mac Remitismily Structured Pass Through Certificates Freddie Mac Strips Freddie Mac Strips Freddie Mac ReMICS Government National Mortgage Association Freddie Mac Strips Freddie Mac ReMICS Government National Mortgage Association Freddie Mac ReMICS Government National Mortgage Association Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Government National Hortgage Government National Ho		"	•	SSO	207	N/A	ns\$	207	
Financial assets at amortized cost	Certificates   Certificates   Comprehensive incorrect const	Equifix In Packaging Corp of America Schender Electric SE Wells Fargo & Co. Wells Fargo & Co. Wespace Banking Corp. Goldman Sachs Group, Inc. Goldman Sachs Group, Inc. Commonwealth Bank of Australia National Australia Bank of China Bank of Nova Scotia Industrial and Commercial Bank of China Government bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qaar Government International Bond Freddie Mae REMICS Freddie Mae REMICS Freddie Mae Multifamily Structured Pass Through Certificates Freddie Mae Strips Freddie Mae Multifamily Structured Pass Through Certificates Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Pool Freddie Mae REMICS Government National Pool Freddie Mae REMICS Government National Pool	n Services Inc		٠	SSLI	202	A/N	\$511	202	
Financial assets at amortized cost	Financial assets at mortized cost   157   N/A   158   157   158   157   158   157   158   157   158   159   158   157   158   159   159	Pakkaging Corp of America Schneider Electric SE Wells Targo & Co. Westpac Banking Corp. Goldman Sachs Group, Inc. Couldman Sachs Group, Inc. Couldman Sachs Group, Inc. Commonwealth Bank of Australia Bank of Nova Scotia Industrial and Commercial Bank of China Bank of Nova Scotia International Australia Bank Bank of States Treasury Floating Rate Note Onited States Treasury Ploating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond United States Treasury Bill Qatar Government International Bond Emnie Mae REMICS Government National Mortgage Association Freddie Mae Multiamly Structured Pass Through Certificates Freddie Mae Multiamly Structured Pass Through Certificates Freddie Mae ReMICS Government National Mortgage Association Freddie Mae ReMICS Government Man REMICS Gimnie Mae I Pool Frendie Mae REMICS Gimnie Mae I Pool Frendie Mae REMICS Gimnie Mae I Pool		: "	•	SSI	174	Z/X	SSII	174	
Financial assets at amortized cost   153   157   N/A	Financial assets at amortized cost   USS   19,941   NIA   USS   1577	Schneider Electric SE Wells Fargo & Co JPMorgan Chase & Co. Wells Fargo & Co. Wells Fargo & Co. Wells Fargo & Co. Wells Fargo & Co. Wells Pargo Banking Corp. Goldman Sachs Group, Inc. Commonwealth Bank of Australia National Australia Bank Bank of Yoova Scotoai Industrial and Commercial Bank of China Government bond United States Treasury Blil Government bonds Government International Bond United States Treasury Bill Quare Covernment International Bond United States Treasury Bill Quare Covernment International Bond Eveddic Mac REMICS Freddic Mac REMICS Government National Mortgage-backed securities Freddic Mac Multifamily Structured Pass Through Certificates Freddic Mac Strips Freddic Mac Surps Freddic Mac Surps Freddic Mac Surps Freddic Mac ReMICS Government National Mortgage Association Freddic Mac REMICS Government Mational Mortgage Association Freddic Mac REMICS Government Mational Mortgage Association Freddic Mac REMICS Government Rational Mortgage Association Freddic Mac REMICS Government Rational Mortgage Association Freddic Mac REMICS Gimnic Mat Remic Mac		: "	٠	8511	157	A/Z	\$811	157	
Financial assets at amonized cost   Cost   149,941   NA	Financial assets at fair value through other   Cuss   149,941   N/A   Cuss   150,065	Wells Pargo & Co.  Wells Pargo & Co.  Westpac Banking Corp. Goldman Sachs Group, Inc. Goldman Sachs Group inc. Goldman Sachs Group inc. Government Bank of Australia Industrial and Commercial Bank of China Government bond United States Treasury Note/Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond United States Treasury Bill Qatar Government International Bond Freddie Mac REMICS Freddie Mac Mattics Freddie Mac Multifamily Structured Pass Through Certificates Freddie Mac Multifamily Structured Pass Through Certificates Freddie Mac Gold Pool Freddie Mac Gold Pool Freddie Mac BEMICS Government National Mortgage Association Freddie Mac REMICS Ginnie Man Remic Man		2 3		9511	157	N/A	3511	157	
Financial assets at fair value through other   USS 134,948   NA	Confidences   Comprehensive and monutation assets at fair value through other   China   Chin	Weispage & Co.  Wespae Banking Corp.  Goldman Sacks Group, Inc.  Commonwealth Bank of Australia  National Australia Bank  Bank of Nova Scotia  Industrial and Commercial Bank of China  Government bond  United States Treasury Floating Rate Note  Abu Dhabi Government International Bond  United States Treasury Bill  Qatar Government International Bond  Agency bonds/Agency mortgage-backed securities  Freddic Mae REMICS  Famic Mae REMICS  Famic Mae Nultifamily Structured Pass Through Certificates  Freddic Mae Strips  Freddic Mae Strips  Freddic Mae REMICS  Government National Mortgage Association  Freddic Mae REMICS	•	T	•	957	170 041	V/N		151	
Financial assets at fair value through other   USS 99,987   N/A	Certificates	Protograe Banking Corp.  Westpac Banking Corp. Goldman Sachs Group, Inc. Commonwealth Bank of Australia National Australia Bank Bank of Nova Scotia Industrial and Commercial Bank of China Government bond United States Treasury Note/Bond United States Treasury Ploating Rate Note Abu Dhabí Government International Bond United States Treasury Bill Qatar Government International Bond United States Treasury Bill Qatar Government International Bond Freddie Mae REMICS Freddie Mae REMICS Government National Mortgage Association Freddie Mae Strips Freddie Mae Roll Pool Freddie Mae Roll CS Government National Mortgage Association Freddie Mae Roll Pool Freddie Mae Roll Pool Freddie Mae Roll Pool Freddie Mae ReMICS Government National Mortgage Association Freddie Mae ReMICS Government National Mortgage Association Freddie Mae ReMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae		Financial assets at amortized cost		220	149,941	V/A		00,065	
Certificates  Ce	Certificates   Cert	Westpace Banking Corp. Goldman Sachs Group, Inc. Commonwealth Bank of Australia National Australia Bank of Australia Bank of Nova Scotia Industrial and Commercial Bank of China Government bond United States Treasury Note/Bond United States Treasury Ploating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond United States Treasury Bill Agency bonds/Agency mortgage-backed securities Freddie Mae REMICS Fannie Mae REMICS Fannie Mae Multifamily Structured Pass Through Certificates Freddie Mae Cold Pool Freddie Mae Cold Pool Freddie Mae Cold Pool Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Freddie Mae II Pool		"	•	\$20	124,948	N/A		07/70	
1	Certificates	Goldman Sachs Group, Inc. Commonwealth Bank of Australia National Australia Bank Bank of Nova Scotia Industrial and Commercial Bank of China Government bond United States Treasury NoteBond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Famie Mae REMICS Freddie Mac Mac Multifamily Structured Pass Through Certificates Freddie Mac Solips Freddie Mac Mac Old Pool Freddie Mac ROId Pool Freddie Mac ROID S Government National Mortgage Association Freddie Mac ROID Pool Freddie Mac ROID Pool Freddie Mac ROID Pool Freddie Mac ROID Pool Freddie Mac REMICS Government National Mortgage Association Freddie Mac II Pool Freddie Mac II Pool Femine Mae II Pool		"		\$SO	186,66	N/A		70,111	
1	Financial assets at fair value through other   USS 49.994   NA   USS 50,010	Commonwealth Bank of Australia  National Australia Bank Bank of China Bank Ornwer Socia Industrial and Commercial Bank of China  Government bond United States Treasury Note/Bond United States Treasury Floating Rate Note Abu Dhah Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Fannie Mae REMICS Freddie Mac Refin Strup Freddie Mac Strip Freddie Mac Strips Freddie Mac Strips Freddie Mac Strips Freddie Mac Strips Freddie Mac Bool Freddie Mac Refin Structured Pass Through Certificates Freddie Mac Strips Freddie Mac Strips Freddie Mac Bool Freddie Mac Bool Freddie Mac Bool Freddie Mac Holos		"		\$SO	006,66	N/A	_	00,103	
Certificates   Cert	Financial assets at fair value through other   USS 49,994   N/A   USS 50,000	Bank of Nova Scotia Industralia Bank Bank of Nova Scotia Industrial and Commercial Bank of China  Government bond United States Treasury Floating Rate Note Abu Dhabit Government International Bond United States Treasury Ball Qatar Government International Bond United States Treasury Ball Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Famile Mac REMICS Famile Mac REMICS Freddie Mac Strip Freddie Mac Strip Freddie Mac Strip Freddie Mac Cold Pool Freddie Mac RONG Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Ginnie Mac II Pool Frenchie Mac	stralia	"	•	\$SO	46,664	N/A		50,037	
Financial assets at fair value through other   USS   19976   N/A	Financial assets at fair value through other   USS 287,628   N/A   USS 19,007	Bank of Nova Scotia Industrial and Commercial Bank of China  Government bond United States Treasury Note/Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Famic Mac REMICS Famic Mac REMICS Freddie Mac Multifamily Structured Pass Through Certificates Freddie Mac Strip Freddie Mac Gold Pool Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS		"		\$SO	46,664	N/A		50,010	
Financial assets at fair value through other   USS   287,628   N/A	Certificates   Financial assets at fair value through other   USS 287628   N/A   USS 287628   N/A   USS 287628   N/A   USS 287628   N/A   USS 2408   N/A   USS 2418	Industrial and Commercial Bank of China  Government bond United States Treasury Note Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Ageney bonds/Ageney mortgage-backed securities Freddie Mac REMICS Frantie Mae REMICS Government National Mortgage Association Freddie Mae Strips Freddie Mae Strips Freddie Mae Cold Pool Freddie Mae Cold Pool Freddie Mae ROMICS Government National Mortgage Association Freddie Mae ROMICS Government National Mortgage Association Freddie Mae ROMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Femine Mae II Pool Femine Mae II Pool		"		\$SO	49,976	N/A		50,077	
Financial assets at fair value through other   USS 287,628   N/A	Financial assets at fair value through other   Cuss   68.164   N/A   Cuss   Comprehensive income   Comprehensive income   Comprehensive income   Cuss   Cu	Government bond United States Treasury Note-Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mae REMICS Fannie Mae REMICS Government National Mortgage Association Freddie Mae Strips Freddie Mae Strips Freddie Mae Strips Freddie Mae Gold Pool Freddie Mae ROMICS Government National Mortgage Association Freddie Mae ROMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool French Mae II Pool French Mae II Pool French Mae II Pool French Mae	ank of China	"	•	\$SO	966,6	N/A		000,01	
Financial assets at fair value through other   USS   287,628   N/A	Financial assets at fair value through other   Cuss   287,628   N/A   Cuss   287,628	Government bond United States Treasury Note/Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/agency mortgage-backed securities Freddie Mae REMICS Famile Mae REMICS Famile Mae Remit Strip Freddie Mae Strip Freddie Mae Cold Pool Freddie Mae Cold Pool Frendie Mae ReMICS Government National Mortgage Association Freddie Mae Cold Pool Freddie Mae Cold Pool Freddie Mae Cold Pool Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Freddie Mae II Pool Freddie Mae									
Financial assets at fair value through other   USS 287,628   N/A	Financial assets at fair value through other   -   USS   287,628   N/A   USS   287,628   S8,164   S8, 628   S8,164   S8, 62,164   S8, 68,164   S8,	United States Treasury Note/Bond United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Fannie Mae REMICS Government National Mortgage Association Freddie Mac Multifamily Structured Pass Through Certificates Freddie Mac Strips Freddie Mac Gold Pool Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Ginnie Mae II Pool Freddie Mac II Pool Fannie Mae II Pool									
Certificates  - Comprehensive moone - Comprehensive moone - Comprehensive moone - Comprehensive moone - Comprehensive income - Comprehens	Certificates  - USS 68,164 N/A USS 68,164  - USS 3,408 N/A USS 3,408  - USS 2,248 N/A USS 2,248  - USS 1,315 N/A USS 2,248  - USS 1,315 N/A USS 1,315  - USS 33,767 N/A USS 33,767  - USS 33,767 N/A USS 33,767  - USS 33,767 N/A USS 1,319  - USS 1,319 N/A USS 1,319  - USS 1,319 N/A USS 1,319  - USS 1,319 N/A USS 1,319  - USS 1,339 N/A USS 1,339  - USS 1,341  - USS 1,341	United States Treasury Floating Rate Note Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Government National Mortgage Association Freddie Mac Multifamily Structured Pass Through Certificates Freddie Mac Surjps Freddie Mac Gold Pool Freddie Mac Gold Pool Freddie Mac Gold Pool Freddie Mac PRICS Government National Mortgage Association Freddie Mac PRICS Government National Mortgage Association Freddie Mac II Pool	Bond -	Financial assets at fair value through other			287,628	N/A		87,628	
Financial assets at fair value through Profit or   USS   33,767   N/A	Financial assets at fair value through other   USS 13,468   N/A   USS 13,468   N/A   USS 13,167   USS 13,16	United States Treasury Floating Kate Note Abu blist Government International Bond United States Treasury Bill Qatar Government International Bond  Agency bonds/Agency mortgage-backed securities Freddie Mae REMICS Government National Mortgage Association Fannie Mae Interest Strip Freddie Mae Strips Freddie Mae Strips Freddie Mae Strips Freddie Mae Gold Pool Freddie Mae Gold Pool Freddie Mae REMICS Government National Mortgage Association Freddie Mae ReMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Fannie Mae II Pool Fannie Mae II Pool Fannie Mae II Pool		comprehensive income		9		*****			
Financial assets at fair value through Profit or   USS   1,315   N/A	Financial assets at fair value through Profit or   USS   1,315   N/A   USS   1,315	Abu Dhabi Government International Bond United States Treasury Bill Qatar Government International Bond Agency bonds/Agency mortgage-backed securities Freddie Mae REMICS Famile Mae REMICS Government National Mortgage Association Freddie Mae Multifamily Structured Pass Through Certificates Freddie Mae Pool Freddie Mae Cold Pool Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Freddie Mae REMICS	ing Kate Note	"		CSS CISS	68,164	V/A		58,164	
Financial assets at fair value through Profit or	Financial assets at fair value through Profit or	United States Treasury Bill Qatar Government International Bond  Agency bonds/Agency mortgage-backed securities Freddie Mac REMICS Government National Mortgage Association Fraddie Mac Multifamily Structured Pass Through Certificates Freddie Mac Strips Freddie Mac Gold Pool Freddie Mac Gold Pool Freddie Mac REMICS Government National Mortgage Association Freddie Mac REMICS Ginnie Man It Pool French Mac It Pool Fanish Mac It Pool	rnational Bond	"	•	\$\$O	3,408	V/A	\$SO	3,408	
Financial assets at fair value through Profit or	Financial assets at fair value through Profit or   USS   47,996   N/A   USS   1,315   N/A   USS   1,320   N/A   USS   1,330   USS   USS   1,310   USS	Agency bonds/Agency mortgage-backed securities Freddie Mae REMICS Government National Mortgage Association Framie Mae Interest Strip Freddie Mae Mae Multifamily Structured Pass Through Certificates Freddie Mae Surips Freddie Mae Ool Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae I Pool Freddie Mae I Pool Freddie Mae I Pool Freddie Mae I Pool		"	•	\$\$O	2,248	V/A	\$SO	2,248	
Financial assets at fair value through Profit or   USS   47,996   N/A	Financial assets at fair value through Profit or   USS   47,996   N/A   USS   47,996   VA   USS   37,67   VA   USS   37,67   VA   USS   37,67   VA   USS   37,67   VA   USS   1,899   VA   USS   1,380   VA   USS   1,340   USS	Agency bonds/Agency mortgage-backed securities Freddie Mae REMICS Government National Mortgage Association Freddie Mae Interest Strip Freddie Mae Strips Freddie Mae Strips Freddie Mae Strips Freddie Mae Strips Freddie Mae Gold Pool Freddie Mae Rold Pool Freddie Mae Rold Pool Freddie Mae Rold Pool Freddie Mae Rold Pool Freddie Mae ReMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Freddie Mae II Pool	nal Bond	"	•	\$SO	1,315	N/A	SSO	1,315	
Financial assets at fair value through Profit or   USS   47,996   N/A	Financial assets at fair value through Profit or	Freddie Walk REMICS Freddie Mae REMICS Fannie Mae REMICS Government National Mortgage Association Freddie Mae Interest Strip Freddie Mae Strips Freddie Mae Pool Freddie Mae Cold Pool Freddie Mae ReMICS Government National Mortgage Association Freddie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Freddie Mae II Pool	boolead committee								
Loss	Certificates	Famie Mae REMICS Government National Mortgage Association Famie Mae Interest Strip Freddie Mae Multifamily Structured Pass Through Certificates Freddie Mae Strips Freddie Mae Gold Pool Famie Mae REMICS Government National Mortgage Association Freddie Mae II Pool Freddie Mae II Pool Freddie Mae REMICS	sage-packed securines	Financial assets at fair value through Profit or	٠	8511	47 996	Ą		17 996	
1	Comprehensive income	Fannie Mae REMICS  Government National Mortgage Association Francie Mae Interest Strip Freddie Mae Mulifamily Structured Pass Through Certificates Freddie Mae Strips Fannie Mae Pool Freddie Mae Gold Pool Famile Mae REMICS Government National Mortgage Association Freddie Mae II Pool French Mae II Pool Famile Mae II Pool		Loss		3	2,,,,	*****		2000	
rough Certificates	rough Certificates - 1	Government National Mortgage Association Famile Mae Interest Strip Freddie Mae Multfamily Structured Pass Through Certificates Freddie Mae Surps Freddie Mae Gold Pool Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Famile Mae II Pool	•		•	\$SO	33,767	N/A		33,767	
rough Certificates	rough Certificates -	Frantie Mae Interest Strip Freddie Mae Multifamily Structured Pass Through Certificates Freddie Mae Pool Freddie Mae Gold Pool Freddie Mae Rold Pool Freddie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Fannie Mae II Pool	age Association	"	•	\$SO	24,518	N/A		24,518	
rough Certificates	rough Certificates -	Freddie Mae Multifamily Structured Pass Through Certificates Freddie Mae Strips Fannie Mae Pool Freddie Mae Cold Pool Fannie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Grünie Mae II Pool Fannie Mae		"	•	\$SO	1,859	N/A	\$SO	1,859	
Financial assets at fair value through other   US\$ 1,380 N/A	Financial assets at fair value through other - USS 1,380 N/A USS 1,380	Freddie Mae Strips Famite Mae Pool Freddie Mae Gold Pool Fannie Mae REMICS Government National Mortgage Association Freddie Mae I Pool Famite Mae II Pool Famite Mae RemicS	uctured Pass Through Certificates	"		\$SO	1,713	N/A	\$SO	1,713	
Financial assets at fair value through other   USS   398,735   N/A	Financial assets at fair value through other   CSS   398,735   N/A   CSS   398,735   Comprehensive income   CSS   133,948   CSS   133,948   CSS   133,948   CSS	Fannie Mae Pool  Freddie Mae Gold Pool Famie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Famie Mae		"		\$SO	1,380	N/A	\$SO	1,380	
comprehensive income  - USS 133,948 N/A  - USS 131,341 N/A  - USS 12,336 N/A  - USS 12,050 N/A  - USS 112,050 N/A  - USS 51,015 N/A  - USS 27,141 N/A	comprehensive income  - USS 133,948 N/A USS 133,948  - USS 131,341 N/A USS 131,341  - USS 128,36 N/A USS 128,26  - USS 128,36 N/A USS 12,036  - USS 27,141 N/A USS 27,141	Freddie Mac Gold Pool Fannie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Fannie Mae		Financial assets at fair value through other	•		398,735	N/A		98,735	
- USS 133,948 N/A - USS 131,941 N/A - USS 131,341 N/A - USS 121,341 N/A - USS 122,346 N/A - USS 122,346 N/A - USS 122,346 N/A - USS 12,141 N/A	- USS 133,948 N/A USS 133,948 - USS 133,948 - USS 133,948 N/A USS 133,948 - USS 133,948 N/A USS 133,448 USS 133,44	Freddie Mac Gold Pool Fannie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Fannie Mae		comprehensive income							
- USS 131,341 N/A - USS 128,236 N/A - USS 128,236 N/A - USS 112,0550 N/A - USS 51,015 N/A - USS 51,015	- USS 131,341 N/A USS 131,341 - USS 128,236 N/A USS 128,236 - USS 112,550 N/A USS 112,050 - USS 112,050 N/A USS 12,015 - USS 27,141 N/A USS 27,141	Fannie Mae REMICS Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Fannie Mae	•	"	•		133,948	N/A		33,948	
- USS 128,236 N/A - USS 112,050 N/A - USS 112,050 N/A - USS 51,015 N/A - USS 51,015 N/A - USS 27,141 N/A	- USS 128,236 N/A USS 128,236 - USS 112,050 N/A USS 112,050 - USS 112,050 N/A USS 112,050 - USS 27,141 N/A USS 27,141	Government National Mortgage Association Freddie Mae REMICS Ginnie Mae II Pool Fannie Mae		"	•		131,341	N/A		31,341	
. USS 112,050 N/A . USS 51,015 N/A . USS 51,015 N/A . USS 27,141 N/A	- USS 112,050 N/A USS 112,050 N/A USS 112,050 N/A USS 112,050 N/A USS 27,141 N/A USS 27,141 N/A USS 27,141	Freddie Mae REMICS Gimine Mae II Pool Fanise Mae	age Association	"	•		128,236	N/A		28,236	
- USS 51,015 N/A - USS 27,141 N/A	- USS 51,015 N/A USS 51,015 - USS 27,141 N/A USS 27,141 - USS 27,141 N/A USS 27,141	Ginnie Mae II Pool Fannie Mae		"	•		112,050	N/A		12,050	
- USS 22,141 N/A	. " USS 27,141 N/A USS 27,141 N/A USS 27,141	Fannie Mae		"		\$SO	51,015	N/A		51,015	
				"		\$SO	27,141	N/A		27,141	
	(American )										

