
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549**

FORM 20-F

(Mark One)

☐ **REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2018

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☐ **SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Date of event requiring this shell company report _____

For the transition period from _____ to _____

Commission file number 001-15128

United Microelectronics Corporation

(Exact name of Registrant as specified in its charter)

N/A

(Translation of Registrant's name into English)

Taiwan, Republic of China

(Jurisdiction of incorporation or organization)

No. 3 Li-Hsin Road II, Hsinchu Science Park,
Hsinchu City, Taiwan, Republic of China
(Address of principal executive offices)

Chitung Liu, +886-2-2658-9168, chitung_liu@umc.com,
8F, No. 68, Section 1, Neihu Road., Taipei 11493, Taiwan R.O.C.
(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of each class
**American Depositary Shares, as evidenced by American
Depositary Receipts, each representing 5 Common Shares**

Name of each exchange on which registered
New York Stock Exchange

Securities registered or to be registered pursuant to Section 12(g) of the Act.

None
(Title of Class)

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.

None
(Title of Class)

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

12,424,318,715 Common Shares of Registrant issued as of December 31, 2018 (including 480,000,000 treasury shares)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definition of "large accelerated filer," "accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒

Accelerated filer ☐

Non-accelerated filer ☐

Emerging growth company ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards[†] provided pursuant to Section 13(a) of the Exchange Act. ☐

[†] The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP ☐

International Financial Reporting Standards as issued
by the International Accounting Standards Board ☒

Other ☐

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. Item 17 ☐ Item 18 ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Securities Exchange Act of 1934). Yes ☐ No ☒

(APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PAST FIVE YEARS)

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes ☐ No ☐

UNITED MICROELECTRONICS CORPORATION
FORM 20-F ANNUAL REPORT
FISCAL YEAR ENDED DECEMBER 31, 2018

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SUPPLEMENTAL INFORMATION

The references to “United Microelectronics”, “we”, “us”, “our”, “our company” and “the Company” in this annual report refer to United Microelectronics Corporation and its consolidated subsidiaries, unless the context suggests otherwise. The references to “Taiwan” and “R.O.C.” refer to Taiwan, Republic of China. The references to “China” and “PRC” refer to People’s Republic of China. The references to “shares” and “common shares” refer to our common shares, par value NT\$10 per share, and “ADSs” refers to our American depositary shares, each representing five common shares. The ADSs are issued under the Deposit Agreement, dated as of October 21, 2009, as amended, supplemented or modified from time to time, among United Microelectronics, JPMorgan Chase Bank, N.A. and the holders and beneficial owners from time to time of American Depositary Receipts issued thereunder. The references to “TIFRSs” refers to the Taiwan International Financial Reporting Standards as issued by the Financial Supervisory Commission in the Republic of China, “IFRSs” refers to International Financial Reporting Standards as issued by the International Accounting Standards Board, or IASB, and “U.S. GAAP” refers to the generally accepted accounting principles in the United States. Any discrepancies in any table between totals and sums of the amounts listed are due to rounding.

We publish our financial statements in New Taiwan dollars, the lawful currency of the R.O.C. In this annual report, “NT\$” and “NT dollars” mean New Taiwan dollars, “\$”, “US\$” and “U.S. dollars” mean United States dollars, “¥” means Japanese Yen, “RMB¥” means Renminbi and “€” means EURO.

FORWARD-LOOKING STATEMENTS IN THIS ANNUAL REPORT MAY NOT BE REALIZED

Our disclosure and analysis in this annual report contain or incorporate by reference some forward-looking statements. Our forward-looking statements contain information regarding, among other things, our financial condition, future expansion plans and business strategy. We have based these forward-looking statements on our current expectations and projections about future events. You can identify these statements by the fact that they do not relate strictly to historical or current facts. Although we believe that these expectations and projections are reasonable, such forward-looking statements are inherently subject to risks, uncertainties and assumptions about us, including, among other things:

- our dependence on frequent introduction of new product services and technologies based on the latest developments;
- the intensely competitive semiconductor, communications, consumer electronics and computer industries and markets;
- risks associated with our international business activities;
- our dependence on key personnel;
- general economic and political conditions, including those related to the semiconductor, communications, consumer electronics and computer industries;
- natural disasters, such as earthquakes and droughts, which are beyond our control;
- possible disruptions in commercial activities caused by natural and human-induced disasters, and outbreaks of contagious diseases;
- fluctuations in foreign currency exchange rates;
- additional disclosures we make in our previous and future Form 20-F annual reports and Form 6-K periodic reports to the U.S. Securities and Exchange Commission, or the U.S. SEC; and
- those other risks identified in the “Item 3. Key Information-D. Risk Factors” section of this annual report.

The words “may”, “will”, “is/are likely to”, “anticipate”, “believe”, “estimate”, “expect”, “intend”, “plan” and similar expressions are intended to identify a number of these forward-looking statements. We do not and will not undertake the obligation to update or revise any forward-looking statements contained in this annual report whether as a result of new information, future events or otherwise. In light of these risks, uncertainties and assumptions, the forward-looking events discussed in this annual report might not occur and our actual results could differ materially from those anticipated in these forward-looking statements.

GLOSSARY

ASIC	Application Specific Integrated Circuit. A custom-designed integrated circuit that performs specific functions which would otherwise require a number of off-the-shelf integrated circuits to perform.
BCD	Bipolar- Complementary Metal Oxide Semiconductor (“CMOS”)- Double Diffused Metal Oxide Semiconductor (“DMOS”). An integrated circuit and is one of the most important components for power management integration circuits.
BSI-CSI	Back-Side Illuminated CMOS Image Sensor, which is recently used for mobile product image sensor with better performance and thinner chip.
Cell	Semiconductor structure in an electrical state which can store a bit of information, mainly used as the building block of memory array.
Die	A piece of a semiconductor wafer containing the circuitry of an unpackaged single chip.
DRAM	Dynamic Random Access Memory. A type of volatile memory product that is used in electronic systems to store data and program instructions. It is the most common type of RAM and must be refreshed with electricity hundreds of times per second or else it will fade away.
eFlash	Embedded Flash Nonvolatile Memory. Used for most SoC (“System-on-Chip”) applications and has faster speed and enhanced security.
eHV	Embedded High Voltage Device. Used for Liquid Crystal Display (“LCD”) driver circuit to drive LCD devices.
EUV Lithography	Extreme Ultraviolet Lithography.
FinFET	Fin Field-Effect Transistor.
FPGA	Field Programmable Gate Array. A programmable integrated circuit.
Integrated Circuit	Entire electronic circuit built on a single piece of solid substrate and enclosed in a small package. The package is equipped with leads needed to electrically integrate the integrated circuit with a larger electronic system. Monolithic and hybrid integrated circuits are distinguished by the type of substrate used.
Interconnect	The conductive path made from copper or aluminum that is required to achieve connection from one circuit element to the other circuit elements within a circuit.
Mask or Photomask	A piece of glass on which an integrated circuit circuitry design is laid out.

MCU	Microcontroller unit, a small computer on a single integrated circuit, containing one or more central processing units along with memory and programmable input/output peripherals.
Memory	A group of integrated circuits that a computer uses to store data and programs, such as ROM, RAM, DRAM and SRAM.
Micron	A unit of spatial measurement that is one-millionth of a meter.
MRAM	Magnetic Random Access Memory
Nanometer	A unit of spatial measurement that is one-billionth of a meter.
PC	Personal computer.
RAM	Random Access Memory. A type of volatile memory forming the main memory of a computer where applications and files are run.
ReRAM	Resistive Random Access Memory
RF-SOI	Radio Frequency Silicon on Insulator
ROM	Read-Only Memory. Memory that is programmed by the manufacturer and cannot be changed. Typically, ROM is used to provide start-up data when a computer is first turned on.
Scanner	A photolithography tool used in the production of semiconductor devices. This camera-like step-and-scan tool projects the image of a circuit from a master image onto a photosensitized silicon wafer.
Semiconductor	A material with electrical conducting properties in between those of metals and insulators. Essentially, semiconductors transmit electricity only under certain circumstances, such as when given a positive or negative electric charge. Therefore, a semiconductor's ability to conduct can be turned on or off by manipulating those charges and this allows the semiconductor to act as an electric switch. The most common semiconductor material is silicon, used as the base of most semiconductor chips today because it is relatively inexpensive and easy to create.
SoC	System-on-Chip. A chip that incorporates functions currently performed by several chips on a cost effective basis.
SOI	Silicon-On-Insulator. Silicon wafer consisting of a thin layer of oxide, on top of which semiconductor devices are built.
SRAM	Static Random Access Memory. A type of volatile memory product that is used in electronic systems to store data and program instructions. Unlike the more common DRAM, it does not need to be refreshed.
Transistor	Tri-terminal semiconductor device in which input signal (voltage or current depending on the type of transistor) controls output current. An individual circuit that can amplify or switch electric current. This is the building block of all integrated circuits.

Volatile memory	Memory products which lose their data content when the power supply is switched off.
Wafer	Thin, round, flat piece of silicon that is the base of most integrated circuits.
8-inch wafer equivalents	Standard unit describing the equivalent amount of 8-inch wafers produced after conversion, used to quantify levels of wafer production for purposes of comparison. Figures of 8-inch wafer equivalents are derived by converting the number of wafers of all dimensions (e.g., 6-inch, 8-inch and 12-inch) into their equivalent figures for 8-inch wafers. 100 6-inch wafers are equivalent to 56.25 8-inch wafers. 100 12-inch wafers are equivalent to 225 8-inch wafers.

PART I.

ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

ITEM 3. KEY INFORMATION

A. Selected Financial Data

The selected consolidated balance sheets data as of December 31, 2017 and 2018 and the selected consolidated statements of comprehensive income data for the years ended December 31, 2016, 2017 and 2018 are derived from our audited consolidated financial statements included elsewhere in this annual report. In accordance with the requirements of the Taiwan Financial Supervisory Commission, or FSC, beginning on January 1, 2013, we have adopted Taiwan-IFRSs, which is translated and published by Accounting Research and Development Foundation, or ARDF, referred to as “TIFRSs” for reporting our annual and interim consolidated financial statements in the R.O.C. At the same time, we have adopted IFRSs as issued by the IASB for our annual reports on Form 20-F with the U.S. SEC beginning with the year ended December 31, 2013. However, since January 1, 2013, we only prepare our interim unaudited quarterly financial statements under TIFRSs, which are furnished to the SEC on Form 6-K. The selected consolidated balance sheet data as of December 31, 2014, 2015 and 2016 and the selected consolidated statements of comprehensive income data for the years ended December 31, 2014 and 2015 are derived from our audited consolidated financial statements not included in this annual report.