Hold Compuny Name  Marketable Securities Type and Name  Relationship with the Comp  Fredde Mac Not Gold Pool  Fredde Mac Multifamily Structured Plass Through Certificates  Province of Quebec Canada  Fredde Mac Multifamily Structured Plass Through Certificates  Province of Quebec Canada  Fredde Mac Multifamily Structured Plass Through Certificates  Province of Quebec Canada  Fredde Mac Prool  Koolooo-Canoto Makey Corp  Frederal Horne Loan Morginge Association  NCUA, Guaramed Aloringe Trast 2018-R1  Frederal Horne Loan Morginge Association  NCUA, Guaramed Morginge Trast 2018-R1  Freder Certificates  Critishank Credit Card Irast  Anoritan Expense Credit Account Master Trast A  Broscore Credit Foorplan Master Owner Trast A  Hyandia Anto Receivables Trast 2018-R1  Evel Credit Card Irast  Missan Master Owner Trast Receivable  Crophal Credit Foorplan Master Owner Trast 2018-R1  Broomereial Morginge Trast 2018-R1  Evel Control Morginge Trast 2018-R1  Evel Control Morginge Trast 2018-R1  Frod Credit Morginge Trast 2018-R1  Frod Credit Mato Owner Trast 2018-R1  Frod Credit Mato Owner Trast 2018-R1  Frod Credit Mato Owner Trast 2018-R1  Frod Control Morginge Trast 2018-R1  Frod Control Morging Trast 2018	Relationship with the Company  CO  CO  Fina  Fina  CO  CO  CO  CO  CO  CO  CO  CO  CO  C	Financial Statement Account Financial assets at fair value through other comprehensive income "" "" "" "" "" "" "" "" "" "" "" "" ""	Shares/Units (In Thousands)	Cearrying Value           for Order         for Thousands)           in Thousands)         USS           USS         16,081           USS         2,584           USS         2,514           USS         2,514           USS         1,486           USS         891           USS         822           USS         832           USS         832           USS         554           USS         370           USS         335           USS         132           USS         15           USS         15           USS         15           USS         15           USS         15           USS         43,604	Carrying Value in Thousands) USS 16,081 USS 2,584 USS 2,584 USS 2,514 USS 2,514 USS 891 USS 891 USS 892 USS 892 USS 870	Percentage of Owners hip (%)    N/A	(Foreign Current in Thousands) in Thousands) in Thousands) in Thousands) USS 16,081 USS 2,534 USS 891 USS 891 USS 554 USS 554 USS 554 USS 1335 USS	Fair Value     In Thousands     In Thousands     USS   16,081     USS   2,684     USS   2,544     USS   2,514     USS   891     USS   842     USS   844     USS   335     USS   43,644     USS     USS   43,644     USS     USS   43,644     USS     USS	Note
	Fina 600	noial assets at fair value through other  " " " " " " " " " " " " " " " " " "		\$\$0 \$\$0 \$\$0 \$\$0 \$\$0 \$\$0 \$\$0 \$\$0 \$\$0 \$\$0	16,081 5,796 2,584 2,584 2,514 1,486 891 891 842 632 500 370 335 132 15		\$\$\$0.000 \$\$\$0.0000 \$\$\$0.000 \$\$\$0.000 \$\$\$0.000 \$\$\$0.000 \$\$\$0.000 \$\$\$0.000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.0000 \$\$\$0.00	16,081 5,796 2,684 2,554 2,514 1,486 891 891 842 632 554 500 370 335 132 15 16,887 43,604	
Fredelie Mae von Gold Pool Fredelie Mae withfraining Smeutured Prass Through Certificates Fredelie Mae Multifraining Smeutured Prass Through Certificates Fredelie Mae Multifraining Smeutured Prass Through Certificates Fredelie Mae Multifraining Smeutured Prass Through Certificates Frederal Farm Credit Banks NUCLA Guaranteed Notes Trust 2010-R2 Gramma Mee I Prod Loan Mortgage Corp Frederal Horne Loan Mortgage Association NUCLA Guaranteed Notes Trust 2010-R1 Fredelie Mae  Asset-backed securities Chichank Certif Card Issuance Trust Fredelie Mae  Asset-backed securities Chichank Certif Card Issuance Trust Chase Issuance Trust Anneriant Express Credit Account Master Trust Discover Card Execution Note Trust Ford Credit Flooplan Master Owner Trust 2018-R3 BA Cedit Card Trust Nissan Master Owner Trust 2018-R3 BA Cedit Card Trust Nissan Master Owner Trust 2018-R5 BE Commercial Mortgage Trust 2018-R1 BEGMS 2018-TALL Mortgage Trust 2018-R1 BONK 2017-BNKS BANK 2017-BNKS	Fina	nipericus ve incone  " " " " " " " " " " " " " " " " " "		820 0 820 0	5,796 2,684 2,554 2,554 1,486 891 891 842 632 554 500 370 335 132 15		S S S S S S S S S S S S S S S S S S S	5.796 2.684 2.554 2.554 1.486 891 842 632 554 500 370 335 132 15 43,604	
Freddie Mare Monfold Pool Freddie Mare Monfold Pool Freddie Mare Monfold Pool Freddie Mare Monfold Broad Freddie Fram Credit Banks NCUA Guarmateed Notes Trust 2010-R2 Ginnie Mar I Pool Ginnie Mar I Pool Kowloort-Canton Raulway Corp Frederal Horner Loun Mongage Association Frederal Horner Loun Mongage Corp Frederal Horner Loun Mongage Trust 2010-R1 Freddie Mare Frederal Horner Loun Mongage Trust 2010-R1 Freddie Mare Frederal Horner Trust Rederal Mongage Trust 2011-BIOC Clabank Credit Card Trust Discover Card Execution Note Trust Freddie Mare Recorpium Master Owner Trust 2018-R1 BA Credit Card Trust Mongage Trust 2018-R1 BA Credit Card Trust Mongage Trust 2018-R1 BEGNES 2018-Trust Receivables Nissan Master Owner Trust 2016-RB Frod Credit Auto Owner Trust 2016-RB Frod Credit Auto Owner Trust 2016-RB Frod Credit Mare Commercial Mongage Trust 2016-RB Frod Credit Mare Owner Trust 2016-RB Frod Credit Mare Owner Trust 2016-RB Frod Credit Mare Commercial Mongage Securities Trust UBS Commercial Mongage Securities Trust 2014-DP Frod Credit Mare Commercial Mongage Securities Trust Subagam Changage Securities Trust Go Mongage Securities Comp II GO Mongage Securities Comp II GO Mongage Securities Comp II GO Man 2018-Credit Mare Commercial Mongage Trust Commercial Mare Commercial Mongage Trust Commercial Mare Commercial Mongage Trust GO Man 2018-Credit Mare Commerc	Fina	" " " " " " " " " " " " " " " " " " "		0.88	2,684 2,554 1,486 891 842 632 500 370 335 132 15 43,604	\$\frac{4}{2} \frac{4}{2}	88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2,684 2,554 2,554 1,486 891 842 632 554 500 370 370 335 132 132 15 43,604	
Freddie Mae Maltifamly Structured Pass Through Certificates Province of Quebec Canada HHANCOMAA Federal Farm Credit Banks NCU, Guaranteed Notes Trust 2010-R2 Ginnie Mae I Pool Kowloon-Canno Balway Cop Federal National Mortgage Association NCU, Guaranteed Notes Trust 2010-R1 Franche Mee Benchmark REMIC Freddie Mae Asset-backed securities Citchauk Credit Card Issuance Trust Chase Issuance Trust American Express Credit Account Master Trust A American Express Credit Account Master Trust A American Express Credit Account Master Trust A Musican Baster Owner Trust Receivables Citchauk Cardel Enophia Master Owner Trust A Hyundai Auto Receivables Trust 2018-B B A Credit Card Trust Stotis-B B X Commercial Mortgage Trust 2011-BIOC Capital Cowner Cannow Trust 2016-B Ford Credit Auto Owner Trust 2017-BP Ford Sommercial Mortgage Securities Trust 2016-B Ford Sommercial Mortgage Securities Trust 2016-B Ford Credit Auto Owner Trust 2017-BP Ford Sommercial Mortgage Securities Trust 2016-B Ford Credit Auto Owner Trust 2017-BP Ford Sommercial Mortgage Securities Trust 2016-B Ford Sommercial Mortgage Securities Trust 2016-B Ford Sommercial Mortgage Securities Trust 2016-B Ford Credit Auto Owner Trust 2017-BP Ford Sommercial Mortgage Trust 2016-B Ford Sommercial Mortgage Trust 2016-B Ford Sommercial Mortgage Trust 2017-BP Ford Sommercial Mortgage Trust 2018-C10	Fina	"" "" "" "" "" "" "" "" "" "" "" "" ""		820 820 820 820 820 820 820 820 820 820	2,554 2,514 1,486 891 891 892 632 554 500 370 335 132 13 43 604	<pre></pre>	S S S S S S S S S S S S S S S S S S S	2,554 2,514 1,486 842 632 632 554 500 370 370 335 132 132 132 132	
Province of Quebec Canada  HILMC-GNMA  Federal Farm Credit Banks  NCUA Guaranteed Notes Trust 2010-R2  Ginnie Mae I Pool  Kowloon-Canton Railway Corp  Federal Horne Lond Morgage Credit  Kowloon-Canton Railway Corp  Federal Horne Lond Morgage Credit  Federal Horne Lond Morgage Credit  Federal Horne Lond Morgage Credit  Fradie Masse Dendermark REMIC  Fradie Masse Dendermark REMIC  Fradie Masse Benchmark REMIC  Fradie Statume Trust Statume Trust  Chase Issuance Trust  Chase Issuance Trust  Chase Issuance Trust  Chase Issuance Trust A  Hyundai Auto Receivables Trust 2018-B  BA Credit Card Issuance Trust 2018-B  BA Credit Card Issuance Trust 2016-B  INSSAM Master Owner Trust 2017-BIOC  Capital One Multi-Asset Execution Note Trust A  Hyundai Auto Receivables Trust 2018-B  RA Conmercial Morgage Trust 2018-B  Ford Credit Auto Owner Trust 2016-REV1  BROWS 2017-BNK  Chesapeake Funding II LLC  Morgan Statley Bank of America Marfill Lynch Trust 2013-IP7  J.P Morgan Statley Bank of America Marfill Lynch Trust 2015-REV1  BANK 2017-BNK  Solt-BNK Solt-BNK  BANK 2017-BNK  BANK 2017-BNK  BANK 2017-BNK  Solt-BNK  BANK 2017-BNK  BANK 2017-BNK  Solt-BNK  Solt	Fina	" " " " " " " " " " " " " " " " " " "		820 0 820 0	2,514 1,486 891 891 842 632 554 500 370 335 132 15 43 604	4     4 <td>SS 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td> <td>2,514 1,486 891 891 842 632 554 500 370 335 132 15 43,604</td> <td></td>	SS 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2,514 1,486 891 891 842 632 554 500 370 335 132 15 43,604	
Federal Farm Credit Banks  NCUA Guarnanech Notes Trast 2010-R2  Guinie Mael Pool  Kowloon-Cation Railway Corp  Federal Home Loan Morgage Corp  Federal Loan-Cation Railway Corp  Federal Loan-Cation Railway Corp  Federal Loan-Cation Railway Corp  Freddie Mae  Asset-banked seamilies  Citchen Credit Card Issuance Trust  Chase Issuance Trust  American Express Cedit Account Master Trust  Discover Card Excention Note Trust A  Hyundan Auto Receivables Trust 2018-B  BA Credit Card Trust Receivables  CGDBB Commercial Morgage Trust 2017-BBIOC  Captiol Cow Multi-Asset Secution Trust  BRX Commercial Morgage Trust 2018-BB  RX Commercial Morgage Trust 2018-BB  RX Commercial Morgage Trust 2018-BB  RX Commercial Morgage Trust 2018-BB  RAC Cation Ano Owner Trust 2016-BB  Ford Cedit Auto Owner Trust 2018-RVI  BRANK 2017-BRKS  BANK 2017-BRKS  GOM BOORGE Trust 2016-BB  COM BOORGE Trust 2016-BB  COM BOORGE Trust 2016-BB  COM SON PROMER SON TRUST AND PROME  COMMADOLS COMMERCE SON PROMER TRUST AND PROMERCE SON PROMERCE	Fina	" " " " " " " " " " " " " " " " " " "		0.88 USS USS USS USS USS USS USS USS USS U	1,486 891 842 632 554 500 370 335 132 15 43 604	<pre>&lt; &lt; &lt;</pre>	SS	1,486 891 891 842 632 554 500 370 335 132 15 43,604	
Federal Farm Cecht Banks  NCUA Guaranteed Notes Trast 2010-R2  Giminic Mate 1 Pool  Kowloon-Canton Railway Corp  Federal Houte Loam Morgage Corp  Fredgie Mae  Asset-backed securities  Cithaun Credit Card Trast  American Express Credit Account Master Trust  Discover Card Excention Note Trast  American Express Credit Account Master Trust  By Credit Card Trust  American Express Credit Account Master Trust  By Commercial Morgage Trust 2017-BIOC  Capital One Multi-Asset Excention Trust 2018-B  By Credit Card Trust  By Commercial Morgage Trust 2017-BIOC  Capital One Multi-Asset Excention Trust 2016-REV1  BECAS 2018-TALL Morgage Trust 2016-REV1  BECAS 2018-TALL Morgage Trust 2016-REV1  Ford Credit Auto Owner Trust 2016-REV1  Volvo Financial Equipment Master Owner Trust 2016-REV1  Volvo Financial Equipment Master Owner Trust 2016-REV1  BANK 2017-BINKS  Go Mortagage Scentries Computer Control Con	Fina	" " " " " " " " " " " " " " " " " " "		\$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30	891 842 632 632 504 500 370 335 132 15 43 604	<pre>&lt; &lt; &lt;</pre>	880 880 880 880 880 880 880 880 880 880	891 842 632 554 500 370 335 132 15 68,487	
NOCUA Guaranteed Notes Trust 2010-R2  Ginnie Mae I Pool  Kowloon-Carlon Railway Corp  Federal Horne Loam Mortgage Association  NCIA Guaranteed Notes Trust 2010-R1  Frantie Mae Benchmark REMIC  Freddie Mae  Asset-backed secunities  Cribank Credit Card Issuance Trust  Chase Issuance Trust  Chase Issuance Trust  Chase Issuance Trust  Chase Issuance Trust  American Express Credit Account Master Trust  Discover Card Execution Note Trust  Ford Credit Foopplan Master Owner Trust 2018-B  BA Credit Card Trust  Ford Credit Card Trust  CGDBB Commercial Mortgage Trust 2017-BIOC  Capital One Multi-Asset Execution Trust 101-B  Ford Credit Auto Owner Trust 2016-RIV1  BBCMS 2018-TALL Mortgage Trust 2018-TNI  Ford Credit Auto Owner Trust 2016-RIV1  Ford Credit Auto Owner Trust 2017-RIV1  Ford Stormer Securities Trust 2017-ID7  Ford Will Securities Trust 2017-ID7  Ford Mortan Securities Trust 2017-ID7  Ford Mortan Securities Trust 2017-ID7  Ford Mortan Securities Commercial Mortgage Trust 2018-CIO  Ford Mortan Securities Trust 2017-ID7  Ford Mortan Secu	Fina	" " " " " " " " " " " " " " " " " " "		\$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30	842 632 554 500 370 335 132 15 43 604		880 880 880 880 880 880 880 880	842 632 534 500 370 335 132 15 68,487	
Gimine Mae I Pool  Kowloon-Canton Railway Corp Federal Mational Morgage Corp Federal National Morgage Corp Federal National Morgage Corp Federal National Morgage Corp Federal National Morgage Association NCUA Guarene Mational Morgage Corp Federal National Morgage Association MCUA Guarene Staumor Trat 2010-R1 Frantie Mae Benchmark REMIC  Assel-backed securities Chase I Suamor Trat Spread Trust Chase I Suamor Trat Spread Trust Discover Card Exception Note Trust American Express Credit Account Master Trust Discover Card Exception Note Trust Ford Cedit Floorplan Master Owner Trust 2018-B B A Codit Card Trust Nissan Master Owner Trust 2018-B B A Codit Card Trust Nissan Master Owner Trust 2016-B Ford Cedit Auto Owner Trust 2016-B Ford Cedit Auto Owner Trust 2016-B Ford Cedit Auto Owner Trust 2016-REV1 BBCMS 2018-TALL Mortage Trust Chesppeake Funding II LLC Morgan Stauley Commercial Mortage Securities Trust 2011-UP7 I.P. Morgan Chase Commercial Mortage Securities Trust 2016-WMK BANK 2017-BMK Commercial Mortage Securities Trust Colon Storage Forust 2016-B Cold Storage Frust 2016-B Cold Storage Frust 2017-CE3 Cold Storage Frust 2017-CE3 Cold Storage Frust 2017-CE3 COMM 2015-CEAS Mortage Trust CONM 2015-CEAS Mortage Trust CONM 2015-CEAS Mortage Trust CONM 2015-CEAS Mortage Trust CONM 2015-CEAS Mortage Scourities Trust Colon Matter 2017-CE3 Cold Storage Frust 2017-CE3 Cold Storage Frust 2017-CE3	Fina	" " " " " " " " " " " " " " " " " " "		\$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30	632 554 500 370 335 132 15 68,487		880 880 880 880 880 880	632 554 500 370 335 132 15 68,487 43,604	
Evolution Palitivary Corp	Fina	" " " " " " " " " " " " " " " " " " "		880 880 880 880 880 880 880 880 880 880	554 500 370 335 132 15 68,487	<u> </u>	880 880 880 880 880 880	554 500 370 335 132 15 68,487 43,604	
Federal Home Loan Mortgage Corp Federal National Mortgage Association NCUA Guaranteed Notes Trust 2010-R1 Fraddie Mac Asset-backed securities Chase Issuance Trust American Expect Credit Account Master Trust Discover Card Execution Note Trust Ford Credit Rooplan Master Owner Trust A Hyundia Accept Trust Colt-BB B A Credit Card Trust Receivables Trust 2018-B B A Credit Card Trust Capital One Multi-Asset Execution Trust B X Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust B X Commercial Mortgage Trust 2016-REV1 BBCMS 2018-TALL Mortgage Trust Chesapeake Funding ILLC Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Cedit Auto Owner Trust 2016-REV1 BBCMS Commercial Mortgage Securities Trust 12017-B7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2017-BNK BANK 2017-BNK BANK 2017-BNK Solo-WIKI BANK 2017-BNK Solo-WIKI Commercial Mortgage Securities Trust 1 Cold Stonger Trust 2016-B Cold Stonger Trust 2017-BT Cold Stonger Trust 2016-B Cold	Fina	" " " " " " " " " " " " " " " " " " "		\$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30	500 370 335 132 15 68,487	<u> </u>	0.88 0.088 0.088 0.088 0.088	500 370 335 132 15 68,487	
Federal National Mortgage Association  NUCL Gaustanted Notes Trust S100R1  Freddie Mac  Asset-backed securities  Chase Issuance Trust  Chase Issuance Trust  Anerican Express Credit Account Master Trust A  Hyundia Auto Recution Note Trust 2018-B  BA Credit Floorplan Master Owner Trust A  Hyundia Auto Recution Trust Receivables  CodDBB Commercial Mortgage Trust 2018-IND  UBS-Bardals Commercial Mortgage Trust 2018-IND  UBS-Bardals Commercial Mortgage Trust 2018-B  Ford Credit Auto Owner Trust 2016-BEV1  BROCK 2018-TALL Mortgage Trust 2018-IND  UBS Commercial Mortgage Trust 2018-IND  Volve Financial Equipment Master Owner Trust 2016-BEV1  BROCK Commercial Mortgage Securities Trust 2017-JP7  J. P. Morgan Credit Auto Owner Trust 2018-C10  JPMCC Commercial Mortgage Securities Trust 2018-C10  JPMC Commercial Mortgage Securities Trust 2018-C10  JPMC Sonder Trust 2018-B  Sond Songer Trust 2016-B  Cod Stonge Trust 2017-CLE  Cod Stonge Trust 2017-CLE  Cod Stonge Trust 2017-CLE  Cod Mortgage Securities Corp II  Cod Mortgage Securities Cod II  C	Fina Co	" " " " " ncial assets at fair value through other mprehensive income " " "		ssn nss nss nss nss nss	370 335 132 15 15 43 604	& & & & & & & & & & & & & & & & & & &	0.88 0.88 0.88 0.88 0.88	370 335 132 15 15 15 43,604	
NCUA Guaranteed Notes Trust 2010-R1 Fradde Mac  Fredde Mac  Asset-backed securities Chibana Credit Card Issuance Trust Chase Issuance Trust Discover Card Execution Note Trust Discover Card Execution Note Trust Ford Credit Poloplan Master Owner Trust A Hyundra Auto Receivables Trust 2018-B BA Credit Card Trust Instant And Auto Receivables Trust 2018-B BA Credit Card Trust BA Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-ND UBS-Barchys Commercial Mortgage Trust 2018-ND UBS-Barchys Commercial Mortgage Trust 2018-B Ford Credit Auto Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBOX 2017-LIL Mortgage Frust 2018-LIP Ford Credit Auto Owner Trust 2015-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust UBS Commercial Mortgage Securities Trust J.P. Morgan Chase Commercial Mortgage Securities Trust Cold Storage Trust 2017-LES GS Mortgage Securities Copp II COMM 2017-BNK6 Nassan Auto Lease Trust 2016-B Cold Storage Trust 2017-LES Cold Storage Trust 2017-LES COMMATOR SCOPTING COPP Trust COMMATOR Trust COMMATO	Fina Co	" " " nocial assets at fair value through other mprehensive income " "		ssn ssn ssn	335 132 15 68,487	4 4 4 4 X X X X	SS RS R	335 132 15 68,487 43,604	
Freddie Mae  Asset-backed securities Citibank Credit Card Issuance Trust Chase Issuance Trust Annerican Express Credit Account Master Trust Discover Card Execution Note Trust A Hyundia Live Receivables Trust 2018-B BA Credit Card Trust Anster Owner Trust Receivables CCDBB Commercial Mortage Trust 2017-BIOC Capital Condition Trust Receivables CCDBB Commercial Mortage Trust 2018-IND UBS-Barclays Commercial Mortage Trust 2018-IND UBS-Barclays Commercial Mortage Trust 2018-IND WBC Commercial Mortage Trust 2018-IND UBS-Barclays Commercial Mortage Trust 2018-IND WGC Capital Auto Owner Trust 2018-REVI BECMS 2018-TALL Mortage Trust 2018-B Ford Credit Auto Owner Trust 2018-REVI Chesapeake Funding II LLC Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2018-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortage Securities Trust 2017-IP7 JP Morgan Chase Commercial Mortage Securities Trust ColomA Auto Lease Trust 2014-BS Gold Storage Trust 2017-CE3 Gold Storage Trust 2016-B Coloma Storage Trust 2017-CE3 Coloma Storage Securities Comp Trust COMM 2017-BNK5 Securities Comp Trust 2015-CE3 Coloma Storage Trust 2016-B COMM 2017-BNK5	Fina	" " ncial assets at fair value through other mprehensive income "		\$SO \$SO \$SO \$SO \$SO \$SO \$SO \$SO \$SO \$SO	132 15 68,487 43,604	Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	\$SO \$SO \$SO	68,487 43,604	
Asset-backed securities Citibank Credit Card Issuance Trust Chase Issuance Trust American Express Credit Account Master Trust Discover Code Execution Note Trust Ford Credit Floorpha Master Over Trust A Hyundai Auto Receivables Trust 2018-B BA Credit Card Trust Nissan Master Owner Trust A Hyundai Auto Receivables Trust 2018-ND UBS-Bardusy Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-ND UBS-Bardusy Commercial Mortgage Trust 2016-RD Ever Credit Auto Owner Trust 2016-REVI BRCMS 2018-TalL. Mortgage Trust 2016-REVI BRCMS 2018-TalL. Mortgage Trust 2015-C10 Ford Credit Auto Owner Trust 2016-REVI Usly Commercial Mortgage Trust 2015-C10 Ford Credit Auto Owner Trust 2015-REVI Ford Commercial Mortgage Securities Trust 2017-JPP J.P. Morgan Chasc Commercial Mortgage Securities Trust 2018-CRES Mortgage Securities Comp II COMM 2017-BCRES Mortgage Trust 2018-CRES COMM 2015-CCREES Mortgage Trust 2018-CRES COMM 2015-CCRESS Mortgage Trust 2018-CRES COMM 2015-CCRESS Mortgage Trust 2018-CRES COMM 2018-CCRES Mortgage Trust 2018-CRES COMM 2017-GCRES COMM 2017-GC	Fina co	"  midal assets at fair value through other mprehensive income " "		\$SON	68,487	N/A	\$SO	68,487	
Asset-backed securities Citibank Credit Card Issuance Trust Chase Issuance Trust American Express Credit Account Master Trust Discover Card Execution Note Trust Hyunda Line Receivables Trust Securition Note Trust A Hyunda Line Receivables Trust 2018-B BA Credit Card Trust Receivables CGDBB Commercial Mortage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortage Trust 2018-IND UBS-Baracte Owner Trust 2016-BIND UBS-Baracte Owner Trust 2016-BIND UBS-Baracte Owner Trust 2016-BIND UBS-Baracte Trust 2016-BIND Cresapeade Funding II LLC Morgae Trust 2016-REVI Wooden Standey Barlot Master Owner Trust UBS Commercial Mortage Trust 2018-COMPACT Of Securities Trust 2016-WIKT BANK 2017-BINKS BANK 2017-BINKS GS Mortage Securities Trust 2016-WIKT Codd Storage Trust 2016-B Codd Sorage Trust 2016-B Codd Sorage Trust 2016-B Codd Sorage Trust 2016-B Codd Sorage Trust 2016-B COM SORAGE SANGARD SORAGE S	- Fina co	ncial assets at fair value through other mprehensive income "		\$SO	68,487	N/A	\$SN	68,487	
Citibank Credit Card Issuance Trust  Chase Issuance Trust  American Express Credit Account Master Trust Discover Card Execution Nore Trust Ford Credit Floorplan Master Owner Trust A Hyundai Auto Receivables Trust 2018-B BA Credit Card Trust Nissan Master Owner Trust Receivables CODBB Commercial Mortgage Trust 201-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 201-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBCMS 2018-ARLAL Mortgage Trust 2018-C10 Ford Credit Auto Owner Trust 2018-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust 2017-Jp7 JDI Morgan Chase Commercial Mortgage Securities Trust 2017-BNK BANK 2017-BNK BANK 2017-BNK BANK 2017-BNK San Auto Lease Trust 2016-B Cold Songer Trust 2016-B Cold Songer Trust 2016-B COMM 2015-CKRES Mortgage Trust CS Mortgage Securities Copp II COMM 2015-CKRES Mortgage Trust CS Mortgage Securities Copp II	- Fina co	ncial assets at fair value through other mprehensive income "		ssn nss	68,487	N/A	\$SO	68,487 43,604 42,144	
Chase Issuance Trust American Express Credit Account Master Trust Discover Card Execution Note Trust Eved Credit Floorplan Master Owner Trust A Hyundai Auto Receivables Trust 2018-B BA Credit Card Trust Inssan Master Owner Trust Receivables CCIDBB Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-B Mercedes-Benz Master Owner Trust 2016-REV1 BRCMS 2018-TALL Mortgage Trust 2016-REV1 BRCMS 2018-TALL Mortgage Trust Chesapeake Funding II LLC Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 UBS Commercial Mortgage Securities Trust UBS Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BINKS BANK 2017-BINKS BANK 2017-BINKS BANK 2017-BINKS BANK 2017-BINKS GS Mortgage Sceurities Cop III COMM 2018-CCRE25 Mortgage Trust COS Mortgage Sceurities Cop III		mprehensive income "		ns\$	43 604		4	43,604	
American Express Credit Account Master Trust Discover Card Execution Note Trust Ford Credit Floorplan Master Owner Trust A Hyundra i Auto Receivables Trust 2018-B BA Credit Card Trust Nissan Master Owner Trust Receivables CGDBB Commercial Morgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Morgage Trust 2018-BIO UBS-Bardays Commercial Morgage Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBCMS 2018-TALL Morgage Trust Chesapeake Funding II L.C Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2016-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Morgage Securities Trust 2016-WIKI BANK 2017-BNK 6 BANK 2017-BNK 6 BANK 2017-BNK 6 Songage Trust 2017-ICE3 GS Mortgage Securities Cop II COMM 2017-CKE25 Morgage Trust COS Mortgage Securities Cop II COS Mortgage		" "		022	4,00,4	*/.*	TICLE	45,604	
American Express Credit Account Master Trust Discover Card Execution Note Trust Ford Credit Floorplan Master Owner Trust A Hyundai Auto Receivables Trust 2018-B BA Credit Card Trust Nissan Master Owner Trust Receivables CGDBB Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-NND UBS-Barclays Commercial Mortgage Trust 2016-B Mercedes-Benz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBCMS 2018-TALL Mortgage Trust Chesapeake Funding II L.C Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust 2016-WIKI BANIK 2017-BNK5 BANIK 2017-BNK6 BOS Mortgage Securities Cop III COMM 2016-CCRES Mortgage Trust 2016-B COR Storage Trust 2017-ICE3 GS Mortgage Securities Cop III COMM 2018-CORES Mortgage Trust COS Mortgage Securities Cop III COS Mortgage Secu	•	**		6011		<b>V</b> /N	SSO.	77177	
Discover Card Execution Note Trust Ford Credit Foloplan Master Owner Trust A Hyundai Auto Receivables Trust 2018-B BA Credit Card Trust Nissan Master Owner Trust Receivables CGDBB Commercial Mortgage Trust 2017-BIOC Capital One Mutit-Asset Execution Trust BX Commercial Mortgage Trust 2018-LND UBS-Barclays Commercial Mortgage Trust 2018-CZ Ancetedes-Barz Master Owner Trust 2016-REVI BBCMS 2018-TALL Mortgage Trust Chesapeake Funding II LLC Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REVI UBS Commercial Mortgage Securities Trust UBS Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNKS BANK 2017-BNKS BANK 2017-BNKS BANK 2017-BNKS Cold Storage Trust 2017-ICC3 GS Mortgage Securities Cop II COMM 2015-CCRES Mortgage Trust COS Mortgage Securities Cop II			•	SSO.	42,144	N/A	SSO	47,14	
Ford Credit Floorplan Master Owner Trust A Hyundai Auto Receivables Trust 2018-B AA Credit Card Trust BA Credit Card Trust Receivables CGDBB Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2016-B Weredes-Bernz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REV1 BBCMS 2018-TALL Mortgage Trust 2016-REV1 BBCMS 2018-TALL Mortgage Trust 2016-REV1 BCM Credit Auto Owner Trust 2015-REV1 Chesapeake Funding II LLC Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 UBS Commercial Mortgage Securities Trust 2017-P7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-LCG3 GS Mortgage Securities Cop II COMM 2018-CCRES Mortgage Trust 2017-LCG3 GS Mortgage Securities Cop III COS Mortgage Securities Cop II COS Mortgage Securities Trust 2017-1000 II COS Mortgage Securities Trust 2017-1000 II COS Mortgage Securities Trust 2017-100 II COS Mortgage Securities Trust		"		SSO.	37,495	N/A	SSO	37,495	
Hyundai Auto Receivables Trust 2018-B BA Credit Card Trust Nissan Master Owner Trust Receivables CGDBB Commercial Morgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Morgage Trust 2012-C2 Mercedes-Bernz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-BEV1 BBCMS 2018-TALL Morgage Trust 2013-C10 Ford Credit Auto Owner Trust 2016-BEV1 Chesapeake Funding II LLC Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2018-C10 JPMCC Commercial Morgage Securities Trust 2017-JP7 JP. Morgan Chase Commercial Morgage Securities Trust 2016-WIKI BANIK 2017-BNK5 BANIK 2017-BNK5 BANIK 2017-BNK5 BANIK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2018-CCRES Morgage Trust COS Mortgage Securities Corp II	•	"	•	ns\$	26,702	N/A	\$SO	26,702	
BA Credit Card Trust  Nissan Master Owner Trust Receivables CGDBB Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-IND UBS-Barclays Commercial Mortgage Trust 2016-B Mercedes-Benz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBCMS 2018-TALL Mortgage Trust Chesapeake Funding II LLC Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Change Securities Trust 2016-WIKI BANK 2017-BNKS BANK 2017-BNKS BANK 2017-BNKS Cold Storage Trust 2016-B Cold Storage Trust 2017-LCE3 GS Mortgage Securities Cop III COMM 2015-CCRES Mortgage Trust COS Mortgage Securities Cop III COS Mortgage Securities Cop III COS Mortgage Securities Trust COS Mortgage Securities Cop III COS Mortgage Securities Trust COS Mortgage Securities Cop III COS Mor	1	"	,	\$SO	8,122	N/A	\$SO	8,122	
Nissan Master Owner Trust Receivables CGDBB Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-MD UBS-Barclays Commercial Mortgage Trust 2018-C2 Moredes-Burz Master Owner Trust 2016-REV1 BRCMS 2018-TALL Mortgage Trust 2016-REV1 BRCMS 2018-TALL Mortgage Trust 2016-REV1 BRCMS 2018-TALL Mortgage Trust 2018-C10 Chesapeake Funding II LLC Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BINKS BANK 2017-BINKS BANK 2017-BINKS Cold Storage Trust 2016-B COld Storage Trust 2017-ICC3 GS Mortgage Securities Corp II COMM 2015-CCRES Mortgage Trust CS Mortgage Securities Corp II COS Mortgage S		"	•	\$SO	8,092	N/A	NS\$	8,092	
CGDBB Commercial Mortgage Trust 2017-BIOC Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-IND UBS-Bardenys Commercial Mortgage Trust 2016-B Mercedes-Benz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-B BCMS 2018-TALL Mortgage Trust Chesapeake Funding II L.C Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Cop II COMM 2015-CCRE25 Mortgage Trust CS Mortgage Securities Cop II COMM 2015-CCRE25 Mortgage Trust CS Mortgage Securities Cop II COMM 2015-CCRE25 Mortgage Trust CS Mortgage Securities Cop II COMM 2015-CCRE25 Mortgage Trust CS Mortgage Securities Cop II COMM 2015-CAT Trust 2017-ICE3		"	•	SSO.	7,989	N/A	SSO.	7,989	
Capital One Multi-Asset Execution Trust BX Commercial Mortgage Trust 2018-TND UBS-Barclays Commercial Mortgage Trust 2012-C2 Mercedes-Bern Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-BEV1 BBCMS 2018-TALL Mortgage Trust Chesapeake Funding II LLC Morgan Statiley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-C10 JPMCC Commercial Mortgage Securities Trust 2017-JP7 JP. Morgan Chase Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2015-CCRES Mortgage Trust COS Mortgage Securities Corp II COS Mortgage Securities COS II COS Mort		"		\$SO	7,430	N/A	SSO.	7,430	
BX Commercial Mortgage Trust 2018-IND UBS-Barclays Commercial Mortgage Trust 2012-C2 Mercedes-Benz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBCMS 2018-TALL Mortgage Trust 1016-REVI Chesapeake Funding II LLC Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-C10 JPMCC Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK5 Cold Storage Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Cop III COMM 2015-CCRES Mortgage Trust CCS Mortgage Securities Cop II COS		"		\$SO	7,304	N/A	SSO.	7,304	
UBS-Barclays Commercial Mortgage Trust 2012-C2  Meredes-Barz Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REVI BBCMS 2018-TALL Margage Trust Chesapeake Funding II LLC Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNKS BANK 2017-BNKS Cold Storage Trust 2016-B Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICC3 GS Mortgage Securities Corp II COMM 2015-CCRES Mortgage Trust CSC Mortgage Securities Corp II COS Mortgage Securities Corp II		"	•	\$SO	946	N/A	SSO.	6,946	
Mercedes- Bern Master Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-B Ford Credit Auto Owner Trust 2016-REV1 BBCMS 2018-TALL Morgage Trust Chesapeake Funding II L.C Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Morgage Securities Trust UB Commercial Morgage Securities Trust J.P. Morgan Chase Commercial Morgage Securities Trust 2016-WIK1 BANK 2017-BNK5 BANK 2017-BNK5 Cold Storage Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Cop II COMM 2015-CCRES Morgage Trust CS Mortraces Securities Cop II		"	•	\$SO	6,313	N/A	SSO.	6,313	
Ford Credit Auto Owner Trust 2016-REV1 BBCANS 2018-TALL Montgage Trust Chesapeake Funding II LLC Morgan Stanley Bank of America Mertill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-C10 JPMCC Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIK1 BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2015-CCRE25 Mortgage Trust CCS Mortgage Securities Corp II COMM 2015-CCRE25 Mortgage Trust CCS Mortgage Securities Corp II COS Mortgage Securities	•	"	•	SSO.	6,012	N/A	\$SO	6,012	
BECMS 2018-TALL Morgage Trust Chesapeake Funding II LLC Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-C10 JPMCC Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Chase Commercial Morgage Securities Trust 2016-WIKI BANK 2017-BNK5 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2015-CCRES Morgage Trust CCS Mortgage Securities Corp II COS Mortgage Securities COS	•	"	•	SSO.	5,917	N/A	\$SO	5,917	
Chesapeake Funding II LLC Morgan Stanley Bank of America Merrill Lynch Trust 2013-C10 Ford Credit, Autu Owner Trust 2015-REVI Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-C10 JPMCC Commercial Mortgage Securities Trust 2016-WIK1 BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK5 Cold Storage Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2015-CCRES Morgage Trust CCS Mortgage Securities Corp II COS Mortgage Securities COP I		"	•	SSO.	5,403	N/A	\$SO	5,403	
Morgan Stanley Bank of America Mertil Lynch Trust 2013-C10 Ford Credit Auto Owner Trust 2015-REV1 Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-C10 JPMCC Commercial Mortgage Securities Trust J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIK1 BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2018-CORES Mortgage Trust CS Mortgage Trust 2017-ICE3 GS Mortgage Securities Corp II COSM 2018-CORES Mortgage Trust CS Mortgage Securities Corp II COSM 2018-CORES Mortgage Trust		"	•	SSO.	5,328	N/A	SSO	5,328	
Ford Credit Annual 2015-KEV1  Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Trust 2018-Ci0  JPMCC Commercial Mortgage Securities Trust JOI-WIKI BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2018-CCKRES Mortgage Trust COMM 2018-CCKRES Mortgage Trust COMM 2018-CCKRES Mortgage Trust CS Mortgage Securities Corp II	1	"	•	nss n	4,879	V/A	SSO	4,879	
Volvo Financial Equipment Master Owner Trust UBS Commercial Mortgage Securities 2018-C10 JPMCC Commercial Mortgage Securities Trust 2017-JP7 J.P. Morgan Chase Commercial Mortgage Securities Trust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2015-CCRE25 Mortgage Trust COMM 2015-CCRE25 Mortgage Trust CS Mortgage Securities Corp II COMM 2015-CCRE25 Mortgage Trust	•	"	•		1,8/1	Α/N	SSO.	4,8/1	
UBS Commercial Mortgage Trust 2017-JP7  J.P. Morgan Camercial Mortgage Securities Trust 2017-JP7  J.P. Morgan Camercial Mortgage Securities Trust 2016-WIKI Day RX 2017-BNK5  BANK 2017-BNK6  BANK 2017-BNK6  Nissan Auto Lease Trust 2016-B  Cold Storage Trust 2017-JCE3  GS Mortgage Securities Corp II  COMM 2018-CORES Mortgage Trust  COMM 2018-CORES Mortgage Trust  COMM 2018-CORES Mortgage Trust  COMM 2018-CORES Mortgage Trust	•	"	•	\$20 51.5	010,4	N/A	0.55	4,510	
J.P. Morgan Chase Commercial Morgage Securities Trust J.P. Morgan Chase Commercial Morgage Securities Trust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK5 BANK 2017-BNK5 Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2018-CORES Morgage Trust CS Mortgage Securities Corp II COMM 2018-CORES Morgage Trust CS Mortgage Securities Corp II CS Mortgage Securities CORP		"	•	SSO	4,047	<b>V</b> /V	SSO	4,047	
J. Morgan Chase Commercial Mortgage Securities I rust 2016-WIKI BANK 2017-BNK5 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2018-CCKRES Mortgage Trust CS Mortgage Securities Corp II	•	"	•	023	3,960	V/A	CSS COSS	3,960	
BANK 2017-BNK5 BANK 2017-BNK6 BANK 2017-BNK6 Nissan Auto Lease Trust 2016-B Cold Storage Trust 2017-ICE3 GS Mortgage Securities Corp II COMM 2015-CCRESS Mortgage Trust		"	•	SSO.	3,932	N/A	\$SO	3,932	
BANK 2017-BNK6  Nissan Auto Lease Trust 2016-B  Cold Storage Trust 2017-ICE3  GS Mortgage Securities Corp II  COMM 2015-CCRESS Mortgage Trust  CS Mortgage Trust  CS Mortgage Securities Corp II  COMM 2015-CORT Trust 2018 BIVID		"	•	SSII	3.902	A/N	SSII	3.902	
Nissan Auto Lease Trust 2016-B  Cold Storage Trust 2017-ICE3  GS Mortgage Securities Corp II  CONM 2015-CORES Mortgage Trust  CS Mortgage Securities Corp. II				3511	3 800	V/N	3311	3 800	
Cold Storage Trust 2017-ICES GS Mortgage Securities Corp II COMM 2015-CCRE25 Mortgage Trust CS Mortgage Securities Corp. Trust 2018 BIVID		"		881	3 886	C /Z	981	3.886	
GSW Mortgage Securities COP II COMM 2015-CCRE25 Mortgage Trust CSW Mortgage Com Trust 2018 DIVP				881	3 732	Y Z	\$S11	3 732	
COMM 2015-Centures Copp II COMM 2015-Centures Committee Trust			•	3511	3 247	N/A	\$511	3 247	
COMIN ACTOR CONTROL MINE BIVD	•		•	9511	7+7,0	V/N	9511	47,0	
	•	"	•	9511	0,770	V/N	\$50	7,990	
Transfer of the Processing Color III	•	,,	•	9071	2,767	V/N	9511	2,969	
Toluda Auto Necelvadoles 2017, 22 Owilet 1018 CM Financial Concurred Automobile December 7 1017 7		,,		951	7 947	A/N	3511	2,947	
CIVI FINANCIA CONSUME AUGUROUS TUSE 2017-2	•	"	•	900	C+C,7	W/NI	20	2,74	

						December 31, 2018	31, 2018			
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryi (Foreign	Carrying Value (Foreign Currencies	Percentage of Ownership (%)	Fair (Foreign	Fair Value (Foreign Currencies	Note
TOMO Clabal	DMMI Files Meder Omes Tools		Discountied connection of from realize alternated addition		3011	usanus)	AVIX	9511	usanus)	
LSIMC GIODAI	DMW F100tptan Master Owner 11ust	1	comprehensive income	'	e co	7,900	W/M	eso	7,000	
	GS Mortgage Securities Trust 2011-GC3		"	•	\$SO	2,750	N/A	\$SO	2,750	
	Hertz Fleet Lease Funding LP		"	•	\$SO	2,672	N/A	SSO	2,672	
	Morgan Stanley Capital I Trust 2018-H3		"	•	\$SO	2,596	N/A	SSO	2,596	
	GS Mortgage Securities Trust 2013-GCJ12		"	•	\$SO	2,576	N/A	\$SO	2,576	
	Toyota Auto Receivables 2018-C Owner Trust		"	•	\$SO	2,554	N/A	SSO	2,554	
	JPMDB Commercial Mortgage Securities Trust 2016-C2		"	•	\$SO	2,512	N/A	SSO	2,512	
	Nissan Auto Lease Trust 2017-A	•	"	•	\$SO	2,386	N/A	NS\$	2,386	
	Toyota Auto Receivables 2018-A Owner Trust		"	•	\$SO	2,306	N/A	SSO	2,306	
	Hyundai Auto Lease Securitization Trust 2017-B		"	•	\$SO	2,252	N/A	SSO	2,252	
	Wells Fargo Commercial Mortgage Trust 2015-LC20		"	•	\$SO	2,127	N/A	SSO	2,127	
	UBS Commercial Mortgage Trust 2018-C11		"	•	\$SO	2,083	N/A	SSO	2,083	
	COMM 2013-CCRE12 Mortgage Trust		"		\$SO	2,061	N/A	SSO	2,061	
	Ford Credit Auto Owner Trust 2017-C		"	•	\$SO	2,046	N/A	SSO	2,046	
	BENCHMARK 2018-B4		"	•	SS	2,034	V/A	nss n	2,034	
	JPMBB Commercial Mortgage Securities Trust 2014-C19		"	'	\$SO	2,017	N/A	nss	2,017	
	COMM 2015-CCRE22 Mortgage Trust		"	'	\$SO	2,010	N/A	SSO	2,010	
	Wells Fargo Commercial Mortgage Trust 2015-C30		"	•	\$SO	2,006	N/A	SSO	2,006	
	UBS-Barclays Commercial Mortgage Trust 2013-C6		"		\$SO	1,979	N/A	SSO	1,979	
	Toyota Auto Receivables 2016-B Owner Trust		"	•	\$SO	1,977	N/A	SSO	1,977	
	Citigroup Commercial Mortgage Trust 2017-P8		"	•	\$SO	1,974	N/A	SSO	1,974	
	Toyota Auto Receivables 2017-C Owner Trust		"	•	\$SO	1,960	N/A	SSO	1,960	
	Mercedes-Benz Auto Lease Trust 2018-B		"	'	\$SO	1,953	N/A	SSO	1,953	
	JPMDB Commercial Mortgage Securities Trust 2017-C7	•	"	•	\$SO	1,944	N/A	NS\$	1,944	
	Morgan Stanley Bank of America Merrill Lynch Trust 2016-C31		"	•	\$SO	1,940	N/A	SSO	1,940	
	GM Financial Automobile Leasing Trust 2016-3		"	•	\$SO	1,931	N/A	SSO	1,931	
	Morgan Stanley Capital I Trust 2016-UB11		"	•	\$SO	1,868	N/A	SSO.	1,868	
	Ford Credit Auto Lease Trust 2017-B		"	•	\$SO	1,863	N/A	SSO	1,863	
	BANK 2018-BNK14		"		\$SO	1,811	N/A	SSO	1,811	
	BMW Vehicle Lease Trust		"		\$SO	1,801	N/A	SSO	1,801	
	Ford Credit Auto Lease Trust		"	•	\$SO	1,799	N/A	SSO .	1,799	
	Wheels SPV 2 LLC		"	'	\$SO	1,788	N/A	SSO	1,788	
	Citigroup Commercial Mortgage Trust 2015-GC35		"	•	\$SO	1,783	N/A	SSO	1,783	
	Morgan Stanley Bank of America Merrill Lynch Trust 2013-C8		"	•	\$SO	1,771	N/A	SSO .	1,771	
	BENCHMARK 2018-B6 Mortgage Trust		"	•	\$SO	1,766	N/A	SSO	1,766	
	CarMax Auto Owner Trust		"	•	SSO .	1,756	V/N	SO	1,756	
	Neinet Student Loan Trust 2010-4	•	#	'	SSO SI	1,742	A/N	SSO	1,742	
	SLM Student Loan Trust 2003-4			•	0.53 1.15	1,707	N/A	\$50	1,727	
	UDS-Dalciays Collineteral Moltgage 11ust 2013-C3 Hynndai Auto I ages Securitization Trust 2016-C			•	820	1,707	N/A	9511	1,707	
	Ford Credit Auto Lease Trust 2017-0				3511	1,070	V/N	351	1,0/0	
	Edsouth Indenture No 10 LLC			,	SSI	1.598	V/N	SSD	1.598	
	Ford Credit Auto Oumer Trust 2015. A				3311	1.541	V/N	3311	1.541	
	Navient Student Loan Trust 2017-1				SSI	1,540	A/N	SSI	1.540	
	Nelnet Student Loan Trust 2018-3		: "	•	SSO	1,538	Z/N	\$SO	1.538	
	COMM 2015-PC1 Mortgage Trust		=	'	SSII	1,500	A/N	SSII	1.500	
	Ford Credit Auto Lease Trust 2018-A				SSO	1,497	N/A	\$SO	1,497	
	Morgan Stanley Capital I Trust 2017-H1		"	•	\$SO	1,481	N/A	\$SO	1,481	
	SLM Student Loan Trust 2013-6		"	•	\$SO	1,465	N/A	SSO	1,465	
	JPMCC Commercial Mortgage Securities Trust 2017-JP5		"	'	\$SO	1,460	N/A	\$SO	1,460	
										(Continued)