In accordance with rule amendments adopted by the U.S. SEC for foreign private issuers reporting under IFRSs, we are not required to provide reconciliations to U.S. GAAP in this annual report following our adoption of IFRSs.

The selected financial data set forth below should be read in conjunction with “Item 5. Operating and Financial Review and Prospects” and our consolidated financial statements and the notes to those statements included in this annual report.

	Years Ended December 31,					US\$
	2014	2015	2016	2017	2018	
	NT\$	NT\$	NT\$	NT\$	NT\$	
(in millions, except per share and per ADS data)						
Consolidated Statements of Comprehensive Income Data						
Operating revenues	140,012	144,830	147,870	149,285	151,253	4,941
Operating costs	(108,159)	(113,061)	(117,491)	(122,227)	(128,413)	(4,195)
Gross profit	31,853	31,769	30,379	27,058	22,840	746
Operating expenses	(21,238)	(19,969)	(23,922)	(22,143)	(22,277)	(727)
Net other operating income and expenses	(539)	(964)	(263)	1,653	5,117	167
Operating income	10,076	10,836	6,194	6,568	5,680	186
Non-operating income and expenses	3,496	2,833	(1,473)	1,104	(3,562)	(117)

	Years Ended December 31,					
	2014 NT\$	2015 NT\$	2016 NT\$	2017 NT\$	2018 NT\$	US\$
(in millions, except per share and per ADS data)						
Income from continuing operations before income tax	13,572	13,669	4,721	7,672	2,118	69
Income tax benefit (expense)	(3,125)	(1,028)	(553)	(993)	1,130	37
Net income	10,447	12,641	4,168	6,679	3,248	106
Total other comprehensive income (loss), net of tax	6,069	(1,065)	(4,024)	(4,815)	835	27
Total comprehensive income	16,516	11,576	144	1,864	4,083	133
Net income attributable to:						
Stockholders of the parent	11,109	13,254	8,621	9,676	7,678	251
Non-controlling interests	(662)	(613)	(4,453)	(2,997)	(4,430)	(145)
Total comprehensive income attributable to:						
Stockholders of the parent	17,035	12,251	4,629	4,973	8,617	281
Non-controlling interests	(519)	(675)	(4,485)	(3,109)	(4,534)	(148)
Earnings per share: ⁽¹⁾						
Basic	0.90	1.07	0.71	0.81	0.65	0.02
Diluted ⁽²⁾	0.89	1.02	0.67	0.75	0.60	0.02
Common shares used in earnings per share calculation:						
Basic	12,334	12,336	12,099	11,995	11,890	11,890
Diluted ⁽²⁾	12,719	13,171	13,350	13,273	13,271	13,271
Earnings per ADS equivalent:						
Basic	4.50	5.37	3.56	4.03	3.23	0.11
Diluted ⁽²⁾	4.44	5.10	3.33	3.75	3.00	0.10

	As of December 31,					
	2014 NT\$	2015 NT\$	2016 NT\$	2017 NT\$	2018 NT\$	US\$
Consolidated Balance Sheets Data						
Total assets	310,648	335,354	384,227	391,132	362,597	11,846
Total liabilities	90,309	110,502	169,281	181,511	158,200	5,168
Stockholders' equity	220,339	224,852	214,946	209,621	204,397	6,678
Capital stock ⁽³⁾	127,303	127,581	126,243	126,243	124,243	4,059
Dividends declared per share ⁽⁴⁾	0.50	0.55	0.55	0.50	0.70	0.02

	Years Ended December 31,					
	2014 NT\$	2015 NT\$	2016 NT\$	2017 NT\$	2018 NT\$	US\$
Segment Data ⁽⁵⁾						
Operating revenues						
Wafer fabrication	129,954	141,705	147,444	148,940	151,024	4,934
New business	10,058	3,125	426	345	229	7
Net income (loss) ⁽⁶⁾						
Wafer fabrication	12,311	13,570	4,219	6,729	2,688	88
New business	(2,354)	(1,731)	(1,662)	(666)	(603)	(20)

- (1) Earnings per share is calculated by dividing net income by the weighted-average number of common shares outstanding during the year.
- (2) Diluted securities include convertible bonds, employee stock options and employees' compensation, if any.
- (3) Changes to the number of the capital common shares are primarily caused by the share-based payment transactions and the cancellation of treasury stocks, if any.
- (4) Dividends declared per share are in connection with earnings and accumulated additional paid-in capital and would be adjusted for the outstanding common shares changed due to employee stock options exercised, treasury stock repurchased, cancelled and transferred to employees, if any.
- (5) Since 2016, certain of our previous new business operation was reclassified as part of wafer fabrication operation resulting in retrospective reclassification of segmentation data.
- (6) There are adjustments for intragroup elimination and GAAP differences between segment data and consolidated data.

Currency Translations and Exchange Rates

In portions of this annual report, we have translated New Taiwan dollar amounts into U.S. dollars for the convenience of readers. The rate we used for the translations was NT\$30.61 to US\$1.00, which was the foreign exchange rate on December 31, 2018 as released by the Board of Governors of the Federal Reserve System. The translation does not mean that New Taiwan dollars could actually be converted into U.S. dollars at that rate.

B. Capitalization and Indebtedness

Not applicable.

C. Reasons for the Offer and Use of Proceeds

Not applicable.

D. Risk Factors

Our business and operations are subject to various risks, many of which are beyond our control. If any of the risks described below actually occurs, our business, financial condition or results of operations could be seriously harmed.

Risks Related to Our Business and Financial Condition

Any global systemic political, economic and financial crisis or catastrophic natural disasters (as well as the indirect effects flowing therefrom) could negatively affect our business, results of operations, and financial condition.

In recent times, several major systemic economic and financial crises and natural disasters negatively affected global business, banking and financial sectors, including the semiconductor industry and markets. These types of crises cause turmoil in global markets that often result in declines in electronic products sales from which we generate our income through our goods and services. In addition, these crises may cause a number of indirect effects such as undermining the ability of our customers to remain competitive when faced with the financial and economic challenges created by insolvent countries and companies still struggling to survive in the wake of these crises. For example, there could be in the future knock-on effects from these types of crises on our business, including significant decreases in orders from our customers; insolvency of key suppliers resulting in product delays; inability of customers to obtain credit to finance purchases of our products; customer insolvencies; and counterparty failures negatively impacting our treasury operations. Any future systemic political, economic or financial crises or catastrophic natural disasters (as well as the indirect effects flowing from these crises or disasters) could cause revenues for the semiconductor industry as a whole to decline dramatically, and if the economic conditions or financial condition of our customers were to deteriorate, additional accounting related allowances may be required in the future and such additional allowances could increase our operating expenses and therefore reduce our operating income and net income. Thus, any future global economic crisis or catastrophic natural disaster (and their indirect effects) could materially and adversely affect our results of operations. Any disruption in global trade conditions such as the increase in tariffs or the escalation of regional trade tension will indirectly impact global business environment which may adversely impact our business, results of operations and financial condition.

Historically, we recognized impairment for our investments in solar energy and LED industries made through our subsidiary, namely UMC New Business Investment Corporation, or NBI. If the solar energy and LED industries continue to encounter significant downturns or significant reductions of government subsidies, our investments made through NBI will be adversely affected which could adversely affect our results of operations.

The seasonality and cyclical nature of the semiconductor industry and periodic overcapacity make us particularly vulnerable to significant and sometimes prolonged economic downturns.

The semiconductor industry has historically been highly cyclical and, at various times, has experienced significant downturns. Since most of our customers operate in semiconductor-related industries, variations in order levels from our customers can result in volatility in our revenues and earnings. Because our business is, and will continue to be, largely dependent on the requirements of semiconductor companies for our services, downturns in the semiconductor industry will lead to reduced demand for our services.

Our operating revenues are also typically affected by seasonal variations in market conditions that contribute to the fluctuations of the average selling price of semiconductor services and products. The seasonal sales trends for semiconductor services and products closely mirror those for consumer electronics, communication and computer sales. We generally experience seasonal lows in the demand for semiconductor services and products during the first half of the year, primarily as a result of inventory correction by our customers. Any change in the general seasonal variations, which we cannot anticipate, may result in materially adverse effects on our revenues, operations and businesses.

Our operating results fluctuate from quarter to quarter, which makes it difficult to predict our future performance.

Our revenues, expenses and results of operations have varied significantly in the past and may fluctuate significantly from quarter to quarter in the future due to a number of factors, many of which are beyond our control. Our business and operations have at times in the past been negatively affected by, and are expected to continue to be subject to the risk of the following factors:

- the seasonality and cyclical nature of both the semiconductor industry and the markets served by our customers;
- our customers' adjustments in their inventory;
- the loss of a key customer or the postponement of orders from a key customer;
- the rescheduling and cancellation of large orders;
- our ability to obtain equipment, raw materials, electricity, water and other required utilities on a timely and economic basis;
- outbreaks of contagious diseases, including but not limited to severe acute respiratory syndrome, avian flu, swine flu and Zika virus;
- environmental events, such as fires and earthquakes, or industrial accidents; and
- technological changes.

Due to the factors noted above and other risks discussed in this section, many of which are beyond our control, you should not rely on quarter-to-quarter comparisons to predict our future performance. Unfavorable changes in any of the above factors may seriously harm our business, financial condition and results of operations. In addition, our operating results may be below the expectations of public market analysts and investors in some future periods. In this event, the price of the common shares or ADSs may underperform or fall.

A decrease in demand for or selling prices of communication devices, consumer electronics and computer goods may decrease the demand for our services and reduce our margins.

Our customers generally use the semiconductors produced in our fabs in a wide variety of applications. We derive a significant percentage of our operating revenues from customers who use our manufacturing services to make semiconductors for communication devices, consumer electronics, PCs and other computers. The semiconductor industry experienced several downturns due to recent major financial crises and natural disasters. These downturns resulted in a reduced demand for our services and hence decreased our revenues and earnings. Any significant decrease in the demand for communication devices, consumer electronics, PCs or other computers may further decrease the demand for our services. In addition, if the average selling price of communication devices, consumer electronics, PCs or other computers decline significantly, we will be pressured to further reduce our selling prices, which may reduce our revenues and, therefore, reduce our margins significantly. As demonstrated by downturns in demand for high technology products in the past, market conditions can change rapidly, without apparent warning or advance notice. In such instances, our customers will experience inventory buildup and/or difficulties in selling their products and, in turn, will reduce or cancel orders for wafers from us. The timing, severity and recovery of these downturns cannot be predicted accurately or at all. When they occur, our business, profitability and price of the common shares and ADSs are likely to suffer.

Overcapacity in the semiconductor industry may reduce our revenues, earnings and margins.

The prices that we can charge our customers for our services are significantly related to the overall worldwide supply of integrated circuits and semiconductor products. The overall supply of semiconductor products is based in part on the capacity of other companies, which is outside of our control. For example, in light of the current market conditions, some companies, including our largest competitors, have announced plans to increase capacity expenditures significantly. We believe such plans, if carried out as planned, will increase the industry-wide capacity and are likely to result in overcapacity in the future. In periods of overcapacity, if we are unable to offset the adverse effects of overcapacity through, among other things, our technology and product mix, we may have to lower the prices we charge our customers for our services and/or we may have to operate at significantly less than full capacity. Such actions could reduce our margin and weaken our financial condition and results of operations. We cannot give any assurance that an increase in the demand for foundry services in the future will not lead to overcapacity in the near future, which could materially adversely affect our revenues, earnings and margins.

Any problem in the semiconductor outsourcing infrastructure can adversely affect our operating revenues and profitability.

Many of our customers depend on third parties to provide mask tooling, assembly and test services. If these customers cannot timely obtain these services on reasonable terms, they may not order any foundry services from us. This may significantly reduce our operating revenues and negatively affect our profitability.

We may be unable to implement new technologies as they become available, which may result in the decrease of our profitability and the loss of customers and market share.

The semiconductor industry is developing rapidly and the related technology is constantly evolving. If we do not anticipate the technology evolution and rapidly adopt new and innovative technology, we may not be able to produce sufficiently advanced services at competitive prices. There is a risk that our competitors may adopt new technology before we do, resulting in our loss of market share. If we are unable to begin offering advanced services and processes on a competitive and timely basis, we may lose customers to our competitors providing similar technologies, which may cause our operating revenues to decline unless we can replace lost customers with new customers. In addition, the market prices for advanced technology and services tend to fall over time. As a result, if we are unable to offer new advanced services and processes on a competitive and timely basis, we need to decrease the prices that we set for our existing services and processes, which would have a negative effect on our profitability. We also depend upon the introduction of new technologies on a timely basis in order to benefit from the relatively higher prices such new technologies offer in the earlier stages of their life cycles. If we are unable to introduce new technologies on a timely and competitive basis, we may not be able to benefit from the relatively higher prices for new technologies, and our average selling price and profits would decrease accordingly.

We may be unable to provide leading technology to our customers if we lose the support of our technology partners.

Enhancing our manufacturing process technologies is critical to our ability to provide services for our customers. We intend to continue to advance our process technologies through internal research and development and alliances with other companies. Although we have an internal research and development team focused on developing new and improved semiconductor manufacturing process technologies, we are also dependent on some of our technology partners to advance certain process technology portfolios. In addition, we currently have patent cross-licensing agreements with several companies, including International Business Machines Corporation, or IBM. Some mask and equipment vendors also supply our technology development teams with masks and equipment needed to develop more advanced processing technologies. If we are unable to continue any of our joint development arrangements, patent cross-licensing agreements and other agreements, on mutually beneficial economic terms, if we re-evaluate the technological and economic benefits of such relationships, if we are unable to enter into new technology alliances and arrangements with other leading and specialty semiconductor companies, or if we fail to secure masks and equipment from our vendors in a timely manner sufficient to support our ongoing technology development, we may be unable to continue providing our customers with leading edge mass-producible process technologies and may, as a result, lose important customers, which would have a materially adverse effect on our businesses, results of operations and financial condition.

In addition, some of our customers rely upon third-party vendors, or intellectual property (IP) vendors, for the IP they embed into their designs. Although we work and collaborate with IP vendors with respect to such matters, there can be no guarantee that we will be successful or that the vendors will deliver according to our requirements or the needs of our customers. Failures to meet the targets or to deliver on a timely basis could cause customers to cancel orders and/or shift capacity to other suppliers.

Our business may suffer if we cannot compete successfully in our industry.

The worldwide semiconductor foundry industry is highly competitive. We compete with dedicated foundry service providers such as Taiwan Semiconductor Manufacturing Company Limited, Semiconductor Manufacturing International (Shanghai) Corporation and Globalfoundries Inc., as well as the foundry operation services of some integrated device manufacturers, such as IBM, Intel, Samsung Electronics, or Samsung, and Toshiba Corporation, or Toshiba. Integrated device manufacturers principally manufacture and sell their own proprietary semiconductor products, but may also offer foundry services. Other competitors such as DongbuAnam Semiconductor, Grace Semiconductor Manufacturing Corp., X-FAB Semiconductors Foundries AG and Silterra Malaysia Sdn. Bhd. have initiated efforts to expand and develop substantial additional foundry capacity. New entrants and consolidations in the foundry business are likely to initiate a trend of competitive pricing and create potential overcapacity in legacy technology. Some of our competitors have greater access to capital and substantially greater production, research and development, marketing and other resources than we do. As a result, these companies may be able to compete more aggressively over a longer period of time than we can.

The principal elements of competition in the wafer foundry market include:

- technical competence;
- time-to-volume production and cycle time;
- time-to-market;
- research and development quality;
- available capacity;

- manufacturing yields;
- customer service and design support;
- price;
- management expertise; and
- strategic alliances.

Our ability to compete successfully also depends on factors partially outside of our control, including product availability, IP, including cell libraries that our customers embed in their product designs, and industry and general economic trends.

We may not be able to implement our planned growth if we are unable to obtain the financing necessary to fund the substantial capital expenditures we expect to incur.

Our business and the nature of our industry require us to make substantial capital expenditures leading to a high level of fixed costs. The costs of facilities, tools and equipment to make semiconductors with advanced technology continue to rise, with each generation typically significantly more expensive than the larger-in-size more mature technologies which preceded. We expect to incur significant capital expenditures in connection with our growth plans. These capital expenditures will be made in advance of any additional sales to be generated by new or upgraded fabs as a result of these expenditures. Given the fixed-cost nature of our business, we have in the past incurred, and may in the future incur, operating losses if our revenues do not adequately offset our capital expenditures. Additionally, our actual expenditures may exceed our planned expenditures for a variety of reasons, including changes in:

- our growth plan;
- our process technology;
- our research and development efforts and patent license arrangements;
- market conditions;
- interest rates;
- exchange rate fluctuations; and
- prices of equipment.

We cannot assure you that additional financing will be available on satisfactory terms, if at all. If adequate funds are not available on satisfactory terms, we may be forced to curtail our expansion plans or delay the deployment of our services, which could result in a loss of customers and limit the growth of our business.

We depend on a small number of customers for a significant portion of our operating revenues and any loss of these customers would result in significant declines in our operating revenues.

We have been largely dependent on a small number of customers for a substantial portion of our business. In 2018, our top ten customers accounted for 51.3% of our operating revenues. We expect that we will continue to depend upon a relatively limited number of customers for a significant portion of our operating revenues. We cannot assure you that our operating revenues generated from these customers, individually or in the aggregate, will reach or exceed historical levels in any future period. Loss or cancellation of business from significant changes in scheduled deliveries to, or decreases in the prices of services sold to any of these customers could significantly reduce our operating revenues.

Our customers generally do not place purchase orders far in advance, which makes it difficult for us to predict our future revenues, adjust production costs and allocate capacity efficiently on a timely basis. In addition, due to the cyclical nature of the semiconductor industry, our customers' purchase orders have varied significantly from period to period. As a result, we do not typically operate with any significant backlog, except in periods of extreme capacity shortage. The lack of significant backlog and the unpredictable length and timing of semiconductor cycles make it difficult for us to forecast our revenues in future periods. Moreover, our expense levels are based in part on our expectations of future revenues, and we may be unable to adjust costs in a timely manner to compensate for revenue shortfalls. We expect that in the future our operating revenues in any quarter will continue to be substantially dependent upon purchase orders received in that quarter.

Moreover, the increasing trend in mergers and acquisitions activities in the semiconductor industry could decrease total available customer base, which could potentially result in a loss of customers.

Our operations and business will suffer if we lose one or more of our key personnel without adequate replacements.

Our future success to a large extent depends on the continued services of our Chairman and key executive officers. We do not carry key person insurance on any of our personnel. If we lose the services of any of our Chairman or key executive officers, it could be difficult to find and integrate replacement personnel in a short period of time, which could harm our operations and the growth of our business.

We may have difficulty attracting and retaining skilled employees, who are critical to our future success.

The success of our business depends upon attracting and retaining experienced executives, engineers and other employees to implement our strategy. The competition for skilled employees is intense. We expect demand for personnel in Taiwan to increase in the future as new wafer fabrication facilities and other businesses are established in Taiwan. We also expect demand for experienced personnel in other locations to increase significantly as our competitors establish and expand their operations. Some of our competitors are willing to offer better compensation than that we do to our executives, engineers and other employees. We do not have long-term employment contracts with any of our employees. If we were unable to retain our existing personnel or attract, assimilate and recruit new experienced personnel in the future, it could seriously disrupt our operations and delay or restrict the growth of our business.

Our transactions with affiliates and stockholders may hurt our profitability and competitive position.

We have provided foundry services to several of our affiliates and stockholders. We currently do not provide any preferential treatment to any of these affiliates and stockholders. However, we may in the future reserve or allocate our production capacity to these companies if there is a shortage of foundry services in the market to enable these companies to maintain their operations and/or to protect our investments in them. This reservation or allocation may reduce our capacity available for our other customers, which may damage our relationships with other customers and discourage them from using our services. This may hurt our profitability and competitive position.

If we fail to maintain an effective system of internal control over financial reporting, we may be unable to accurately report our financial results or prevent fraud, and investor confidence in our company may be adversely affected.

We are required to comply with the R.O.C and the U.S. securities laws and regulations in connection with internal controls. As a public company in the United States, our management is required to assess the effectiveness of our internal control over financial reporting using the criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), or the COSO criteria, as required by Section 404 of the Sarbanes-Oxley Act of 2002.

However, although effective internal controls can provide reasonable assurance with respect to the preparation and fair presentation of financial statements, they may not prevent or detect misstatements because of their inherent limitations, including the possibility of human error, the circumvention or overriding of controls, fraud or corruption. If we fail to maintain the adequacy of our internal controls, our business and operating results could be harmed, we could fail to meet our reporting obligations, and there could be a material adverse effect on the market price of our common shares and ADSs.

The trend of adopting protectionist measures in certain countries, including the United States, could have a material adverse impact on our results of operations and financial condition.