						December 31, 2018	.31, 2018		_	
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carryi (Foreign in Tho	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair (Foreign C	Fair Value (Foreign Currencies in Thousands)	Note
TSMC Global	ECMC Group Student Loan Trust 2018-2	,	Financial assets at fair value through other		NS\$	1,448	N/A	\$SO	1,448	
	Nelnet Student Loan Trust 2012-1		comprehensive income	•	SSO	1,446	N/A	SSO	1,446	
	Pheaa Student Loan Trust 2018-1		"	•	\$SO	1,443	N/A	\$SO	1,443	
	Toyota Auto Receivables 2018-B Owner Trust	,	"	•	\$SO	1,432	N/A	\$SO	1,432	
	Mercedes-Benz Master Owner Trust 2018-BA		"	•	\$SO	1,396	N/A	\$SO	1,396	
	Ford Credit Auto Owner Trust 2014-REV2		"	•	\$SO	1,390	N/A	\$SO	1,390	
	Nelnet Student Loan Trust 2006-2		"	•	\$SO	1,388	N/A	\$SO	1,388	
	COMM 2013-CCRE6 Mortgage Trust		"	•	\$SO	1,360	N/A	\$SO	1,360	
	GM Financial Automobile Leasing Trust 2017-1		"	•	\$SO	1,299	N/A	\$SO	1,299	
	COMM 2015-DC1 Mortgage Trust		"	•	\$SO	1,253	N/A	SSO	1,253	
	Enterprise Fleet Financing LLC		"		\$SO	1,251	N/A	\$SO	1,251	
	Hyundai Auto Lease Securitization Trust 2018-A		"	•	\$SO	1,246	N/A	\$SO	1,246	
	JPMBB Commercial Mortgage Securities Trust 2016-C1		"	•	\$SO	1,243	N/A	\$SO	1,243	
	Morgan Stanley Bank of America Merrill Lynch Trust 2015-C20		"	•	\$SO	1,196	N/A	\$SO	1,196	
	Hyundai Auto Lease Securitization Trust 2017-C		"	•	\$SO	1,049	N/A	\$SO	1,049	
	Nissan Auto Receivables 2016-B Owner Trust		"	•	\$SO	1,043	N/A	SSO	1,043	
	WFRBS Commercial Mortgage Trust 2011-C4		"	•	\$SO	1,036	N/A	SSO.	1,036	
	GM Financial Consumer Automobile Receivables Trust 2018-4		"	•	\$SO	1,023	N/A	SSO.	1,023	
	COMM 2014-CCRE20 Mortgage Trust		"	•	\$SO	1,009	N/A	NS\$	1,009	
	Nissan Auto Receivables 2017-B Owner Trust	,	"	•	\$SO	1,008	N/A	\$SO	1,008	
	Morgan Stanley Bank of America Merrill Lynch Trust 2014 C19	,	"	•	\$SO	1,006	N/A	\$SO	1,006	
	Nissan Auto Receivables 2018-B Owner Trust		"	•	\$SO	1,004	N/A	SSO	1,004	
	JPMBB Commercial Mortgage Securities Trust 2014-C21		"		\$SO	1,002	N/A	\$SO	1,002	
	Navient Student Loan Trust 2017-3		"	•	\$SO	1,000	N/A	SSO.	1,000	
	GM Financial Consumer Automobile 2017-1		"		\$SO	986	N/A	\$SO	986	
	Ford Credit Auto Owner Trust 2017-REV1		"		\$SO	985	N/A	\$SO	985	
	Citigroup Commercial Mortgage Trust 2013-GC11		"		\$SO	696	N/A	\$SO	696	
	JPMBB Commercial Mortgage Securities Trust 2015-C31		"	•	\$SO	945	N/A	\$SO	945	
	Honda Auto Receivables 2018-2 Owner Trust		"	•	\$SO	911	N/A	\$SO	911	
	JP Morgan Chase Commercial Mortgage Securities Trust		"	•	\$SO	897	N/A	\$SO	268	
	2012-LC9				901	0	*****	6011	0	
	CarMax Auto Owner Trust 2018-1		,,	•	\$20 178	6/3	N/A	\$20	6/3	
	Motgan stanley bank of America Merrill Lynch Trust 2012-Co		"	•	600	633	A/N	600	633	
	Mercedes-Benz Auto Receivables Trust 2018-1		, ;	•	\$20 116	841	N/A	\$20	241	
	250 Fark Avenue 2017-260F Mongage Trust		**	•	620	778	N/A	820	778	
	SEMI Student Loan 1 rust 2012-3  Ford Crodit Auto Oronor Trust 2015 DEV2		, :	•	\$20	816	N/A	\$20	810	
	Fold Cledit Auto Owile 110st 2013-NEV2 Navient Student Loan Trust 2018-1				880	799	A/N	\$80	200	
	Ford Credit Auto Owner Trust/Ford Credit 2014-REV1		: "	•	SSO	262	Z/X	nS\$	862	
	Honda Auto Receivables 2018-3 Owner Trust		"	•	\$SO	792	N/A	\$SO	792	
	SLM Student Loan Trust 2013-1		"	•	\$SO	786	N/A	\$SO	982	
	CFCRE Commercial Mortgage Trust 2011-C1		"	•	SSO	9//	N/A	\$SO	9//	
	Mercedes-Benz Auto Lease Trust 2018-A		"	•	\$SO	770	N/A	SSO	770	
	GM Financial Automobile Leasing Trust 2018-1		"	•	\$SO	753	N/A	\$SO	753	
	COMM 2015-LC19 Mortgage Trust		"	•	\$SO	716	N/A	\$SO	716	
	Toyota Auto Receivables 2018-D Owner Trust		"	•	\$SO	902	N/A	\$SO	902	
	Ally Auto Receivables Trust 2018-3		"	•	\$SO	669	N/A	\$SO	669	
	SLM Student Loan Trust 2013-4		"	•	\$SO	889	N/A	\$SO	889	
	Wells Fargo Commercial Mortgage Trust 2015-C28		"	•	\$SO	029	N/A	SSO.	029	
	Mercedes-Benz Auto Lease Trust 2016-B	,	"	•	SSO	649	N/A	\$SO	649	
										(Continued)

_									(7 - 1-c	
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Valu (Foreign Curren in Thousands)	Carrying Value (Foreign Currencies in Thousands)	Percentage of Ownership (%)	Fair Value (Foreign Currend in Thousands)	Fair value (Foreign Currencies in Thousands)	Note
TSMC Global	Ford Credit Auto Owner Trust 2018-A	,	Financial assets at fair value through other		\$SO	640	N/A	\$SO	640	
	IP Moroan Chase Commercial Mortoace Securities Trust		comprehensive income	•	3511	989	e Z	3511	929	
	2012-C6				3	000	V/M	3	000	
	JP Morgan Chase Commercial Mortgage Securities Trust	•	"	•	SSO	209	N/A	\$SO	209	
	2012-WLDIN GM Einancial Automobile Leacin of Trust 2018-3	,	=	'	3511	585	A/N	3511	585	
	DRGS 2018_RIOD Mortgage Trust		: =		8811	573	V/N	351	573	
	Hyundai Auto Receivables Trust 2015-A		: =	•	SSD	571	Y/Z	SSO	571	
	COMM 2016-SAVA Mortgage Trust		: 1	,	SSI	555	N/A	SSI	555	
	DBUBS 2011-LC2 Mortgage Trust	,	: *	•	SSO	514	A/N	SSO	514	
	ARI Fleet Lease Trust 2018-A	,	: "	•	SSO	508	A/Z	SSO	508	
	GS Mortgage Securities Trust 2014-GC18	•	"	'	ns\$	505	N/A	ns\$	505	
	CD 2016-CD2 Mortgage Trust	•	"	'	\$SO	200	N/A	\$SO	500	
	COMM 2014-CCRE19 Mortgage Trust	•		•	\$SO	499	N/A	\$SO	466	
	Ford Credit Auto Owner Trust 2016-A		**	•	\$SO	485	N/A	\$SO	485	
	Hyundai Auto Lease Securitization Trust 2017-A		"	•	\$SO	433	N/A	\$SO	433	
	WFRBS Commercial Mortgage Trust 2014-C25		Ш	,	\$SO	404	N/A	\$SO	404	
	GM Financial Automobile Leasing Trust 2018-2		"	•	\$SO	390	N/A	\$SO	390	
	Morgan Stanley Bank of America Merrill Lynch Trust 2014-C18	•	"	•	\$SO	377	N/A	\$SO	377	
	Honda Auto Receivables 2017-4 Owner Trust		"	•	\$SO	366	N/A	SSn	366	
	Wells Fargo Commercial Mortgage Trust 2016-LC24		"	•	SS	357	V/A	SSO	357	
	Morgan Stanley Bank of America Merrill Lynch Trust 2014-C16	•	"	•	SSO	337	<b>V</b> / <b>V</b>	SSO	337	
	ARI Fleet Lease Trust 2018-B	•	"	•	\$20 100	331	N/A	200	331	
	make Service Lease 1 rust 2018-1	•	"	•	\$20 118	317	N/A	\$20 1188	300	
	JPMISB Commercial Mortgage Securities 1 fust 2013-C14 GM Einemoint Automobile Leaving Tract 2017 2			•	\$20	260	A/N	951	360	
	Wells Faro Commercial Mortgone Trust 2017-2				980	264	A/N	3511	607	
	BMW Vehicle Lease Trust 2016-2	,		•	SSO	259	V/X	SSO	259	
	Honda Auto Receivables 2016-2 Owner Trust	,	: =	•	SSII	248	Y/Z	SSII	248	
	Wells Faron Commercial Mortoace Trust 2015-SG1		: =		SS1	214	Y Z	SI	212	
	Citigroup Commercial Mortgage Trust 2014-GC23			•	SSI	1661	V/Z	SSI	166	
	BMW Vehicle Lease Trust 2017-2		: =	•	SSI	187	A/Z	SSI	187	
	GS Mortgage Securities Trust 2010-C1			•	SSO	141	A/X	SSO	141	
	WFRBS Commercial Mortgage Trust 2011-C5	•	"	•	\$SO	123	N/A	\$SO	123	
	COMM 2014-CCRE15 Mortgage Trust			•	\$SO	96	N/A	\$SO	96	
	GS Mortgage Securities Trust 2014-GC24		H H	•	\$SO	82	N/A	\$SO	82	
	GS Mortgage Securities Trust 2010-C2	•	"	•	\$SO	45	N/A	\$SO	45	
	Honda Auto Receivables 2015-4 Owner Trust	1	II II	•	\$SO	32	N/A	\$SO	32	
	Commercial paper						į		6	
	Royal Bank of Canada/New York NY	•	Financial assets at fair value through other	•	SSO OS	2,000	N/A	SSO	2,000	
	Toronto-Dominion Bank/NY			1	SSO	1,500	N/A	\$SO	1,500	
	Non-publicly traded equity investments									
	Primavera Capital Fund II L.P.		Financial assets at fair value through other comprehensive income	•	\$SO	70,460	4	ns\$	70,460	
VTAF II	Non-publicly traded equity investments Sentelic	•	Financial assets at fair value through other	1,019	\$SO	2,039	4	\$SO	2,039	
	Aether Systems, Inc.			1,085	\$SO	353	20	\$SO	353	
_										

						December 31, 2018	1, 2018				
Held Company Name	Marketable Securities Type and Name	Relationship with the Company	Financial Statement Account	Shares/Units (In Thousands)	Carrying Value (Foreign Currencies in Thousands)	Value rrencies ands)	Percentage of Ownership (%)	Fair Value (Foreign Currencies in Thousands)	ılue rrencies ands)	Note	
VTAF II	5V Technologies, Inc.	•	Financial assets at fair value through other comprehensive income	364	\$SO	313	2	\$SN	313		
	Publicly traded stocks Aquantia		Financial assets at fair value through other comprehensive income	83	\$SO	730		\$SO	730		
VTAF III	Non-publicly traded equity investments LiquidLeds Lighting Corp.		Financial assets at fair value through other	1,952	\$SO	800	14	\$SO	800		
	Neoconix, Inc.			4,147	\$SO	174		\$SO	174		
Growth Fund	Non-publicly traded equity investments Innovium, Inc.		Financial assets at fair value through other	451	\$SO	2,393	,	\$SO	2,393		
	CNEX Labs, Inc.		comprehensive income	237	\$SO	775		\$SO	775		
										(Concluded)	

Taiwan Semiconductor Manufacturing Company Limited and Investees

MARKETABLE SECURITIES ACQUIRED AND DISPOSED OF AT COSTS OR PRICES OF AT LEAST NTS300 MILLION OR 20% OF THE PAID-IN CAPITAL FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

		37	31	13	1	55	02	38	23	94	94	59	82	97	29	46	,		4	49	_
ote 1)	Amount	498,837	393,577,931	20,601,413		44,755	28,602	27,238	23,123	18,894	12,594	11,159	8,928	7,726	7,462	3,594			283,314	68,164	
nce (N	Ψ	~	393	20		\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	SSO.	\$SO	SSO	\$SO	\$SO	
Ending Balance (Note 1)	Shares/Units (In Thousands)	50	Ξ	•	1	1	'	1	1	1	1	1	1	•	1	•	1	•	ı	•	
	Gain/Loss on Disposal	-	1	'	(1,179,268)	(37)	(128)	8	4	(2)	(142)	(16)	(152)	(187)	(127)	•	•	•	(2,637)	48	
		\$			(1)	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	SSO	
	Carrying Value	•	'	1	1,831,241	6,027	12,128		12,482	1,212	_		_			11,075	21,166	10,000	403,883	106,123	
Disposal	Carr	*				\$SO	\$SO	\$SO	NS\$	NS\$	\$SO	NS\$	$\Omega$	$\Omega$		_	SSO	\$SO	\$SO	\$SO	
Dis	Amount	•	ı	'	651,973	5,990	12,000	684	12,438		=		12,105			3 11,075	3 21,166	10,000	3 401,246	US\$ 106,171	
		\$				\$SO	\$SO	\$SO	\$SO	\$SO	SSO	$\Omega$	SSO.	SSO.	SSO.	SSO.	\$SO	\$SO	US\$	nS\$	
	Shares/Units (In Thousands)	•	,	,	58,320	'	1	'	'	•	•	•	1	•	•	•		'	•	•	
	Amount	498,837	62,272,080	2,361,320	1	10,852	11,293	18,102	9,299	18,768	13,719	10,490	8,573	10,575	13,474	3,576	21,168	•	483,976	124,504	-
sition	Am	<b>~</b>	62,	2,		\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	\$SO	SSO.	SSO.	\$SO	, \$SU	\$SO	
Acquisition	Shares/Units (In Thousands)	20	2	1	1		•	'	1	•	1	i	'	'	1	•	1	•		•	_
se .	Amount		309,211,877	26,493,740	1,309,279	40,876	29,911	10,018	26,867	1,256	17,024	1,761	12,722	6,181	1,450	11,073	•	10,013	202,689	49,901	-
; Balan	An	\$	309,	26,	, <del>,</del>	NS\$	\$SO	SSO.	\$SO	\$SO	\$SO	\$SO	SSO.	SSO.	\$SO	SSO.	\$SO	\$SO	NS\$	\$SO	
Beginning Balance	Shares/Units (In Thousands)	•	6	1	58,320	1	i	'	1	1	1	1	1	1	1	•	•	•	1	1	
Noture	ip ,	1	Subsidiary	Subsidiary	1	,	ı	,	,			1			1		1	,			
	Counter-party	1		,				,					,					1			
Financial Statement	Account	Financial assets at amortized cost	Investments accounted for using equity method (Note	2) "	Financial assets at fair value through other comprehensive income	Financial assets at fair value through other	comprehensive income	"	"	"	"	"	"	"	"	"	"	Financial assets at amortized cost	Financial assets at fair value through other	"	
Moulestoble Committee		Commercial paper CPC Corporation, Taiwan	Non-publicly traded equity investments TSMC Global	TSMC Nanjing	Publicly traded stocks Motech	Corporate bond Bank of America Corp	Citigroup Inc	CVS Health Corp	AT&TInc	Comcast Corp	BAT Capital Corp	United Technologies Corp	Morgan Stanley	Celgene Corp	Cooperatieve Rabobank UA/NY	Asian Development Bank	Inter American	Development Bank JPMorgan Chase & Co.	Government bond United States Treasury Note/Bond Financial assets at fair value through other	United States Treasury Floating	Data Note
	Company Name	TSMC				TSMC Global															