Governments in the United States, PRC and certain other countries have implemented fiscal and monetary programs to stimulate economic growth as a result of the recent economic downturn, and many of these programs include protectionist measures that encourage the use of domestic products and labor. Recent policy developments by the governments in US, China and elsewhere also suggest an increased unwillingness to allow international companies to invest in or acquire local businesses. Since many of our direct customers and other downstream customers in the supply chain are located in or have operations in the countries where protectionist measures were adopted, such protectionist measures may have a material adverse effect on demand for our manufacturing services.

Any future outbreak of contagious diseases may materially and adversely affect our business and operations, as well as our financial condition and results of operations.

Any future outbreak of contagious diseases, including but not limited to Zika virus, Ebola virus, avian or swine influenza or severe acute respiratory syndrome, may disrupt our ability to adequately staff our business and may generally disrupt our operations. If any of our employees is suspected of having contracted any contagious disease, we may under certain circumstances be required to quarantine such employees and the affected areas of our premises. Therefore, we may have to temporarily suspend part of or all of our operations. Furthermore, any future outbreak may restrict the level of economic activities in affected regions, including Taiwan, and affect the willingness and ability of our employees and customers to travel, which may also adversely affect our business and prospects. As a result, we cannot assure you that any future outbreak of contagious diseases would not have a material adverse effect on our financial condition and results of operations.

Currency fluctuations could increase our costs relative to our revenues, which could adversely affect our profitability.

More than half of our operating revenues are denominated in currencies other than New Taiwan dollars, primarily in U.S. dollars. On the other hand, more than half of our costs of direct labor, raw materials and overhead are incurred in New Taiwan dollars. Although historically we hedged a portion of the resulting net foreign exchange position through the use of foreign exchange spot transactions, or currency forward contracts, we are still affected by fluctuations in foreign exchange rates among the U.S. dollar, the New Taiwan dollar and other currencies. Any significant fluctuation in exchange rates may impact on our financial condition and the U.S. dollar value of the ADSs and the U.S. dollar value of any cash dividends we distributed, which could have a corresponding effect on the market price of the ADSs.

Risks Relating to Manufacturing

Our manufacturing processes are highly complex, costly and potentially vulnerable to impurities and other disruptions that can significantly increase our costs and delay product shipments to our customers.

Our manufacturing processes are highly complex, require advanced and costly equipment and are continuously being modified to improve manufacturing yields and product performance. Impurities or other difficulties in the manufacturing process or defects with respect to equipment or supporting facilities can lower manufacturing yields, interrupt production or result in losses of products in process. As system complexity has increased and process technology has become more advanced, manufacturing tolerances have been reduced and requirements for precision have become even more demanding. Although we have been enhancing our manufacturing capabilities and efficiency, from time to time we have experienced production difficulties that have caused delivery delays and quality control problems, as is common in the semiconductor industry. In the past we have encountered the following problems:

- capacity constraints due to changes in product mix or the delayed delivery of equipment critical to our production, including scanners, steppers and chemical stations;
- construction delays during expansions of our clean rooms and other facilities;

- difficulties in upgrading or expanding existing facilities;
- manufacturing execution system or automatic transportation system failure;
- unexpected breakdowns in our manufacturing equipment and/or related facilities;
- changing or upgrading our process technologies;
- raw materials shortages and impurities; and
- delays in delivery and shortages of spare parts and in maintenance for our equipment and tools.

Should these problems repeat, we may suffer delays in delivery and/or loss of business and revenues. In addition, we cannot guarantee that we will be able to increase our manufacturing capacity and efficiency in the future to the same extent as in the past.

Our profit margin may substantially decline if we are unable to continuously improve our manufacturing yields, maintain high capacity utilization and optimize the technology mix of our silicon wafer production.

Our ability to maintain our profitability depends, in part, on our ability to:

- maintain high capacity utilization, which is defined as the ratio of the wafer-out quantity of 8-inch wafer equivalents divided by our estimated total 8-inch equivalent capacity in a specified period. The estimated capacity figures may vary depending upon equipment delivery schedules, pace of migration to more advanced processing technologies and other factors affecting production ramp-ups;
- maintain or improve our manufacturing yields, which is defined as the percentage of usable devices manufactured on a wafer; and
- optimize the technology mix of our production by increasing the number of wafers manufactured by utilizing different processing technologies.

Our manufacturing yields directly affect our ability to attract and retain customers, as well as the price of our services. Our capacity utilization affects our operating results because a large percentage of our operating costs are fixed. Our technology mix affects utilization of our equipment and process technologies, as well as the prices we can charge, either of which can affect our margins. If we are unable to continuously improve our manufacturing yields, maintain high capacity utilization or optimize the technology mix of our wafer production, our profit margin may substantially decline.

We may have difficulty in ramping up production in accordance with our schedule, which could cause delays in product deliveries and decreases in manufacturing yields.

As is common in the semiconductor industry, we have from time to time experienced difficulties in ramping up production at new or existing facilities or effecting transitions to new manufacturing processes. As a result, we have suffered delays in product deliveries or reduced manufacturing yields. We may encounter similar difficulties in connection with:

- the migration to more advanced process technologies, such as 45/40 and 28-nanometer and more advanced process technology;
- the joint development with vendors for more powerful tools (both in production and inspection) needed in the future to meet advanced process technology requirements; and
- the adoption of new materials in our manufacturing processes.

We may face construction delays, interruptions, infrastructure failure and delays in upgrading or expanding existing facilities, or changing our process technologies, any of which might adversely affect our production schedule. Our failure to achieve our production schedule could delay the time required to recover our investments and seriously affect our profitability.

Our production schedules could be delayed and we may lose customers if we are unable to obtain raw materials and equipment in a timely manner.

We depend on our suppliers for raw materials. To maintain competitive manufacturing operations, we must obtain from our suppliers, in a timely manner, sufficient quantities of quality materials at acceptable prices. Although we source our raw materials from several suppliers, a small number of these suppliers account for a substantial amount of our supply of raw materials because of the consistent quality of their products. For example, in 2016, 2017 and 2018, we purchased a majority of our silicon wafers from four makers, Shin-Etsu Handotai Corporation, or Shin-Etsu, GlobalWafers, Siltronic and Sumco Group (including Sumco Corporation and Formosa Sumco Technology Corporation). We may have long-term contracts with most of our suppliers if necessary. From time to time, our suppliers have extended lead time or limited the supply of required materials to us because of capacity constraints. Consequently, from time to time, we have experienced difficulty in obtaining the quantities of raw materials we need on a timely basis.

In addition, from time to time we may reject materials that do not meet our specifications, resulting in declines in output or manufacturing yields. We cannot assure you that we will be able to obtain sufficient quantities of raw materials and other supplies in a timely manner. If the supply of materials is substantially diminished or if there are significant increases in the costs of raw materials, we may be forced to incur additional costs to acquire sufficient quantities of raw materials to sustain our operations, which may increase our marginal costs and reduce profitability.

We also depend on a limited number of manufacturers and vendors that make and maintain the complex equipment we use in our manufacturing processes. We also rely on these manufacturers and vendors to improve our technology to meet our customers' demands as technology improves. In periods of unpredictable and highly diversified market demand, the lead time from order to delivery of this equipment can be as long as six to twelve months. If there are delays in the delivery of equipment or in the availability or performance of necessary maintenance, or if there are increases in the cost of equipment, it could cause us to delay our introduction of new manufacturing capacity or technologies and delay product deliveries, which may result in the loss of customers and revenues.

We may be subject to the risk of loss due to fire because the materials we use in our manufacturing processes are highly flammable.

We use highly flammable materials such as silane and hydrogen in our manufacturing processes and may therefore be subject to the risk of loss arising from fires. The risk of fire associated with these materials cannot be completely eliminated. We maintain insurance policies to reduce losses caused by fire, including business interruption insurance. While we believe that our insurance coverage for damage to our property and business interruption due to fire is consistent with semiconductor industry practice, our insurance coverage is subject to deductibles and self-insured retention and may not be sufficient to cover all of our potential losses. If any of our fabs were to be damaged or cease operations as a result of a fire, it would temporarily reduce manufacturing capacity and reduce revenues.

We and many of our customers and suppliers are vulnerable to natural disasters and other events outside of our control, which may seriously disrupt our operations.

Most of our assets and many of our customers and suppliers are located in certain parts of Taiwan. Our operations and the operations of our customers and suppliers are vulnerable to earthquakes, floods, droughts, power losses and similar events that affect the locations of our operations. The occurrence of any of these events could interrupt our services and cause severe damages to wafers in process, or cause significant business disruptions. For example, in early 2016, we experienced a severe earthquake which adversely affected our wafer manufacturing operations at our 300mm Fab 12A in Taiwan. Although we had adopted practices in compliance with ISO 22301 business continuity standards which ensured the safety of our employees and minimized supply disruptions resulting from the earthquake and we had settled our insurance policies which partially recovered the losses resulting from this earthquake, there is no guarantee that our business continuity practices will always be effective and any future damages or business loss from severe natural disasters will be covered by such insurance, that we will be able to collect from our insurance carriers, should we choose to claim under our insurance policies, or that such coverage will be sufficient. In addition, our manufacturing facilities have occasionally experienced insufficient power supplies, and our operations have been disrupted.

Our operations may be delayed or interrupted and our business could suffer if we violate environmental, safety and health, or ESH, regulations.

The semiconductor manufacturing process requires the use of various gases, chemicals, hazardous materials and other substances such as solvents and sulfuric acid which may have an impact on the environment. We are always subject to ESH regulations, and a failure to manage the use, storage, transportation, emission, discharge, recycling or disposal of raw materials or to comply with these ESH regulations could result in (i) regulatory penalties, fines and other legal liabilities, (ii) suspension of production or delays in operation and capacity expansion, (iii) a decrease in our sales, (iv) an increase in pollution cleaning fees and other operation costs, or (v) damage to our public image, any of which could harm our business. In addition, as ESH regulations are becoming more comprehensive and stringent, we may incur a greater amount of capital expenditures in technology innovation and materials substitution in order to comply with such regulations, which may adversely affect our results of operations.

Climate change may negatively affect our business.

There is increasing concern that climate change is occurring and may have dramatic effects on human activity without aggressive remediation steps. A modest change in temperature would result in increased coastal flooding, changing precipitation patterns and increasing risk of extinction for the world's species. Public expectations for reductions in greenhouse gas emissions could result in increased energy, transportation and raw material costs.

Scientific examination of, political attention to and rules and regulations on issues surrounding the existence and extent of climate change may result in an increase in the cost of production due to increase in the prices of energy and introduction of energy or carbon tax. Various regulatory developments have been introduced that focus on restricting or managing emissions of carbon dioxide, methane and other greenhouse gases. Enterprises may need to purchase at higher costs emission credits, new equipment or raw materials with lower carbon footprints. These developments and further legislation that is likely to be enacted could affect our operations negatively. Changes in environmental regulations, such those on the use of perfluorinated compounds, could increase our production costs, which could adversely affect our results of operation and financial condition.