				, ,	Beginning	Beginning Balance	Acq	Acquisition				Disposal	osal				Ending Balance (Note 1)	lance (N	(ote 1)	
Company Name	Type and Name	Account	Counter-party	Relationship	Shares/Units (In Thousands)	Amount	Shares/Units (In Thousands)		Amount	Shares/Units (In Thousands)	Am	Amount	Carryin	Carrying Value	Gain/Loss on Disposal		Shares/Units (In Thousands)		Amount	
TSMC Global A	Agency bonds/Agency_ mortgage-backed securities FNMA PooL BM4681	Financial assets at fair value through other			•	NS\$		\$SO	35,947	1	\$SO	4,026	NS\$	4,089	\$SO	(63)	٠	\$SO	31,784	84
ഥ	FNMA Pool BM4495	comprehensive income			•	SO OS		USS	29,035	•	NS\$	1.249	NS\$	1,361	SSO	(112)	•	SSO.	27,324	24
4	FNMA Pool BM1948	"	1		•	US\$ 41,275		\$SO	5,534	1	SSO.	18,653	\$SO	19,922		(1,269)	'	NS\$		46
<u>щ</u>	FED HM LN PC Pool G61603	"	1		1			\$SO	27,059	1	\$SO	1,256	\$SO	1,387	\$SO	(131)	•	NS\$		15
<u>н</u>	FNMA Pool CA2352	"	1	•	1	\$SO		ns\$	25,688	1	SSO.	492		517	NS\$	(25)		NS\$		30
<u> </u>	FNMA TBA 30 Yr 5	"			•	ns\$	· -	\$SO	186,999	•	ns\$	162,191	_	162,197	SSO	9	•	NS\$		19
<u></u>	FED HM LN PC Pool G61592	"	ı		•	\$SD	· · · · · · · · · · · · · · · · · · ·	SSD.	45,987	1	SSO	24,813		24,527	SSO	286	•	SSO		70
_ 0	FED HM LN PC Pool G61654 GNMA II Pool MA5468	" "				SSD SSD		880	19,316		\$ S I	112	\$20 128	118	SSI	(55)	' '		17 490	ç 6
, 114	FNMA Pool BM4493		,		,	SSO		SSO	18.362	•	SSO	1.279	SSO.	1.325	SSO	9 6		SSO		2 2
<u> </u>	Government National Mortgage	"	1		•	\$SO		NS\$	16,433	•	ns\$	39	SSO.	39	SSO		'	SSO.		85
Ţ	Association FED HM LN PC Pool G61553	"		,	,	SSn		SSI	15.372	1	SSI	244	SSI	255	SSO	Ξ	•	SSI	15.045	45
ш.	FNMA Pool CA2169					\$SO		ns\$	15,368	•	SSO.	1,406	NS\$	1,429	NS\$	(23)		ns\$		29
0	GNMA II Pool MA5332	*	,		1	NS\$		\$SO	26,202	1	SSO.	13,285	NS\$	13,279	NS\$	9		SSO.		72
)	GNMA II TBA 30 Yr 5	*	,		•	\$SO		\$SO	61,268	•	\$SO	49,012		49,046	\$SO	(34)	•	\$SO		60
<u> </u>	Government National Mortgage	"	1	,	1	\$SO		\$SO	10,494	1	\$SO	•	\$SO	•	SSO	•	•	\$SO	10,590	06
_ =	Association GNMA II TBA 30 Yr 4	"	1			US\$ 2,378	∞	NS\$	47,507		NS\$	47,743	SSO.	47,773	SSO	(30)		\$SO	2,129	67
<u>т</u>	FNMA TBA 15 Yr 3.5	"	i		•	\$SO		\$SO	42,360	•	\$SO	40,346	SSO.	40,350	SSO	4	'	SSO.		50
)	GNMA II TBA 30 Yr 3.5	"			•	US\$ 145		\$SO	47,680	•	\$SO	46,609		46,676	NS\$	(67)	'	\$SO		2.2
4	FED HM LN PC Pool G08799	"			•	SSO.		\$SO	24,748	•	\$SO	24,846		24,782	NS\$	49	'	\$SO		,
<u>щ</u>	Federal Home Loan Bank	"	1	,	1	\$SO		\$SO	29,498	1	\$SO	29,500	\$SO	29,499	SSO	-	•	\$SO		,
Ī	Discount Notes FFD HM I N PC Pool G60594	=			•	1158	0	3511		•	3511	11 101	3511	11711	3511	(520)	•	3511		-
, <u>II</u> ,	FNMA TBA 30 Yr 3.5	: "			1		9	SSO O	83.271	•	SSO	86.356		86.144	nSS O	212		SSO		
щ	FNMA TBA 30 Yr 3	*						NS\$	198,586	•	US\$	198,614		198,586	SSO	28	•	NS\$		,
щ	FNMA TBA 15 Yr 3	"	1	•	,	US\$ 2,015	5	\$SO	65,931	1	\$SO	67,884		67,949	SSO	(65)	•	\$SO		
<u>т</u>	FNMA TBA 30 Yr 4.5	"	,		•	US\$ 15,758	- 8	\$SO	157,210	•	ns\$	172,818		173,014	\$SO	(196)		\$SO		
<u>, iii</u>	FED HM LN PC Pool G08773	"			1	\$SO		NS\$	10,380	1	SSO.	10,410	\$SO	10,380	NS\$	30		NS\$		,
Ģ O	Asset-backed securities Citibank Credit Card Issuance	Financial assets at fair value			1	US\$ 48,328		\$SO	40,865		\$SO	20,343	NS\$	20,346	SSO	(3)	'	\$SO	68,487	87
	Trust	through other comprehensive income																		
<u> </u>	Chase Issuance Trust	"			•			\$SO	27,720	•	\$SO	23,176		23,192	\$SO	(16)	•	SSO.		4
I	Discover Card Execution Note	"			1	US\$ 45,722		SSO	16,266	1	SSO.	24,230	\$SO	24,268	SSO.	(38)		NS\$	37,495	95
V	American Express Credit Account	ıt "	1		•	US\$ 12,805		NS\$	25,878	•	\$SO	11,239	\$SO	11,233	SSO	9	•	SSO.	27,285	85
	Master Trust																			
<u> </u>	Capital One Multi-Asset Execution Trust	· ·			1	US\$ 22,544	4	\$SO	1	1	SS <sub>O</sub>	15,223	SSO	15,227	\$SO	<u>4</u>	'	SSO	7,304	<del>4</del>
<b>∞</b> l π	<u>Structure product</u> Bank of Tokyo-Mitsubishi UFJ	Financial assets at amortized cost			1	US\$ 50,000		ns\$	,	1	\$SO	50,000	\$SO	50,000	NS%	1	,	\$SO		1

Note 1: The ending balance includes the amortization of premium/discount on bonds investments, share of profits/losses of investees and other related adjustment.

Note 2: To lower the hedging cost, in August 2018, the Board of Directors of TSMC approved to inject US\$2,000,000 thousand of capital into TSMC Global. This project was approved by the Investment Commission, Ministry of Economic Affairs, R.O.C. (MOEA). The prepayment for investment was US\$100,000 thousand as of December 31, 2018.

Taiwan Semiconductor Manufacturing Company Limited and Investees

ACQUISITION OF INDIVIDUAL REAL ESTATE PROPERTIES AT COSTS OF AT LEAST NT\$300 MILLION OR 20% OF THE PAID-IN CAPITAL FOR THE YEAR ENDED DECEMBER 31, 2018

(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	Other Terms	None	None	None	None	None	None	None	None	None
	Purpose of Acquisition	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose
	Price Reference	Price comparison Manufacturing and price purpose negotiation	Price comparison   Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation
nartv	Amount	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prior Transaction of Belated Counter-narty	Transfer Date	N/A	Z/A	N/A						
Transaction of R	Relationships	N/A	N/A	N/A	N/A	Z/A	N/A	N/A	Z/A	N/A
Prior	Owner	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Nature of Relationships			1	1	1		1		
	Counter-party	HSIEH KUN CO., LTD	Jer Yih Electrical Eng. Co.	TRUSVAL TECHNOLOGY CO., LTD.	M+W High Tech Project Taiwan Co., Ltd.	CHEN FULL INTERNATIONAL CO., LTD.	Unique Station International Corp.	Organo Technology Co., Ltd.	YANKEY ENGINEERING CO., LTD.	HUAN YU TECHNOLOGIES CO., LTD.
	Payment Term	ement by ction d	acceptance Monthly settlement by the construction progress and	Monthly settlement by the construction progress and	ement by	Monthly settlement by the construction progress and	Monthly settlement by the construction progress and	ement by ction d	ement by	acceptance Monthly settlement by the construction progress and acceptance
Transaction	Amount (Foreign Currencies in Thousands)	\$ 303,592	301,341	607,800	382,672	1,334,403	300,874	1,841,951	2,559,574	413,901
	Transaction Date	March 10, 2017 to January 25, 2018	March 17, 2017 to March 12, 2018	March 21, 2017 to August 6, 2018	April 10, 2017 to March 30, 2018	April 18, 2017 to June 4, 2018	April 20, 2017 to April 19, 2018	April 21, 2017 to June 12, 2018	April 25, 2017 to July 31, 2018	May 12, 2017 to May 10, 2018
	Types of Property	Fab	Fab	Fab	Fab	Fab	Fab	Fab	Fab	Fab
	Company Name	TSMC								

(Continued)

Counter-party         Nature of Counter-party         Nature of Counter-party         Nature Party         Nature Party         Nature Date         Are price or companies         Nature desiration         Terms           TASA Construction         -         N/A	Transaction	Transaction	Transaction					Prior	Prior Transaction of Related Counter-party	elated Counter-p	arty			
- N/A N/A N/A Price comparison Manufacturing and price purpose negotiation and price purpose negotiation and price purpose negotiation purpose neg	Company Types of Transaction Date (Foreign Payment Term Co Name Property Currencies in Thousands)	Amount Transaction Date (Foreign Payment Term Currencies in Thousands)	Payment Term		ŭ	ounter-party	Nature of Relationships	Owner		Fransfer Date	Amount	Price Reference	Purpose of Acquisition	Other Terms
SS N/A N/A N/A N/A Price comparison Manufacturing and price negotiation purpose negotiation N/A N/A N/A N/A Price comparison Manufacturing and price and price opposition negotiation n	Fab May 25, 2017 to June \$2,187,982 Monthly settlement by TECHNOLO TECHNOLO TECHNOLO TECHNOLO TECHNOLO INCORPORA INCORPORA	\$2,187,982 Monthly settlement by Milh the construction progress and	Monthly settlement by Mithe construction progress and accentance	Σ	MEGA UN TECHN INCOR	VION FOLOGY PORATED		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
SS, - N/A N/A N/A Price comparison Manufacturing and price and price purpose negotiation and price and pri	ement by ction	1,422,454 Monthly settlement by The construction progress and	Monthly settlement by the construction progress and	`	TASA Con Corporat	struction	ı	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
PARTNERS, - N/A N/A N/A N/A Price comparison Manufacturing and price and price purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price or purpose negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  - N/A N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation	ement by ction d	347,431 Monthly settlement by the construction progress and acceptance	347,431 Monthly settlement by the construction progress and acceptance		MandarTo	ech Interiors Inc.	1	N/A	Z/Z	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ional Corp., - N/A N/A N/A N/A Price comparison Manufacturing and price purpose negotiation purpose negotiation and price purpose negotiation and price purpose negotiation purpose negotiation and price purpose negotiation and price purpose negotiation purpose negotiation and price purpose negotiation and price purpose negotiation purpose negotiation negotiation negotiation negotiation purpose negotiation negotiatione	ement by J.J. ction	348,757 Monthly settlement by J.J. the construction progress and acceptance	Monthly settlement by J.J. Hondry Settlement by J.J. progress and acceptance	T.	J.J. PAN ARCE PLAN		ı	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ional Corp., - N/A N/A N/A Price comparison Manufacturing and price purpose negotiation and price purpose negotiation beering Co., - N/A N/A N/A N/A N/A Price comparison Manufacturing and price purpose negotiation	ement by ction	574,621 Monthly settlement by the construction progress and	Monthly settlement by the construction progress and		Trane Ta Limite	Frane Taiwan Distribution Limited	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
Feastern - N/A N/A N/A Price comparison Manufacturing and price negotiation herring Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation human broad price negotiation and price negotiation human price negotiation and price negotiation human price negotiation human price negotiation and price negotiation human price negotiation human price negotiation human human human negotiation human human negotiation human human human negotiation human hu	ement by ction	337,069 Monthly seatlement by the construction progress and acceptance	Monthly settlement by the construction progress and acceptance		Lumax Iı Ltd	nternational Corp.,	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ndustrial Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation ndustrial Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation purpose negotiation negotiation	ement by ction	1,012,550 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and		Air Liqu	Air Liquide Far Eastern	ı	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
industrial Co., - N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price negotiation N/A N/A N/A Price comparison Manufacturing and price negotiation Price on purpose negotiation N/A N/A N/A N/A Price comparison Manufacturing and price negotiation purpose negotiation	Fab August 16, 2017 to July 617,447 Monthly settlement by Kao Hsin 31, 2018 the construction Ltd.	617,447 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and		Kao Hsi Ltd.		1	N/A	Z/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
- N/A N/A Price comparison Manufacturing and price purpose negotiation - N/A N/A N/A Price comparison Manufacturing and price negotiation - N/A N/A N/A Price comparison manufacturing and price purpose negotiation	ement by ction d	1,224,738 Monthly settlement by the construction progress and acceptance	Monthly settlement by the construction progress and acceptance		Uangyih Ltd.	Uangyih-Tech Industrial Co., Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ONAL N/A N/A N/A Manufacturing and price purpose negotiation	Fab September 14, 2017 to 784,003 Monthly settlement by Siemens I March 22, 2018 progress and acceptance	784,003 Monthly settlement by the construction progress and accordance	Monthly settlement by the construction progress and		Siemens	s Ltd.		N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
	ement by M ction d	1,773,165 Monthly settlement by M the construction progress and acceptance	Monthly settlement by M the construction progress and acceptance	Σ	MARKE INTE CORI	ARKETECH INTERNATIONAL CORP.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None

Payment Term Methy scalement by BESICCANT Relationships Methy scalement by BESICCANT Methy scalement by BESICCANT Methy scalement by BESICCANT Methy scalement by BESICCANT Methy scalement by Methy scalem			1	Transaction				Prior	Prior Transaction of Related Counter-party	elated Counter-	arty			
DESICCANT	Company Types of Transaction Date (Foreign Name Property Transaction Date (Toreign Currencies in Thousands)		Amount (Foreign Currencies in Thousands)		Payment Term	Counter-party	Nature of Relationships	Owner		Fransfer Date	Amount	Price Reference	Purpose of Acquisition	Other Terms
Chen Yaan International Co.         - N/A         N/A         N/A         Price comparison Manufacturing and price and price purpose pregutation         Purpose purpose pregutation           PAN ASIA Corp.         - N/A         N/A         N/A         Price comparison Manufacturing and price purpose pregutation         Purpose purpose pregutation           Taiwan Puritic Corp.         - N/A         N/A         N/A         N/A         Price comparison Manufacturing and price purpose purpo	November 10, 2017 to \$ 305,783 May 24, 2018	\$ 305,783	305,783	_	ement by stion	DESICCANT TECHNOLOGY CO., LTD.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
PAN ASIA Corp.         -         N/A         N/A         N/A         Price comparison         Manufacturing and price and price purpose negotiation           SERVICES CO., LTD.         -         N/A         N/A         N/A         N/A         Price comparison         Manufacturing and price purpose negotiation           Taiwan Puritic Corp.         -         N/A         N/A         N/A         N/A         Price comparison         Manufacturing purpose negotiation           WHOLETECH SYSTEM HITECH LIMITED         -         N/A         N/A         N/A         N/A         N/A         Price comparison         Manufacturing purpose negotiation           ABB Ltd.         -         N/A         N/A <td< td=""><td>November 13, 2017 to 948,048 MG August 13, 2018</td><td>948,048</td><td></td><td>ĬĬĪ</td><td>ement by etion d</td><td>Chen Yuan International Co., Ltd</td><td>1</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>Price comparison and price negotiation</td><td>Manufacturing purpose</td><td>None</td></td<>	November 13, 2017 to 948,048 MG August 13, 2018	948,048		ĬĬĪ	ement by etion d	Chen Yuan International Co., Ltd	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
SERVICES CO., LTD.  Taiwan Purite Corp.  Taiwan Pur	November 14, 2017 to 1,724,550 Moi April 16, 2018 tt	1,724,550		Mo th	ement by ction d	PAN ASIA Corp.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
Taiwan Puritic Corp.  - N/A N/A N/A N/A N/A N/A Price comparison Manufacturing and price purpose negotiation  ABB Ltd.  - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  KEDGE Construction Co., Ltd.  Shihlin Electric & - N/A N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  Shihlin Electric & - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  Shihlin Electric & - N/A N/A N/A N/A Price comparison Manufacturing and price negotiation  Engree Construction Co., LTD.  Engree Construction Co., LTD.  Engree Construction Co., LTD.  Full Tau Construction Co., LTD.  Fu	December 5, 2017 to 7,219,028 Mon July 31, 2018 th	7,219,028		Mon th pr	ement by ction d	UNITED INTEGRATED SERVICES CO., LTD.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
WHOLETECH SYSTEM HITECH LIMITED         -         N/A         N/A         N/A         Price comparison negotiation         Manufacturing purpose           ABB Ltd.         -         N/A         N/A         N/A         Price comparison negotiation         Manufacturing purpose           Shihlin Electric & Engineering Corp. Tainan Branch Engineering Corp. Tainan Branch CO.,LTD.         -         N/A         N/A         N/A         Price comparison negotiation         Manufacturing purpose           Eu Tsu Construction Co., Ltd.         -         N/A         N/A         N/A         Price comparison negotiation         Manufacturing purpose           Fu Tsu Construction Co., Ltd.         -         N/A         N/A         N/A         Price comparison negotiation         Manufacturing purpose           Fu Tsu Construction Co., Ltd.         -         N/A         N/A         N/A         Price comparison negotiation         Manufacturing purpose	December 13, 2017 to 2,457,695 Mon July 23, 2018 th	2,457,695		Mon the pre	Monthly settlement by the construction progress and	Taiwan Puritic Corp.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
ABB Ltd.       -       N/A       N/A       N/A       N/A       Price comparison negotiation       Manufacturing and price purpose negotiation         KEDGE Construction Co., Ltd.       -       N/A       N/A       N/A       N/A       Price comparison purpose negotiation         Shihlin Electric & Ltd.       -       N/A       N/A       N/A       N/A       Price comparison purpose negotiation         Engineering Corp. Tainan Branch       -       N/A       N/A       N/A       Price comparison purpose negotiation         Lek ENGINEERING Co.LTD.       -       N/A       N/A       N/A       Price comparison purpose negotiation         Fu Tsu Construction Co., Ltd.       -       N/A       N/A       N/A       Price comparison purpose negotiation	December 14, 2017 to 305,566 Month Month May 23, 2018 the proof	305,566		Month the prog		WHOLETECH SYSTEM HITECH LIMITED	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
KEDGE Construction Co, Ltd.       - N/A       N/A       N/A       N/A       Price comparison and price negotiation       Manufacturing and price purpose negotiation         Shihlin Electric & Configuration Shihlin Electric & Engineering Corp. Tainan Branch       - N/A       N/A       N/A       N/A       Price comparison purpose negotiation         L&K ENGINEERING CO.LTD.       - N/A       N/A       N/A       N/A       N/A       Manufacturing purpose negotiation         Fu Tsu Construction Co., Ltd.       - N/A       N/A       N/A       N/A       N/A       Manufacturing purpose negotiation         Ltd.       - N/A       N/A       N/A       N/A       N/A       Manufacturing purpose negotiation	December 26, 2017 to   525,172   Month     February 13, 2018   progen	525,172		Month the c		ABB Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
Shihlin Electric & - N/A N/A N/A Price comparison Manufacturing Branch  L&K ENGINEERING  CO.,LTD.  Full Tsu Construction Co.,  Ltd.	January 4, 2018 to April 1,744,533 Monthl 16, 2018 prog	1,744,533		Monthl the c prog		KEDGE Construction Co., Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
L&K ENGINEERING - N/A N/A Price comparison Manufacturing CO.,LTD.  Fu Tsu Construction Co., - N/A N/A N/A Price comparison Manufacturing and price purpose negotiation Ltd.	January 5, 2018 to April 315,886 Month 16, 2018 programmer 18, 2018	315,886		Month the o		Shihlin Electric & Engineering Corp. Tainan Branch	1	N/A	Z/Z	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
Fu Tsu Construction Co., - N/A N/A N/A Price comparison Manufacturing Ltd.  Ltd.  negotiation	February 5, 2018 to July 2,564,709 Month 131, 2018 prop	2,564,709	2,564,709	Month the prog		L&K ENGINEERING CO.,LTD.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None
	February 6, 2018 to 5,387,421 Month August 13, 2018 pro pro pro acc	5,387,421		Montl the pro acc		Fu Tsu Construction Co., Ltd.	1	N/A	N/A	N/A	N/A	Price comparison and price negotiation	Manufacturing purpose	None

Other Terms		None	None	None	None	None	None
Purpose of Acquisition		Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose	Manufacturing purpose
Price Reference		Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation	Price comparison   Manufacturing and price purpose negotiation	Price comparison Manufacturing and price purpose negotiation
Prior Transaction of Related Counter-party	Amount	N/A	N/A	N/A	N/A	N/A	N/A
	Relationships Transfer Date	N/A	N/A	N/A	N/A	N/A	N/A
	Relationships	N/A	N/A	N/A	N/A	N/A	N/A
Prior	Owner	N/A	N/A	N/A	N/A	N/A	N/A
Counter-party Relationships		1	1	1	1	1	
		AMPOWER INTERNATIONAL ENTERPRISE	Cica-Huntek Chemical Technology Taiwan Co., Ltd	Monthly settlement by the construction Co., Ltd Construction Co., Ltd Construction Co., Ltd	China Steel Structure Co., Ltd.	Lead Fu Industrials Corp.	Monthly settlement by the construction Co., the construction brogress and acceptance
	Payment Term	Monthly settlement by AMPOWER the construction INTERNA Progress and ENTERPIE	ement by ction d	Monthly settlement by the construction progress and	Monthly settlement by China the construction Ltd. progress and	Monthly settlement by the construction progress and	Monthly settlement by the construction progress and acceptance
Transaction	Amount (Foreign Currencies in Thousands)	\$ 378,445	1,415,232	1,068,243	3,098,269	410,000	5,311,851
_	Transaction Date	February 12, 2018 to April 16, 2018	February 13, 2018 to June 25, 2018	March 16, 2018 to August 2, 2018	March 16, 2018 to December 18, 2018	April 13, 2018 to April 16, 2018	April 16, 2018 to December 24, 2018
	Types of Property	Fab	Fab	Fab	Fab	Fab	Fab
	Company Types of Name Property	TSMC					

(Concluded)

Taiwan Semiconductor Manufacturing Company Limited and Investees

TOTAL PURCHASES FROM OR SALES TO RELATED PARTIES OF AT LEAST NT\$100 MILLION OR 20% OF THE PAID-IN CAPITAL FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	Note									
able or	% to Total	70	ı	4	1	3	1	П	ı	20
Notes/Accounts Payable or Receivable	Unit Price Payment Terms (Foreign Currencies in Thousands)	\$ 86,057,097	375,184	(1,299,072)	(414,401)	(1,092,785)	(357,080)	(362,564)	106,750 (US\$ 3,473)	102,478
Abnormal Transaction	Payment Terms	Note					1		ı	
Abnorm	Unit Price			ı				1	•	
ails	Payment Terms	Net 30 days from invoice date	Net 30 days from the end of the	Net 30 days from the end of the	Month of when invoice is issued Net 30 days from the end of the month of when invoice is issued	Net 30 days from the end of the	Net 30 days from the end of the month of when invoice is issued	Net 30 days from the end of the month of when invoice is issued	Net 30 days from invoice date	Net 30 days from the end of the month of when invoice is issued
Transaction Details	% to Total	09	_	19	∞	6	S	4	1	70
Transa	Amount (Foreign Currencies in Thousands)	\$ 650,432,820	6,705,439	18,089,003	7,738,425	8,309,250	5,142,749	3,666,645	1,664,555 (US\$ 55,492)	542,179
	Purchases/ Sales	Sales	Sales	Purchases	Purchases	Purchases	Purchases	Purchases	Sales	Sales
	Nature of Relationships	Subsidiary	Associate	Subsidiary	Subsidiary	Indirect subsidiary	Associate	Associate	Associate of TSMC	Associate of TSMC
	Related Party	TSMC North America	GUC	TSMC China	TSMC Nanjing	WaferTech	VIS	SSMC	GUC	Xintec
	Company Name	TSMC							TSMC North America	VisEra Tech

Note: The tenor is 30 days from TSMC's invoice date or determined by the payment terms granted to its clients by TSMC North America.

Taiwan Semiconductor Manufacturing Company Limited and Investees

RECEIVABLES FROM RELATED PARTIES AMOUNTING TO AT LEAST NT\$100 MILLION OR 20% OF THE PAID-IN CAPITAL DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

						Orondus		
Company Name	Related Party	Nature of Relationships	Ending Balance (Foreign Currencies in Thousands)	Turnover Days (Note 1)	Amount	Overtune Action Taken	Amounts Received in Subsequent Period	Allowance for Bad Debts
TSMC	TSMC North America GUC	Subsidiary Associate	\$ 87,092,562 375,184	50 31	\$ 2,828,842 182,416		\$ 39,357,357 182,416	<b>∽</b>
TSMC China	TSMC Nanjing	The same parent company	30,986,047	Note 2	1	•	1	•
	TSMC	Parent company	(KMB 6,920,699) 1,299,072 (RMB 290,149)	27	1	•	1	ı
WaferTech	TSMC	The ultimate parent of the Company	1,092,785 (USD 35,549)	53	661,841 (USD 21,530)	1	661,841 (USD 21,530)	ı
TSMC Nanjing	TSMC	Parent company	614,039 (RMB 137,146)	10	•	•	,	•
TSMC Technology	TSMC	The ultimate parent of the Company	218,347 (USD 7,103)	Note 2	•	•	1	•
TSMC North America GUC	GUC	Associate of TSMC	106,750 (USD 3,473)	39	43,023 (USD 1,400)	•	43,023 (USD 1,400)	•
VisEra Tech	Xintec	Associate of TSMC	102,478	44	1	,	1	1

Note 1: The calculation of turnover days excludes other receivables from related parties.

Note 2: The ending balance is primarily consisted of other receivables, which is not applicable for the calculation of turnover days.

Taiwan Semiconductor Manufacturing Company Limited and Investees

NAMES, LOCATIONS, AND RELATED INFORMATION OF INVESTEES OVER WHICH THE COMPANY EXERCISES SIGNIFICANT INFLUENCE (EXCLUDING INFORMATION ON INVESTMENT IN MAINLAND CHINA) FOR THE YEAR ENDED DECEMBER 31, 2018
(Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

				Original Investment Amount	ment Amount	Balance	Balance as of December 31, 2018	31, 2018	Not Income	Share of	
Investor Company	Investee Company	Location	Main Businesses and Products	December 31, 2018 (Foreign Currencies in Thousands)	December 31, 2017 (Foreign Currencies in Thousands)	Shares (In Thousands)	Percentage of Ownership	Carrying Value (Foreign Currencies in Thousands)	(Losses) of the Investee (Foreign Currencies in Thousands)	Profits/Losses of Investee (Note 1) (Foreign Currencies in Thousands)	Note
TSMC	TSMC Global	Tortola, British Virgin Islands	Investment activities	\$ 355,162,309 (Note 3)	\$ 292,890,229	11	100	\$ 393,577,931	\$ 9,271,602	\$ 9,271,602	Subsidiary
	TSMC Partners	Tortola, British Virgin Islands	Investing in companies involved in the design, manufacture, and other related business in the semiconductor industry and other investment activities	31,456,130	31,456,130	988,268	100	52,339,094	2,499,370	2,499,370	Subsidiary
	VIS	Hsin-Chu, Taiwan	Manufacturing, selling, packaging, testing and computer-aided design of integrated circuits and other semiconductor devices and the manufacturing and dusign acretics of masks	10,180,677	10,180,677	464,223	28	9,006,126	6,166,269	1,741,394	Associate
	SSMC	Singapore	Manufacturing and selling of integrated circuits and other semiconductor devices	5,120,028	5,120,028	314	39	5,772,815	3,919,068	1,520,207	Associate
	VisEra Tech	Hsin-Chu, Taiwan	Engaged in manufacturing electronic spare parts and in researching, developing, designing, manufacturing, selling, packaging and testing of color filter	5,005,171	5,005,171	253,120	87	4,531,929	412,283	358,421	Subsidiary
	TSMC North America	San Jose, California, U.S.A	Selling and marketing of integrated circuits and other semiconductor devices	333,718	333,718	11,000	100	4,269,393	117,948	117,948	Subsidiary
	Xintec	Taoyuan, Taiwan	Wafer level chip size packaging and wafer level	1,988,317	1,988,317	111,282	41	1,764,607	(1,351,951)	(547,789) Associate	ssociate
	GUC	Hsin-Chu, Taiwan	Researching, developing, manufacturing, testing and marketing of integrated circuits	386,568	386,568	46,688	35	1,299,423	988,156	344,274	Associate
	TSMC Europe	Amsterdam, the Netherlands	Customer service and supporting activities	15,749	15,749	•	100	445,828	41,697	41,697	Subsidiary
	VTAF III TSMC Japan	Cayman Islands Yokohama, Japan	Investing in new start-up technology companies Customer service and supporting activities	1,308,244	1,318,885	- 9	86 O	194,660	(3,416)	(3,348)	Subsidiary
	VTAFIL	Cayman Islands	Investing in new start-up technology companies	278,800	412,831	' ' 0	86	128,758	(3,726)		Subsidiary
	TSMC Solar Europe GmbH	Seoul, Korea Hamburg, Germany	Customer service and supporting activities Selling of solar related products and providing customer service	25,266	25,266	30	100	(20,106)	(21)	(21)	(21) Subsidiary
TSMC Partners	TSMC Development	Delaware, U.S.A	Investing in companies involved in the manufacturing related business in the semi-conductor industry	18,042,499 (US\$ 586,939)	18,042,499 (US\$ 586,939)	ı	100	29,240,767 (US\$ 951,229)	1,863,196 (US\$ 61,803)	Note 2	Subsidiary
	TSMC Technology	Delaware, U.S.A	Engineering support activities	439,029	439,029	•	100	587,008	47,866	Note 2	Subsidiary
	TSMC Canada	Ontario, Canada	Engineering support activities	70,702		2,300	100	205,423		Note 2	Subsidiary
	ISDF	Cayman Islands	Investing in new start-up technology companies	14,607		583	26	510		Note 2	Subsidiary
	ISDF II	Cayman Islands	Investing in new start-up technology companies			9,299	76	<u> </u>	(6,781) US\$ (231))	Note 2	Subsidiary
VTAF III	Growth Fund	Cayman Islands	Investing in new start-up technology companies		66,207	1	100	97,782	(597) (US\$ (20))	Note 2	Subsidiary
	Mutual-Pak	New Taipei, Taiwan	Manufacturing of electronic parts, wholesaling and retailing of electronic materials, and researching, developing and testing of RFID	48,980	4	4,693	39	22,867	(1)	Note 2	Associate
											(Continued)

_		
	Note	Note 2   Subsidiary
Share of	Profits/Losses of Investee (Note 1) (Foreign Currencies in Thousands)	Note 2
omoonI toN	Carrying (Loses) of the Investee (Foreign (Foreign Currencies in Currencies in Thousands)	\$ 4,595,263 \$ 1,473,555 US\$ 149,488) (US\$ 48,918)
	Carrying Value (Foreign Currencies in Thousands)	\$ 4,595,263 (US\$ 149,488)
Balance as of December 31, 2018	Shares (In Percentage of Thousands) Ownership	100
		293,637
Original Investment Amount	December 31, 2018 2017 (Foreign (Foreign Currencies in Thousands)	· · ·
Original Inves	December 31, 2018 (Foreign Currencies in Thousands)	ss
	Main Businesses and Products	Manufacturing, selling and testing of integrated circuits and other semiconductor devices
	Location	Washington, U.S.A
	Investee Company	WaferTech
	Investor Company	TSMC Development

Note 1: The share of profits/losses of investee includes the effect of unrealized gross profits/losses on intercompany transactions.

Note 2: The share of profits/losses of the investee company is not reflected herein as such amount is already included in the share of profits/losses of the investor company.

Note 3: To lower the hedging cost, in August 2018, the Board of Directors of TSMC approved to inject US\$2,000,000 thousand of capital into TSMC Global. This project was approved by the Investment Commission, Ministry of Economic Affairs, R.O.C. (MOEA). The prepayment for investment was US\$100,000 thousand as of December 31, 2018.

(Concluded)

Taiwan Semiconductor Manufacturing Company Limited and Investees

INFORMATION ON INVESTMENT IN MAINLAND CHINA FOR YEAR ENDED DECEMBER 31, 2018 (Amounts in Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Accumulated	Inward Remittance of Earnings as of December 31, 2018	· ·	•
	Carrying Amount as of December 31, 2018	5,364,578 \$ 55,466,911 (Note 2)	20,601,413
	Share of Profits/Losses	\$ 5,364,578 (Note 2)	(8,200,927) (Note 2)
	Percentage of Ownership	100%	100%
	Net Income (Losses) of the Investee Company	\$ 5,397,462	(8,215,989)
Accumulated	Investment from Taiwan as of December 31, 2018 (USS in Thousands)	- \$ 18,939,667 (US\$ 596,000)	30,521,412 (US\$ 1,000,000)
t Flows	Inflow	<b>.</b>	1
Investment Flows	Outflow (US\$ in Thousands)	· •	2,361,320 (US\$ 80,000)
Accumulated	Method of Investment from Investment January 1, 2018 (USS in Thousands)	\$ 18,939,667 (US\$ 596,000)	28,160,092 2,361,320 (US\$ 920,000)
	Method of Investment	Note 1	Note 1
	Total Amount of Paid-in Capital (RMB in Thousands)	\$ 18,939,667 (RMB 4,502,080)	30,521,412 (RMB 6,650,119)
	Main Businesses and Products	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices	Manufacturing, selling, testing and computer-aided design of integrated circuits and other semiconductor devices
	Investee Company	TSMC China	TSMC Nanjing

Upper Limit on Investment	Note 3
Investment Amounts Authorized by Investment Commission, MOEA (US\$ in Thousands)	\$ 119,412,667 (US\$ 3,596,000)
Accumulated Investment in Mainland China as of December, 2018 (USS in Thousands)	\$ 49,461,079 (US\$ 1,596,000)

Note 1: TSMC directly invested US\$596,000 thousand in TSMC China and US\$1,000,000 thousands in TSMC Nanjing.

Note 2: Amount was recognized based on the audited financial statements.

Note 3: As the Company has obtained the certificate of being qualified for operating headquarters issued by Industrial Development Bureau, MOEA on August 2016, the upper limit on investment in mainland China pursuant to "Principle of investment or Technical Cooperation in Mainland China" is not applicable.

# THE CONTENTS OF STATEMENTS OF MAJOR ACCOUNTING ITEMS

ITEM	STATEMENT INDEX
MAJOR ACCOUNTING ITEMS IN ASSETS, LIABILITIES AND	
EQUITY	
STATEMENT OF CASH AND CASH EQUIVALENTS	1
STATEMENT OF NOTES AND ACCOUNTS RECEIVABLE,	2
NET	3
STATEMENT OF RECEIVABLES FROM RELATED PARTIES	3
STATEMENT OF INVENTORIES	4
STATEMENT OF INVENTORIES STATEMENT OF OTHER CURRENT ASSETS	Note 14
STATEMENT OF OTHER CURRENT ASSETS STATEMENT OF CHANGES IN INVESTMENTS	Note 14 5
ACCOUNTED FOR USING EQUITY METHOD	3
STATEMENT OF CHANGES IN PROPERTY, PLANT AND	Note 12
EQUIPMENT	Note 12
STATEMENT OF CHANGES IN ACCUMULATED	Note 12
DEPRECIATION AND ACCUMULATED IMPAIRMENT	Note 12
OF PROPERTY, PLANT AND EQUIPMENT	
STATEMENT OF CHANGES IN INTANGIBLE ASSETS	Note 13
STATEMENT OF CHANGES IN INTANGIBLE ASSETS STATEMENT OF GUARANTEE DEPOSITS	Note 19
STATEMENT OF GUARANTEE DEFOSITS STATEMENT OF DEFERRED INCOME TAX ASSETS /	Note 26
LIABILITIES	Note 20
STATEMENT OF SHORT-TERM LOANS	6
STATEMENT OF SHORT-TERM EOANS STATEMENT OF ACCOUNTS PAYABLES	7
STATEMENT OF PAYABLES TO RELATED PARTIES	8
STATEMENT OF PAYABLES TO CONTRACTORS AND	9
EQUIPMENT SUPPLIERS	,
STATEMENT OF PROVISIONS	Note 16
STATEMENT OF ACCRUED EXPENSES AND OTHER	10
CURRENT LIABILITIES	10
STATEMENT OF BONDS PAYABLE	11
MAJOR ACCOUNTING ITEMS IN PROFIT OR LOSS	
STATEMENT OF NET REVENUE	12
STATEMENT OF COST OF REVENUE	13
STATEMENT OF OPERATING EXPENSES	14
STATEMENT OF FINANCE COSTS	Note 24
STATEMENT OF LABOR, DEPRECIATION AND	15
AMORTIZATION BY FUNCTION	

# STATEMENT OF CASH AND CASH EQUIVALENTS DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Item	Description	A	Amount
Cash			
Petty cash		\$	280
Cash in banks			
Checking accounts and demand deposits			17,433,341
Foreign currency deposits	Including US\$389,998 thousand @30.74, JPY199,382 thousand @0.2783, EUR729 thousand @35.22 and RMB220 thousand @4.4773		12,070,686
Time deposits	From 2018.06.05 to 2019.10.31, interest rates at 0.17%-3.00%, including NT\$208,317,862 thousand and US\$21,200 thousand @30.74	20	08,969,550
Cash equivalents	<i>,</i>		
Repurchase agreements collateralized by corporate bonds	Expired by 2019.01.02, interest rates at 3.7%		1,229,600
Commercial paper	Expired by 2019.02.20, interest rates at 0.76%		499,068
Total		\$ 24	40,202,525

# STATEMENT OF NOTES AND ACCOUNTS RECEIVABLE, NET DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars)

Client Name		Amount
Client A	\$	9,700,035
Client B		3,912,500
Client C		3,681,950
Client D		3,276,349
Others (Note 1)	_	16,121,687
		36,692,521
Less: Allowance for doubtful accounts	_	(7,132)
Total	<u>\$</u>	36,685,389

Note 1: The amount of individual client included in others does not exceed 5% of the account balance.