We have a state-of-the-art 12-inch wafer fab in Singapore. The Singapore government announced that it will introduce a carbon tax from 2019 onwards, making it the first country in Southeast Asia to promote this measure. In Taiwan, there are draft amendments to the "Greenhouse Gas Reduction and Management Law" and the "Regulations on the Development of Renewable Energy Resources," which respectively imposes a fine for any portion of the greenhouse gas emissions in excess of a stipulated quantity and making a mandated purchase of green energy vouchers to cover the inadequacy of green electricity or a mandatory surcharge payment. We have transformed the carbon emissions into potential carbon costs based on the analysis of the carbon risk scenarios of each fab, and have actively carried out a phased greenhouse gas reduction plan. The measures for the use of clean energy include the reduction of raw materials, setting of high-efficiency greenhouse gas breakdown equipment, etc., and building solar energy systems. We take an aggressive stance in reducing the impact of carbon emissions and taxes, enhancing its operational competitive advantage.

In addition, more frequent droughts and floods, extreme weather conditions and rising sea levels could occur due to climate change. The impact of such changes could be significant as most of our factories are located in islands including Taiwan, Singapore and Xiamen in Fujian Province in China. For example, transportation suspension caused by extreme weather conditions could harm the distribution of our products. Similarly, our operations depend upon adequate supplies of water, and extended or serious droughts may affect our ability to obtain adequate supplies of water and threaten our production.

Disruptions in the international trading environment may seriously decrease our international sales.

A substantial portion of our operating revenues is derived from sales to customers located in countries other than the countries where our fabs are located. In 2016, 2017 and 2018, we operated fabs in Taiwan, Singapore and China. For the years ended December 31, 2016, 2017 and 2018, we generated approximately 41.2%, 33.9% and 35.0% of our operating revenues, respectively, from countries other than those where our fabs are located. We expect sales to customers from countries outside of Taiwan, Singapore and China will continue to represent a significant portion of our operating revenues. The success and profitability of our international activities depend on certain factors beyond our control, such as general economic conditions, labor conditions, political stability, tax laws, import duties and foreign exchange controls of the countries in which we sell our products, and the political and economic relationships between these countries. As a result, our manufacturing services will continue to be vulnerable to disruptions in the international trading environment, including adverse changes in foreign government regulations, political unrest and international economic downturns.

These disruptions in the international trading environment affect the demand for our manufacturing services and change the terms upon which we provide our manufacturing services overseas, which could seriously decrease our international sales.

Political, Economic and Regulatory Risks

We face substantial political risks associated with doing business in Taiwan, particularly due to the tense relationship between the R.O.C. and the People's Republic of China, or the PRC, that could negatively affect the value of your investment.

Our principal executive offices and most of our assets and operations are located in Taiwan. Accordingly, our business, financial condition and results of operations and the market price of our common shares and the ADSs may be affected by changes in R.O.C. governmental policies, taxation, inflation or interest rates and by social instability and diplomatic and social developments in or affecting Taiwan which are outside of our control. Taiwan has a unique international political status. Since 1949, Taiwan and the Chinese mainland have been separately governed. The PRC claims that it is the sole government in China and that Taiwan is part of China. Although significant economic and cultural relations have been established between the R.O.C. and the PRC in the past few years, such as the adoption of the Economic Cooperation Framework Agreement and memorandum regarding cross-strait financial supervision, we cannot assure you that relations between the R.O.C. and PRC will not become strained again. For example, the PRC government has refused to renounce the use of military force to gain control over Taiwan and, in March 2005, passed an Anti-Secession Law that authorized non-peaceful means and other necessary measures should Taiwan move to gain independence from the PRC. Past developments in relations between the R.O.C. and the PRC have on occasions depressed the market prices of the securities of companies in the R.O.C. Such initiatives and actions are commonly viewed as having a detrimental effect to reunification efforts between the R.O.C. and the PRC. Relations between the R.O.C. and the PRC and other factors affecting military, political or economic conditions in Taiwan could materially and adversely affect our financial condition and results of operations, as well as the market price and the liquidity of our securities.

Our business depends on the support of the R.O.C. government, and a decrease in this support may decrease our net income.

We, like many R.O.C. technology companies, have benefited from substantial tax incentives provided by the R.O.C. government. Among the incentives broadly enjoyed by R.O.C. technology companies, various tax benefits granted under Chapter 2 and Article 70-1 of the Statute for Upgrading Industries expired on December 31, 2009. Despite the fact that we can still enjoy the tax holidays for the relevant investment plans approved by the R.O.C. tax authority until 2020 under the grandfather clause of the Statute for Upgrading Industries, if more incentives are curtailed or eliminated, our net income may decrease significantly.

Our future tax obligations may adversely affect our net income.

We operate in various jurisdictions, which involve different tax regimes and application of tax regulations. Applicable taxes for which we make provisions could increase significantly as a result of changes in applicable tax laws in the countries where we operate. On February 7, 2018, the amendments to the Income Tax Act of the R.O.C. were promulgated with retrospective effect from January 1, 2018. According to the amendments, the corporate income tax rate is raised from 17% to 20%, and 10% undistributed earnings tax is lowered to 5%. The change of corporate income tax rate could increase our future tax obligation and have an adverse effect on our net income.

Compliance with laws such as the U.S. Conflict Minerals Law may affect our ability or the ability of our suppliers to purchase raw materials at an effective cost.

Many industries rely on materials which are subject to regulations concerning certain minerals sourced from the Democratic Republic of Congo, or the DRC, or adjoining countries, including: Sudan; Uganda; Rwanda; Burundi; United Republic of Tanzania; Zambia; Angola; Congo; and Central African Republic. These minerals are commonly referred to as conflict minerals. Conflict minerals which may be used in our industry or by our suppliers include Columbite-tantalite (derivative of tantalum [Ta]), Cassiterite (derivative of tin [Sn]), gold [Au], Wolframite (derivative of tungsten [W]), and Cobalt [Co]. Under present U.S. regulations, we and our customers are required to survey and disclose whether our processes or products use or rely on conflict materials. On August 22, 2012, the U.S. SEC adopted the final rule for disclosing the use of conflict minerals that require companies similar to us to make a report in a type and format similar to Form SD to disclose the use of conflict materials on an annual basis on or prior to May 31 each year. We have filed the conflict mineral disclosure report every year since 2014. In order to comply with the aforementioned rules and regulations promulgated by the U.S. SEC, we will continue to verify the relevant information with our vendors and file the required report. Although we expect that we and our vendors will be able to comply with the requirements of the U.S. Conflict Minerals law and any new related regulations promulgated by the U.S. SEC, we cannot assure you that we will be able to gather all the information required to comply with such regulations. While we believe our suppliers do not rely on such conflict materials, we cannot assure you that we will continue to be able to obtain adequate supplies of materials needed in our production from supply chains outside the DRC and adjoining countries. The failure to obtain necessary information or to maintain adequate supplies of materials from supply chains outside the DRC and adjoining countries may delay our production, increasing the risk of losing customers and business.

Similarly, many jurisdictions have promulgated regulations with the intention to deter disregard and contempt for human rights within supply chains. Although our own operations comply with the relevant requirements under the laws of the jurisdictions where we have operations, possible violation by our suppliers may not be known to us and beyond our control. While we believe our suppliers comply with applicable human rights requirements, there can be no guarantee that they will continue to do so, or that we will be able to obtain the necessary information on their activities to comply with whatever future requirements may be enacted.

Data security and data privacy considerations and regulations may adversely affect our operations.

Our operations depend upon reliable and uninterrupted information technology services, including the integrity of our web-based and electronic customer service systems. Although we have put in place what we believe are reasonable precautions to prevent accidental and/or malicious disruption of these services, there can be no assurance that our preventive measures will preclude failure of the information technology, web-based and electronic customer service systems upon which our business depends. Disruption of these systems could adversely affect our ability to manufacture and to serve our customers.

In addition, in the course of our operations, we receive confidential information from and about our customers, vendors, partners and employees. Although we take what we believe are reasonable precautions to protect such information from disclosure to or interruption, there are no guarantees our precautions will prevent accidental or malicious access to such information. In the event of such access, our reputation could be adversely affected, customers and others may hesitate to entrust us with their confidential information, which would negatively affect our operations, and we would incur costs to remedy the breach.

Moreover, many jurisdictions have proposed regulations concerning data privacy. Although we have taken measures to comply with existing law and regulations in this regard, future laws may impose requirements that make our operations more expensive and/or less efficient. In addition, should we experience a breakdown in our systems or failure in our precautions that results in a violation of such regulations, we may suffer adverse customer reaction and face governmental penalties.

Risks Related to the Common Shares and ADSs and Our Trading Markets

Restrictions on the ability to deposit common shares into our ADS program may adversely affect the liquidity and price of the ADSs.

The ability to deposit common shares into our ADS program is restricted by R.O.C. law. Under current R.O.C. law, no person or entity, including you and us, may deposit common shares into our ADS program without specific approval of the R.O.C. FSC except for the deposit of the common shares into our ADS program and for the issuance of additional ADSs in connection with:

- (A) distribution of share dividends or free distribution of our common shares;
- (B) exercise of the preemptive rights of ADS holders applicable to the common shares evidenced by ADSs in the event of capital increases for cash; or
- (C) delivery of our common shares which are purchased in the domestic market in Taiwan directly by the investor or through the depositary or are already in the possession of the investor to the custodian for deposit into our ADS program, subject to the following conditions: (a) the re-issuance is permitted under the deposit agreement and custody agreement, (b) the depositary may accept deposit of those common shares and issue the corresponding number of ADSs with regard to such deposit only if the total number of ADSs outstanding after the issuance does not exceed the number of ADSs previously approved by the R.O.C. FSC, plus any ADSs issued pursuant to the events described in (A) and (B) above and (c) this deposit may only be made to the extent previously issued ADSs have been withdrawn.

As a result of the limited ability to deposit common shares into our ADS program, the prevailing market price of our ADSs on the NYSE may differ from the prevailing market price of the equivalent number of our common shares on the Taiwan Stock Exchange.

Holders of our ADSs will not have the same proposal or voting rights as the holders of our common shares, which may affect the value of your investment.

Except for treasury common shares and common shares held by our subsidiaries which meet certain criteria provided under the R.O.C. Company Act, each common share is generally entitled to one vote and no voting discount will be applied. However, except as described in this annual report and in the deposit agreement, holders of our ADSs will not be able to exercise voting rights attached to the common shares evidenced by our ADSs on an individual basis. Holders of our ADSs will appoint the depositary or its nominee as their representative to exercise the voting rights attached to the common shares represented by the ADSs. The voting rights attached to the common shares evidenced by our ADSs must be exercised as to all matters brought to a vote of stockholders collectively in the same manner.

Moreover, holders of the ADSs do not have individual rights to propose any matter for stockholders' votes at our stockholders' meetings. However, holders of at least 51% of the ADS outstanding at the relevant record date may request the depositary to submit to us one proposal per year for consideration at our annual ordinary stockholders' meeting, provided that such proposal meets certain submission criteria and limitations, including the language and the length of the proposal, the time of submission, the required certification or undertakings, and the attendance at the annual ordinary stockholders' meeting. However, if the proposal submitted by the depositary does not qualify, we have no obligation to allow the depositary to modify such proposal.

Furthermore, if holders of at least 51% of the ADSs outstanding at the relevant record date instruct the depositary to vote in the same manner regarding a resolution, including election of directors, the depositary will appoint our Chairman, or his designee, to represent the ADS holders at the stockholders' meetings and to vote the common shares represented by the ADSs outstanding in the manner so instructed. If by the relevant record date the depositary has not received instructions from holders of ADSs holding at least 51% of the ADSs to vote in the same manner for any resolution, then the holders will be deemed to have instructed the depositary to authorize and appoint our Chairman, or his designee, to vote all the common shares represented by ADSs at his sole discretion, which may not be in your interest.

The rights of holders of our ADSs to participate in our rights offerings may be limited, which may cause dilution to their holdings.

We may from time to time distribute rights to our stockholders, including rights to acquire our securities. Under the deposit agreement, the depositary will not offer those rights to ADS holders unless both the rights and the underlying securities to be distributed to ADS holders are either registered under the Securities Act or exempt from registration under the Securities Act. We are under no obligation to file a registration statement with respect to any such rights or underlying securities or to endeavor to cause such a registration statement to be declared effective. Accordingly, holders of our ADSs may be unable to participate in our rights offerings and may experience dilution in their holdings.

Changes in exchange controls that restrict your ability to convert proceeds received from your ownership of ADSs may have an adverse effect on the value of your investment.

Your ability to convert proceeds received from your ownership of ADSs depends on existing and future exchange control regulations of the Republic of China. Under the current laws of the Republic of China, an ADS holder or the depositary, without obtaining further approvals from the R.O.C. Central Bank of China, or the CBC, or any other governmental authority or agency of the Republic of China, may convert NT dollars into other currencies, including U.S. dollars, in respect of:

- the proceeds of the sale of common shares represented by ADSs or received as share dividends with respect to the common shares and deposited into the depositary receipt facility; and
- any cash dividends or distributions received from the common shares represented by ADSs.

In addition, the depositary may also convert into NT dollars incoming payments for purchases of common shares for deposit in the depositary receipt facility against the creation of additional ADSs. If you withdraw the common shares underlying your ADSs and become a holder of our common shares, you may convert into NT dollars subscription payments for rights offerings. The depositary may be required to obtain foreign exchange approval from the CBC on a payment-by-payment basis for conversion from NT dollars into foreign currencies of the proceeds from the sale of subscription rights of new common shares. Although it is expected that the CBC will grant approval as a routine matter, required approvals may not be obtained in a timely manner, or at all.

Under the Republic of China Foreign Exchange Control Law, the Executive Yuan of the Republic of China may, without prior notice but subject to subsequent legislative approval, impose foreign exchange controls or other restrictions in the event of, among other things, a material change in international economic conditions.

Our public stockholders may have more difficulty protecting their interests than they would as stockholders of a U.S. corporation.

Our corporate affairs are governed by our articles of incorporation and bylaws governing R.O.C. corporations. The rights of our stockholders to bring stockholders' suits against us or our board of directors under R.O.C. law are much more limited than those of the stockholders of U.S. corporations. Therefore, our public stockholders may have more difficulty protecting their interests in connection with actions taken by our management, members of our board of directors or controlling stockholders than they would as stockholders of a U.S. corporation. Please refer to "Item 10. Additional Information—B. Memorandum and Articles of Association— Rights to Bring Stockholders' Suits" included elsewhere in this annual report for a detailed discussion of the rights of our stockholders to bring legal actions against us or our directors under R.O.C. law.

Holders of our ADSs will be required to appoint several local agents in Taiwan if they withdraw common shares from our ADS program and become our stockholders, which may make ownership burdensome.

Non-R.O.C. persons wishing to withdraw common shares represented by their ADSs from our ADS program and hold our common shares represented by those ADSs are required to, among other things, appoint a local agent or representative with qualifications set forth by the applicable R.O.C. laws and regulations to open a securities trading account with a local brokerage firm, pay R.O.C. taxes, remit funds and exercise stockholders' rights. In addition, the withdrawing holders are also required to appoint a custodian bank or a securities firm with qualifications set forth by the R.O.C. FSC to hold the securities in safekeeping, make confirmations, settle trades and report all relevant information, in which the securities firm is appointed as the custodian, the payments shall be held in safekeeping in a special account opened in a bank approved by the R.O.C. FSC. Without making this appointment and opening of the accounts, the withdrawing holders would not be able to subsequently sell our common shares withdrawn from a depositary receipt facility on the Taiwan Stock Exchange. Under R.O.C. law and regulations, except under limited circumstances, PRC persons are not permitted to withdraw the common shares underlying the ADSs or to register as a stockholder of our company. Under the Regulations Governing Securities Investment and Futures Trading in Taiwan by Mainland Area Investors promulgated by the R.O.C. Executive Yuan on April 30, 2009, as amended, only qualified domestic institutional investors, or QDIIs and limited entities or individuals, are permitted to withdraw the common shares underlying the ADSs, subject to compliance with the withdrawal relevant requirements, and only QDIIs, and limited entities or individuals who meet the qualification requirements set forth therein are permitted to own common shares of an R.O.C. company listed for trading on the Taiwan Stock Exchange or the Taipei Exchange, provided that among other restrictions generally applicable to investments made by PRC persons, their shareholdings are subject to certain restrictions as set forth in the abovementioned regulations and that such mainland area investors shall apply for a separate approval if their investment, individually or in aggregate, amounts to or exceeds 10 percent of the common shares of any R.O.C. listed company.

You may not be able to enforce a judgment of a foreign court in the R.O.C.

We are a company limited by shares incorporated under the R.O.C. Company Act. Most of our assets and most of our directors, executive officers and experts named in the registration statement are located in Taiwan. As a result, it may be difficult for you to enforce judgments obtained outside Taiwan upon us or such persons in Taiwan. We have been advised by our R.O.C. counsel that any judgment obtained against us in any court outside the R.O.C. arising out of or relating to the ADSs will not be enforced by R.O.C. courts if any of the following situations shall apply to such final judgment:

- the court rendering the judgment does not have jurisdiction over the subject matter according to R.O.C. law;

- the judgment or the court procedure resulting in the judgment is contrary to the public order or good morals of the R.O.C.;
- the judgment was rendered by default, except where the summons or order necessary for the commencement of the action was legally served on us within the jurisdiction of the court rendering the judgment within a reasonable period of time or with judicial assistance of the R.O.C.; or
- judgments of the R.O.C. courts are not recognized in the jurisdiction of the court rendering the judgment on a reciprocal basis.

We may be considered a passive foreign investment company, which could result in adverse U.S. federal income tax consequences for U.S. investors.

We do not believe that we were a passive foreign investment company, or PFIC, for 2018 and we do not expect to become one in the future, although there can be no assurance in this regard. Characterization as a PFIC could result in adverse U.S. federal income tax consequences to you if you are a U.S. investor.

For example, if we are a PFIC, our U.S. investors may become subject to increased tax liabilities under U.S. federal income tax laws and regulations and will become subject to burdensome reporting requirements. The determination of whether or not we are a PFIC is made on an annual basis and will depend on the composition of our income and assets from time to time. Specifically, for any taxable year we will be classified as a PFIC for U.S. federal income tax purposes if either (i) 75% or more of our gross income in a taxable year is passive income or (ii) the average percentage of our assets (which includes cash) by value in a taxable year which produce or are held for the production of passive income is at least 50%. The calculation of the value of our assets will be based, in part, on the quarterly market value of common shares and ADSs, which is subject to change. See “Taxation—U.S. Federal Income Tax Considerations For U.S. Persons—Passive Foreign Investment Company.”

The trading price of the common shares and ADSs may be adversely affected by the general activities of the Taiwan Stock Exchange and U.S. stock exchanges, the trading price of our common shares, increases in interest rates and the economic performance of Taiwan.

Our common shares are listed on the Taiwan Stock Exchange. The trading price of our ADSs may be affected by the trading price of our common shares on the Taiwan Stock Exchange and the economic performance of Taiwan. The Taiwan Stock Exchange is smaller and, as a market, more volatile than the securities markets in the United States and some European countries. The Taiwan Stock Exchange has experienced substantial fluctuations in the prices and volumes of sales of listed securities, and there are currently limits on the range of daily price movements on the Taiwan Stock Exchange. The Taiwan Stock Exchange is particularly volatile during times of political instability, such as when the relationship between Taiwan and the PRC becomes tense. Moreover, the Taiwan Stock Exchange has experienced disturbance caused by market manipulation, insider trading and payment defaults, and the government of Taiwan has from time to time intervened in the stock market by purchasing stocks listed on the Taiwan Stock Exchange. The recurrence of these or similar events could deteriorate the price and liquidity of our common shares and ADSs.

The market price of the ADSs may also be affected by general trading activities on the U.S. stock exchanges, which recently have experienced significant volatility with respect to trading prices of technology companies. Fluctuation in interest rates and other general economic conditions may also influence the market price of the ADSs.

ITEM 4. INFORMATION ON THE COMPANY

A. History and Development of the Company

Our legal and commercial name is United Microelectronics Corporation, commonly known as “UMC”. We were incorporated under the R.O.C. Company Law as a company limited by shares in May 1980 and our common shares were listed on the Taiwan Stock Exchange in 1985. Our principal executive office is located at No. 3 Li-Hsin Road II, Hsinchu Science Park, Hsinchu, Taiwan, Republic of China, and our telephone number is 886-3-578-2258. Our Internet website address is www.umc.com. The information on our website does not form part of this annual report. Our ADSs have been listed on the NYSE under the symbol “UMC” since September 19, 2000.