Note 2: The accounts receivable past due over one year amounted to NT\$4 thousand for which the Company has recognized appropriate allowance for doubtful accounts.

# STATEMENT OF RECEIVABLES FROM RELATED PARTIES DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars)

Client Name	Amount
TSMC North America	\$ 86,057,097
Others (Note)	395,487
Total	\$ 86,452,584

Note: The amount of individual client included in others does not exceed 5% of the account balance.

#### **STATEMENT 4**

# **Taiwan Semiconductor Manufacturing Company Limited**

#### STATEMENT OF INVENTORIES DECEMBER 31, 2018 (In Thousands of New Taiwan Dollars)

	Am	ount
Item	Cost	Net Realizable Value
Finished goods	\$ 10,920,351	\$ 24,537,764
Work in process	70,405,998	187,819,293
Raw materials	14,110,534	14,140,627
Supplies and spare parts	2,651,277	2,758,051
Total	\$ 98,088,160	\$ 229,255,735

Taiwan Semiconductor Manufacturing Company Limited

STATEMENT OF CHANGES IN INVESTMENTS ACCOUNTED FOR USING EQUITY METHOD FOR THE YEAR ENDED DECEMBER 31, 2018
(In Thousands of New Taiwan Dollars, Unless Specified Otherwise)

	nount Collateral	7,931 Nil		27,621,298 Nil			4,269,393 Nil		9,617,699 Nil					9,715	55,586,818 Nil 20,837,480 Nil 171,491 Nil 122,512 Nil 76,718,301	<u>3,016</u>
Market Value or Net Assets Value	Unit Price (NTS) Total Amount	\$ 393,577,931	52,43	\$59.5 (Note 1) 27,62	5,55	4,47	4,26		206 (Note 1) 9,61		14	4	(2	501,949,715	55,586,811 20,837,488 171,49 122,517 76,718,30	\$578,668,016
	Unit Amount (N	\$ 393,577,931	52,339,094		5,772,815	1,531,929	1,269,393				141,136	40,966	(20,106)	473,169,142	55,466,911 20,601,413 194,660 128,758 76,391,742	\$ 549,560,884
Balance, December 31, 2018	W %	100 \$ 395	100 52						35	100	100	100	100	47.	100 100 98 98	\$ 54
Balance.]	Shares (In Thousands)	Ξ	988,268	464,223	314	253,120	11,000	111,282	46,688		9	80	_			
Increase (Decrease) in Using the Equity Method	Amount (Note 2)	\$ 22,093,974	2,654,807	437,782	95,175	(135,233)	268,390	(527,493)	(177)	38,504	11,690	1,756	111	24,938,692	4,406,026 (8,253,647) 52,465 (57,744) (3,852,900)	\$ 21,085,792
Decrease in Investment	s) Amount	89													- (10,641) (134,031) (144,672)	\$ (144,672)
Decrease	Shares (In Thousands)													ō		0
Additions in Investment	) Amount	\$ 62,272,080												62,272,080	2,361,320	\$ 64,633,400
Additions	Shares (In Thousands)	2	•	•	•	•	•	•	•	•	•	•	•			
Balance, January 1, 2018	Amount	\$ 309,211,877	49,684,287	8,568,344	5,677,640	4,667,162	4,001,003	2,292,100	1,300,194	407,324	129,446	39,210	(20,217	385,958,370	51,060,885 26,493,740 152,836 320,533 78,027,994	\$ 463,986,364
Balance, Ja	Shares (In Thousands)	6	988,268	464,223	314	253,120	11,000	111,282	46,688	•	9	80	-			
	Investees	Stocks TSMC Global	TSMC Partners	VIS	SSMC	VisEra Tech	TSMC North America	Xintec	GUC	TSMC Europe	TSMC Japan	TSMC Korea	TSMC Solar Europe GmbH	Subtotal	Capital TSMC China TSMC Nanjing VTAF III VTAF III Subtotal	Total

Note 1: The unit price is calculated by closing price of Gre Tai Securities Market as of December 28, 2018 or by closing price of the Taiwan Stock Exchange as of December 28, 2018.

Note 2: Mainly including share of profit or loss of subsidiaries and associates, share of other comprehensive income of subsidiaries and associates, cash dividends received from subsidiaries and associates, etc.

Taiwan Semiconductor Manufacturing Company Limited

STATEMENT OF SHORT-TERM LOANS DECEMBER 31, 2018 (In Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Type	Balance, End of Year	Contract Period	Range of Interest Rates (%)	Loan Cc	Loan Commitments	Collateral	Remark
				5		į	
	\$ 15,831,100	2018.11.06-2019.01.08	2.89-3.22		000,009	N	•
	13,218,200	2018.10.11-2019.01.18	2.75-2.94	\$SO	000,009	N.	
	10,144,200	2018.11.05-2019.01.11	2.75-3.00	TW\$	12,000,000	N.I.	
The Bank Of Tokyo-Mitsubishi UFJ, Ltd.	8,914,600	2018.11.26-2019.01.25	2.94-2.99	SSO	300,000	Z	
	6,762,800	2018.11.08-2019.01.09	2.79	TW\$	8,000,000	I.N.	
	5,705,640	2018.12.27-2019.01.30	0.10	SSO	400,000	Z	
JPMorgan Chase Bank N.A.	5,533,200	2018.11.05-2019.01.07	2.80	\$SO	200,000	I.N.	•
	4,918,400	2018.11.07-2019.01.09	2.98-3.00	SSO	160,000	Z	
	3,842,500	2018.12.03-2019.01.04	2.65	\$SO	500,000	Nii	•
	3,381,400	2018.11.14-2019.01.16	2.82	SSO	110,000	Z	
Taipeifubon Commercial Bank	2,817,600	2018.12.27-2019.01.25	0.01	\$SO	100,000	Nii	
	2,766,600	2018.10.05-2019.01.04	2.68	SSO	100,000	Z	•
	2,151,800	2018.11.09-2019.01.09	2.99	\$SO	75,000	Nii	
	1,537,000	2018.11.09-2019.01.09	3.00	SSO.	65,000	ΞΖ	
	1,229,600	2018.11.14-2019.01.16	2.82	\$SO	484,000	Nii	
	88,754,640						
	3,227,700	2018.12.28-2019.04.19	2.53	\$SO	1,500,000	Nil	
	\$ 91,982,340						

STATEMENT OF ACCOUNTS PAYABLES DECEMBER 31, 2018 (In Thousands of New Taiwan Dollars)

Vendor Name	Amount
Vendor A	\$ 1,625,875
Others (Note)	28,846,417
Total	\$ 30,472,292

Note: The amount of individual vendor in others does not exceed 5% of the account balance.

# STATEMENT OF PAYABLES TO RELATED PARTIES DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars)

Vendor Name	Amount
TSMC China	\$ 1,299,072
WaferTech	1,092,785
Xintec	649,812
TSMC Nanjing	414,401
SSMC	362,564
VIS	357,080
Others (Note)	371,038
Total	<u>\$ 4,546,752</u>

Note: The amount of individual vendor in others does not exceed 5% of the account balance.

# STATEMENT OF PAYABLES TO CONTRACTORS AND EQUIPMENT SUPPLIERS DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars)

Vendor Name	Amount
Vendor B	\$ 4,424,855
Vendor C	4,089,399
Vendor D	2,349,753
Others (Note)	30,415,903
Total	<u>\$ 41,279,910</u>

Note: The amount of individual vendor included in others does not exceed 5% of the account balance.

# STATEMENT OF ACCRUED EXPENSES AND OTHER CURRENT LIABILITIES DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars)

Item	Amount
Refund liability	\$ 21,199,032
Guarantee deposit	6,148,000
Receipts in advance	2,740,649
Others (Note)	19,690,361
Total	<u>\$ 49,778,042</u>

Note: The amount of each item in others does not exceed 5% of the account balance.

Taiwan Semiconductor Manufacturing Company Limited

STATEMENT OF BONDS PAYABLE DECEMBER 31, 2018 (In Thousands of New Taiwan Dollars)

	Collateral	Nii	Nii	Nil	E E	E E E	Z Z Z	EZ EZ	Nil			
	Repayment	Bullet repayment	Bullet repayment	Bullet repayment	Bullet repayment Bullet repayment	Bullet repayment Bullet repayment Bullet repayment	Bullet repayment Bullet repayment Bullet repayment	Bullet repayment Bullet repayment	Bullet repayment	Bullet repayment Bullet repayment Bullet repayment Bullet repayment		
	Carrying Value	· ·	7,000,000	000,000,6	9,000,000 4,400,000	10,000,000	11,600,000	10,200,000 3,500,000	8,500,000	1,400,000 2,600,000 5,400,000 2,600,000	91,800,000	(34,900,000)
	Unamortized Premiums (Discounts)	· ·	1					1 1				
Amount	Balance, End of Year	· ·	7,000,000	9,000,000	9,000,000 4,400,000	10,000,000	11,600,000	10,200,000 3,500,000	8,500,000	1,400,000 2,600,000 5,400,000 2,600,000	91,800,000	(34,900,000)
	Repayment paid	\$ 7,500,000	1			10,600,000	6,200,000		1		\$ 24,300,000	
	Total Amount	3 7,500,000	7,000,000	9,000,000	9,000,000 4,400,000	10,600,000 10,000,000 3,000,000	6,200,000 11,600,000 3,600,000	10,200,000 3,500,000	8,500,000	1,400,000 2,600,000 5,400,000 2,600,000	\$ 116,100,000	
	Coupon Rate (%)	1.63	1.46	1.40	1.39	1.23 1.35 1.49	1.23 1.38 1.50	1.50	1.52	1.60 1.85 2.05 2.10		
	Interest Payment Date	on 09.28 annually	on 01.11 annually	on 08.02 annually	on 09.26 annually on 10.09 annually	on 01.04 annually on 01.04 annually on 01.04 annually	on 02.06 annually on 02.06 annually on 02.06 annually	on 07.16 annually on 07.16 annually	on 08.09 annually	on 09.25 annually		
	Issuance Date	2011.09.28	2012.01.11	2012.08.02	2012.09.26 2012.10.09	2013.01.04 2013.01.04 2013.01.04	2013.02.06 2013.02.06 2013.02.06	2013.07.16 2013.07.16	2013.08.09	2013.09.25 2013.09.25 2013.09.25 2013.09.25		
	Trustee	Mega International Commercial Bank Co., Ltd.	Mega International Commercial Bank Co., Ltd.	Mega International Commercial Bank Co., Ltd.	Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd.	Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd.	Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd.	Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd.	Taipei Fubon Commercial Bank Co., Ltd.	Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd. Taipei Fubon Commercial Bank Co., Ltd.		
	Bonds Name	Domestic unsecured bonds-100-1	Domestic unsecured bonds-100-2 - B - Domestic unsecured bonds 101 1	Domestic unsecured bonds-101-1 - B Domestic unsecured bonds 101-2	- B Domestic unsecured bonds-101-3 Domestic unsecured bonds-101-3 Domestic unsecured bonds-101-4	- A - B - C - C - C - C - C - C - C - C - C	Domestic unsecuted bonds 102-1 - A - B - C - C - C	Domestic unsecured bonds-102-2 - A - B - Domestic unsecured bonds 102 3	Domestic unsecured bonds-102-3 - B Domestic unsecured bonds 102.4	Domestic dissective bonds-102-4 - C - E - F	TOTAL	Less: current portion

\$ 56,900,000

\$ 56,900,000

STATEMENT OF NET REVENUE FOR THE YEAR ENDED DECEMBER 31, 2018 (In Thousands of New Taiwan Dollars, Unless Specified Otherwise)

Item	Shipments (Piece) (Note)	Amount
Wafer Other	10,751,552	\$ 906,992,422 116,933,291
Net revenue		\$ 1,023,925,713

Note: 12-inch equivalent wafers.

#### STATEMENT OF COST OF REVENUE FOR THE YEAR ENDED DECEMBER 31, 2018

(In Thousands of New Taiwan Dollars)

Item	Amount
Raw materials used	
Balance, beginning of year	\$ 6,566,716
Raw material purchased	48,003,230
Raw materials, end of year	(14,110,534)
Transferred to manufacturing or operating expenses	(6,483,906)
Others	(205,440)
Subtotal	33,770,066
Direct labor	14,099,289
Manufacturing expenses	474,764,387
Manufacturing cost	522,633,742
Work in process, beginning of year	52,166,234
Work in process, end of year	(70,405,998)
Transferred to manufacturing or operating expenses	(21,864,208)
Cost of finished goods	482,529,770
Finished goods, beginning of year	9,596,837
Finished goods purchased	45,624,012
Finished goods, end of year	(10,920,351)
Transferred to manufacturing or operating expenses	(11,067,796)
Scrapped	(103,647)
Subtotal	515,658,825
Others	15,202,341
Total	<u>\$ 530,861,166</u>

#### STATEMENT OF OPERATING EXPENSES FOR THE YEAR ENDED DECEMBER 31, 2018 (In Thousands of New Taiwan Dollars)

Item	Research and Development Expenses	General and Administrative Expenses	Selling Expenses
Payroll and related expense	\$ 28,608,138	\$ 7,541,827	\$ 2,121,253
Depreciation expense	22,154,406	822,877	42,835
Consumables	21,022,083	235,779	3,050
Repair and maintenance expense	3,624,661	1,266,629	596
Moving expense	271,117	986,379	600
Service fee	75,840	1,290,476	12,050
Patents	-	1,558,487	-
Management fees of the Science Park Administration	-	2,014,270	-
Commission	-	-	866,068
Others (Note)	9,188,216	3,396,574	155,218
Total	<u>\$ 84,944,461</u>	\$ 19,113,298	\$ 3,201,670

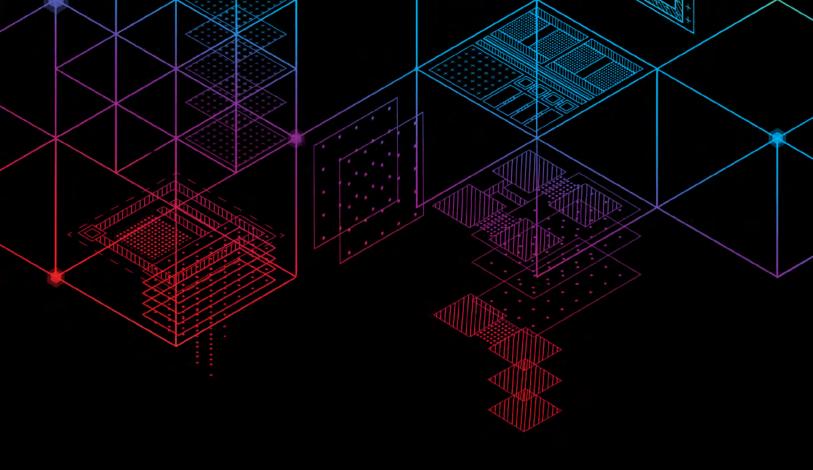
Note: The amount of each item in others does not exceed 5% of the account balance.

Taiwan Semiconductor Manufacturing Company Limited

STATEMENT OF LABOR, DEPRECIATION AND AMORTIZATION BY FUNCTION FOR THE YEAR ENDED DECEMBER 31, 2018 AND 2017 (In Thousands of New Taiwan Dollars, Unless Specified Otherwise)

		Year Ended De	Year Ended December 31, 2018			Year Ended De	Year Ended December 31, 2017	
			Classified as Other				Classified as Other	
	Classified as	Classified as Operating	Operating Income		Classified as	Classified as Operating	Operating Income	
Tahar nast (Nata)	Cost of Revenue	Expenses	and Expenses	Total	Cost of Revenue	Expenses	and Expenses	Total
Salary and bonus	\$ 51,980,310	\$ 34,454,020	· •	\$ 86,434,330	\$ 50,157,890	\$ 33,221,701	<b>S</b>	\$ 83,379,591
Labor and health insurance	2,610,200	1,708,463	•	4,399,663	2,628,261	1,589,597	•	4,217,858
Pension	1,457,996	852,315	•	2,310,311	1,405,941	770,262	•	2,176,203
Board compensation		378,092	•	378,092		412,422	•	412,422
Others	1,604,091	878,328	1	2,482,419	1,710,785	891,612		2,602,397
	\$ 57,733,597	\$ 38,271,218	\$	\$ 96,004,815	\$ 55,902,877	\$ 36,885,594	\$	\$ 92,788,471
Depreciation Amortization	\$ 251,292,565 \$ 2,018,702	\$ 23,020,118 \$ 2,334,145	\$ 27,857 \$	\$ 274,340,540 \$ 4,352,847	\$ 231,042,615 \$ 2,119,899	\$ 19,490,010 \$ 2,205,129	\$ 64,510	\$ 250,597,135 \$ 4,325,028

Note: As of December 31, 2018 and 2017, the Company had 43,228 and 43,139 employees, respectively. There were 8 non-employee directors for both years.





8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 30078, Taiwan, R. O. C.
Tel: 886-3-5636688 Fax: 886-3-5637000
http://www.tsmc.com



Taiwan Semiconductor Manufacturing Company, Ltd.



Mark Liu, Chairman