We are one of the world's largest independent semiconductor foundries and a leader in semiconductor manufacturing process technologies. Our primary business is the manufacture, or "fabrication", of semiconductors, sometimes called "chips" or "integrated circuits", for others. Using our own proprietary processes and techniques, we make chips to the design specifications of our many customers. Our company maintains a diversified customer base across industries, including communication devices, consumer electronics, computer, and others, while continuing to focus on manufacturing for high growth, large volume applications, including networking, telecommunications, internet, multimedia, PCs and graphics. We sell and market mainly wafers which in turn are used in a number of different applications by our customers. The following table presented the percentages of our wafer sales by application for the years ended December 31, 2016, 2017 and 2018.

Application	Years Ended December 31,		
	2016	2017	2018
	%	%	%
Communication	53.0	48.6	45.2
Consumer	27.2	29.4	28.6
Computer	12.6	13.1	16.3
Others	7.2	8.9	9.9
Total	100.0	100.0	100.0

We focus on the development of leading mass-producible manufacturing process technologies. We were among the first in the foundry industry to go into commercial operation with such advanced capabilities as producing integrated circuits with line widths of 0.25, 0.18, 0.15, 0.13 micron and 90, 65/55, 45/40, 28, 14 nanometer and beyond. Advanced technologies have enabled electronic products, especially in relation to communication, consumer and computer products, to integrate their functions in new and innovative methods. Networking capabilities have allowed electronic products such as computers, tablets, cell phones, televisions, set-top boxes and wearable devices to communicate with each other to exchange information. More powerful semiconductors are required to drive multimedia functions (e.g., processing visual data) and to resolve network bandwidth issues. At the same time, the trend towards portable personal electronic devices has resulted in products that are becoming physically smaller and consume less power. Process technology must also shrink the volumes of products aggressively to cater to this trend of integrating multiple functions, reducing the size of components needed for operation and lowering IC power consumption. Dedicated semiconductor foundries need to achieve this process improvement and at the same time develop multiple process technologies to satisfy the varying needs of communication, consumer and computer products. We believe our superior process technologies will enable us to continue to offer our customers significant performance benefits for their products, faster time-to-market production, cost savings and other competitive advantages.

We provide high quality service based on our performance. In today's marketplace, we believe it is important to make available not only the most manufacturable processes, but also the best solutions to enable customers to design integrated circuits that include entire systems on a chip. Through these efforts, we intend to be the foundry solution for SoC customer needs. To achieve this goal, we believe it is necessary to timely develop and offer the IP and design support that customers need to ensure their specific design blocks work with the other design blocks of the integrated circuit system in the manner intended. Accordingly, we have a dedicated IP and design support team which focuses on timely development of the IP and process specific design blocks our customers need in order to develop products that operate and perform as intended. Our design service team actively cooperates with our customers and vendors of cell libraries and IP offerings to identify, early in the product/market cycle, the offerings needed to ensure that these coordinated offerings are available to our customers in silicon verified form in a streamlined and easy-to-use manner. As a result, we are able to ensure the timely delivery of service offerings from the earliest time in the customer design cycle, resulting in a shorter time-to-volume production. We also provide our customers with real-time online access to their confidential production data, resulting in superior communication and efficiency. We further address our customers' needs using our advanced technology and proven methodology to achieve fast cycle time, high yield, production flexibility and close customer communication. For example, we select and configure our clean rooms and equipment and develop our processes to maximize the flexibility in meeting and adapting to rapidly changing customer and industry needs. As a result, our cycle time, or the period from customer order to wafer delivery, and our responsiveness to customer request changes are among the fastest in the dedicated foundry industry. We also provide high quality service and engineering infrastructure.

Our production capacity is comparable to that of certain largest companies in the semiconductor industry, and we believe our leading edge and high volume capability is a major competitive advantage.

Our technology and service have attracted two principal types of foundry industry customers: fabless design companies and integrated device manufacturers. Fabless design companies design, develop and distribute proprietary semiconductor products but do not maintain internal manufacturing capacity. Instead, these companies depend on outside manufacturing sources. Integrated device manufacturers, in contrast, traditionally have integrated internally all functions—manufacturing as well as design, development, sales and distribution.

Our primary customers, in terms of our sales revenues, include premier integrated device manufacturers, such as Texas Instruments and Intel Mobile, plus leading fabless design companies, such as Broadcom, MediaTek, Realtek, Qualcomm and Novatek. In 2018, our company's top ten customers accounted for 51.3% of our operating revenues. We believe our success in attracting these customers is a direct result of our commitment to high quality service and our intense focus on customer needs and performance.

In addition to our semiconductor foundry business, we also established UMC New Business Investment Corporation to focus on investments in the solar energy and LED industries.

On August 29, 2014, we and Fujitsu Semiconductor Limited, or Fujitsu, announced an agreement where we invested ¥5 billion as an initial investment and received approximately 9.3% of the issued and outstanding share capital to become a minority shareholder of a newly formed subsidiary of Fujitsu named Mie Fujitsu Semiconductor Limited, or MIFS, which will operate a 300mm wafer manufacturing facility located in Kuwana, Mie, Japan. On December 16, 2015, our board has further approved the acquisition of additional newly issued shares of MIFS with an aggregate investment amount of NT\$1.36 billion, which increased our ownership interest in MIFS to approximately 15.9%. Through this relationship with us, MIFS was able to expand its business globally as a pure-play foundry company by strengthening its production and development capacity in a cost competitive manner. On June 29, 2018, our board approved the acquisition of the remaining 84.1% in MIFS from Fujitsu at a consideration of no more than ¥57.6 billion. Upon completion of such equity acquisition, MIFS will become our wholly-owned subsidiary. We expect to leverage this acquisition to further achieve global synergies and deliver value to our customers. The outward equity transaction was approved by the R.O.C. Government on September 26, 2018. However, the transaction has been partially delayed pending approval from certain relevant government authorities. As a result, the scheduled transaction date of January 1, 2019 will be pushed to the next available date(s) (July 1, 2019 or October 1, 2019). If the transaction cannot be completed by October 1, 2019, the option to acquire the remaining shares of the target company's equity from the counter party will expire on the mentioned date.

On October 9, 2014, our board of directors approved an agreement with the Xiamen Municipal People's Government and Fujian Electronics & Information Group to found a new company named United Semiconductor (Xiamen) Co., Ltd., or USCXM, based in Xiamen, Fujian Province, China that will focus on 12-inch wafer foundry services. We anticipate that we may invest up to US\$1.35 billion in USCXM over the next five years, with our investment starting in 2015 that will be deployed in installments based on the progress of this company. USCXM will manufacture 12-inch wafers and initially offer 40 nanometer and 55 nanometer process technologies. Our participation in USCXM has complied and will continue to comply with R.O.C. rules and regulations and will continue to be subject to the review and approval by the relevant R.O.C. authorities. We have obtained the initial investment approval from the R.O.C. government on December 31, 2014 with US\$300 million invested by HJ (Hejian Technology Suzhou) and US\$450 million by UMC. The initial groundbreaking event of USCXM took place in March 2015 and the grand opening ceremony took place in November 2016. We have further obtained investment approval from the R.O.C. government in November 2017 in connection with US\$600 million for capital injection into USCXM and the mentioned amount was invested in September 2018. USCXM had successfully realized commercial mass production by the end of 2016 and it has carried out production on both 40nm and 28nm technology nodes in 2017. USCXM has continued to increase its capacity to fulfill requirements from worldwide customers, including those from domestic fabless companies in China. We expect to continue to expand our worldwide foundry presence by tapping into the high growth semiconductor market in China, and to increase our exposure to the semiconductor supply chain in China while mitigating geographical risks, which allows us to be closer to our customers in China, which, in turn, enables us to provide better services, increases our manufacturing scale and stimulates revenue growth.

On December 24, 2014, we transferred our 6-inch fabrication plant, or Fab 6A, including machinery equipment and building facilities to our subsidiary, Wavetek Microelectronics Corporation, or Wavetek, in order to further satisfy customer needs in the fast growing GaAs market and to improve the 6-inch fabrication operational efficiency among our group by fully utilizing the existing assets and resources. In April 2015, Wavetek had successfully entered into the silicon-based CMOS foundry business after it had fully acquired our 6-inch Fab 6A fixed assets and production lines. As of March 31, 2019, our shareholdings in Wavetek was approximately 79.92%, making us its largest shareholder.

On December 26, 2014, our subsidiary, Topcell Solar International Co., Ltd., or Topcell, announced its plans to merge with Motech Industries, Inc., or Motech, through a share exchange transaction. The share exchange conversion was six ordinary shares of Topcell into one newly-issued ordinary share of Motech. The merger was completed in June 2015 and Motech became the surviving company while Topcell Solar was absorbed.

On December 31, 2018, we acquired the remaining equity interest in Best Elite International Limited, a British Virgin Islands corporation, or Best Elite, and our cumulative ownership in Best Elite became 100% as a result.

Please refer to “Item 5. Operating and Financial Review and Prospects-B. Liquidity and Capital Resources” for a discussion of our capital expenditures in the past three years and the plan for the current year.

On April 25, 2018, to further integrate the resources pursuant to our group wise investment strategy, our board and the board of our subsidiaries, Fortune Venture Capital Corp. or FORTUNE, and UMC New Business Investment Corp., or NBI, resolved an organizational restructure plan, under which NBI will be merged into FORTUNE. FORTUNE is the surviving company and assumes all the assets and liabilities from NBI when the merger became effective on July 1, 2018.

On June 29, 2018, our board approved the proposed application with the China Securities Regulatory Commission for our mainland operations to be listed on the Shanghai Stock Exchange. HeJian Technology (Suzhou) Co., or HJ, our currently 98.14%-owned subsidiary, will represent our to be listed China businesses, which are comprised of HJ’s 8” fab in Suzhou, USCXM and its 12” fab in Xiamen and Shandong-based UDS, which provides IC design support services. We anticipate the proposed listing on the Shanghai Stock Exchange for our HJ-led China subsidiaries will provide us with the ability to capitalize on the rapid growth of China’s semiconductor market and facilitate our long-term development. The proceeds from the listing is expected to be further allocated towards reinvestments in our China operations in order to provide customers with a complete, integrated IC manufacturing solution from chip design to manufacturing, which will help expand our market share and increase our production scale, technical quality, and overall competitiveness. Moreover, the proposed listing will provide us with a more diversified funding source that we believe will assist in strengthening our capital structure and financial positions, while allowing us to reserve more capital in Taiwan. On March 22, 2019, our subsidiary, HeJian Technology (Suzhou) Co., Ltd., has completed the submission process for A-Share listing application materials.

Our Strategy

To maintain and enhance our position as a market leader, we have adopted a business strategy with a focus on a partnership business model designed to accommodate our customers’ business needs and objectives and to promote their interests as our partners. We believe that our success and profitability are inseparable from the success of our customers. The goal in this business model is to create a network of partnerships or alliances among integrated device manufacturers, IP and design houses, as well as foundry companies. We believe that we and our partners will benefit from the synergy generated through such long-term partnerships or alliances and the added value to be shared among the partners. The key elements of our strategy are:

Operate as a Customer-Driven Foundry. We plan to operate as a customer-driven foundry. The increasing complexity of 40 nanometer, 28 nanometer, and more advanced technologies has impacted the entire chip industry, as ICs can now be designed with greater gate density and higher performance while incorporating the functions of an entire system. These advanced designs have created a new proliferating market of advanced digital devices such as smart phones, which have decreased in size but greatly increased in functionality. We collaborate closely with our customers as well as partners throughout the entire supply chain, including equipment, electronic design automation tool and IP vendors to work synergistically toward each customer's SoC solution. We also possess experience and know-how in system design and architecture to integrate customer designs with advanced process technologies and IP. We believe the result is a higher rate of first-pass silicon success for our SoC solutions. Our customer-driven foundry solutions begin with a common logic-based platform, where designers can choose the process technologies and transistor options that best fit their specific application. From there, technologies such as radio frequency complementary metal-oxide-semiconductor, or RF CMOS, and embedded Flash memories can be used to further fine-tune the process for customers' individual needs. Furthermore, as IP has become critical resources for SoCs, our portfolio includes basic design building blocks as well as more complex IP of optimized portability and cost, developed both internally and by third-party partners. With advanced technology, a broad IP portfolio, system knowledge and advanced 300-millimeter manufacturing, we offer comprehensive solutions that help customers deliver successful results in a timely fashion.

Build up Customer-focused Partnership Business Model. We have focused on building partnership relationships with our customers, and we strive to help our customers achieve their objectives through close cooperation. Unlike the traditional buy-and-sell relationship between a foundry and its customers, we believe our partnership business model will help us understand our customers' requirements and, accordingly, better accommodate our customers' needs in a number of ways, such as customized processes and services that optimize the entire value chain (not just the foundry portion) and IP-related support. We believe that this business model will enable us to deliver our products to our customers at the earliest time our customers require for their design cycle, resulting in shorter time-to-market and time-to-volume production. Furthermore, we believe we will render more cost-effective services by focusing our research and development expenditures on the specific requirements of our customers. We believe our partnership business model will help us not only survive a market downturn, but also achieve a better competitive position.

Continue to Focus on High Growth Applications and Customers and Actively Explore New Market Opportunities. We believe one measure of a successful foundry company is the quality of its customers. We focus our sales and marketing on customers who are established or emerging leaders in industries with high growth potential. Our customers include industry leaders such as Broadcom, MediaTek, Realtek, Texas Instruments and Qualcomm. We seek to maintain and expand our relationships with these companies. We strive to demonstrate to these customers the superiority and flexibility of our manufacturing, technology and service capabilities and to provide them with production and design assistance. We are also making efforts to further diversify our customer portfolio in order to maintain a balanced exposure to different applications and different customers. We believe these efforts strengthen our relationships with our customers and enhance our reputation in the semiconductor industry as a leading foundry service provider.

In addition to customer diversification, we have also been actively exploring new market opportunities in consumer electronics such as Internet of Things.

Maintain Our Leading Position in Mass-Produced Semiconductor Technology and Selectively Pursue Strategic Investments in New Technologies. We believe that maintaining and enhancing our leadership in mass-producible semiconductor manufacturing technology is critical to attract and retain customers. Our reputation for technological excellence has attracted both established and emerging leaders in the semiconductor industries who work closely with us on technology development. In addition, we believe our superior processing expertise has enabled us to provide flexible production schedules to meet our customers' particular needs. We plan to continue enhancing capital expenditures in research and development and building internal research and development expertise, to focus on process development and to establish alliances with leading and specialty semiconductor companies to accelerate access to next-generation and specialized technologies. For example, with our continuous technology development efforts and capital investment, in 2016, revenue derived from 28-nanometer technology had significantly increased from 2015. We believe our progress in developing more advanced process technologies has benefited our customers in the fields of computers, communications, consumer electronics and others with special preferences in certain aspects of the products, such as the ultimate performance, density and power consumption.

Moreover, we expect to strengthen our leading position and increase our market share by licensing our technologies to several corporate partners. For example, in 2014, we licensed to MIFS, which is a pure-play foundry company, our advanced 40 nanometer technology under a technology transfer and license agreement. We will continue to explore licensing opportunities based on our comprehensive technology offerings to further drive our revenue. In addition, we also entered into an agreement with the Xiamen Municipal People's Government and Fujian Electronics & Information Group in 2014 in connection with the newly established USCXM located in Xiamen, Fujian Province, China, which is focusing on the manufacturing of 12-inch wafers with initial offering of 40 nanometer and 55 nanometer process technologies. In April 2017, we entered into a license agreement with USCXM to provide 28 nanometer process technologies aimed to further strengthen the wafer manufacturing capabilities of our subsidiary company.

We also recognize that every company has limited resources and that the foundry industry is ever-evolving. Accordingly, we believe we should invest in new research and development technology intelligently and in a cost-effective manner to achieve the ultimate output of the resulting technology. In doing so, we balance the rate of return of our research and development with the importance of developing a technology at the right time to enhance our competitive edge without unduly diluting our profitability. We intend to avoid investments in technologies that do not present a commercial potential for volume production. We believe that to develop the earliest and most advanced semiconductor technology without regard to its potential for near term volume production may prove costly to our operations and would not strengthen our competitive position. We perceive a benefit to defer investment in the premature equipment needed to claim the earliest advanced technology and instead to purchase a more advanced and less expensive version of equipment from vendors who design such equipment based on pre-production lessons learned from the earliest technology.

Maintain Scale and Capacity Capabilities to Meet Customer Requirements, with a Focus on 12-inch Wafer Facilities for Future Expansion.

We believe that maintaining our foundry capacity with advanced technology and facilities is critical to the maintenance of our industry leadership. Our production capacity is currently among the largest of all semiconductor foundries in the world. We intend to increase our 12-inch wafer production capacity to meet the needs of our customers and to fully capitalize on the expected growth of our industry. We expect our future capacity expansion plans will focus on 12-inch wafer facilities in order to maintain our technology leadership. 12-inch wafers offer manufacturing advantages over 8-inch wafers due to, among other reasons, the greater number of chips on each wafer and the advantages only offered on newer 12-inch capable equipment. In addition, 12-inch wafer facilities present a more cost-effective solution in achieving an economic scale of production. We intend to carefully monitor current market conditions in order to optimize the timing of our capital spending. We also plan to continue to expand our capacity and capabilities to meet customer requirements in different markets and expand our global presence by making strategic investments in other companies. For example, in 2014, we invested in MIFS in Japan with Fujitsu Semiconductor Limited and in USCXM in China with the Xiamen Municipal People's Government and Fujian Electronics & Information Group that will focus on manufacturing semiconductors using 12-inch wafers. These investments enable us to achieve a greater economy of scale with respect to 300mm wafer operations for advanced node process technologies. We also licensed our advanced technologies to these invested companies in order to provide feasible technology solutions to fulfill their needs. Our board had subsequently approved in June 2018 to acquire all the remaining equity interest in MIFS from Fujitsu Semiconductor Limited. Upon completion, MIFS will become our wholly-owned subsidiary.

B. Business Overview

Manufacturing Facilities

To maintain a leading position in the foundry business, we have placed great emphasis on achieving and maintaining a high standard of manufacturing quality. As a result, we seek to design and implement manufacturing processes that produce consistent, high manufacturing yields to enable our customers to estimate, with reasonable certainty, how many wafers they need to order from us. In addition, we continuously seek to enhance our production capacity and process technology, two important factors that characterize a foundry's manufacturing capability. Our large production capacity and advanced process technologies enable us to provide our customers with volume production and flexible and quick-to-market manufacturing services. All of our fabs operate 24 hours per day, seven days per week. Substantially all maintenance at each of the fabs is performed concurrently with production.

As a step in our continuing expansion of our manufacturing complex in the Tainan Science Park in southern Taiwan, we completed the construction of our second 300mm fab in Taiwan in May 2009, and moved the equipment into this fab in July 2010.

The following table sets forth operational data of each of our manufacturing facilities as of December 31, 2018.

	Wavetek	Fab 8A	Fab 8C	Fab 8D	Fab 8E	Fab 8F	Fab 8S	HJ	Fab 12A	Fab 12i	USCXM
Commencement of volume production	1989	1995	1998	2000	1998	2000	2000	2003	2002	2004	2016
Estimated full capacity ⁽¹⁾⁽²⁾	31,000	69,000	36,050	30,000	35,000	36,100	31,100	64,500	83,400	47,840	17,000
	wafers	wafers	wafers	wafers	wafers	wafers	wafers	wafers	wafers	wafers	wafers
	per	per	per	per	per	per	per	per	per	per	per
	month	month	month	month	month	month	month	month	month	month	month
Wafer size	6-inch	8-inch	8-inch	8-inch	8-inch	8-inch	8-inch	8-inch	12-inch	12-inch	12-inch
	(150mm)	(200mm)	(200mm)	(200mm)	(200mm)	(200mm)	(200mm)	(200mm)	(300mm)	(300mm)	(300mm)

(1) Measured in stated wafer size.

(2) The capacity of a fab is determined based on the capacity ratings given by manufacturers of the equipment used in the fab, adjusted for, among other factors, actual output during uninterrupted trial runs, expected down time due to set up for production runs and maintenance and expected product mix.

Our fabs are located in the R.O.C., Singapore, and the PRC. The following table sets forth the size and primary use of our facilities and whether such facilities, including land and buildings, are owned or leased. The land in the Hsinchu and Tainan Science Parks is leased from the R.O.C. government. The land in the Pasir Ris is leased from statutory boards of the Singapore government. The land in the Suzhou Industrial Park and Xiang'an District is leased from the PRC government.

Location	Size (Land/Building) (in square meters)	Primary Use	Land (Owned or Leased)	Building (Owned or Leased)
Fab 8A, 3, 5 Li-Hsin 2 nd Rd., Hsinchu Science Park, Hsinchu, Taiwan 30078, R.O.C.	43,130 / 83,699	8-inch wafer production	Leased (expires in December 2033)	Owned
Fab 8C & Fab 8D, 6, 8 Li-Hsin 3 rd Rd., Hsinchu Science Park, Hsinchu, Taiwan 30078, R.O.C.	33,784/100,609	8-inch wafer production	Leased (expires in December 2033)	Owned
Fab 8E, 17 Li-Hsin Rd., Hsinchu Science Park, Hsinchu, Taiwan 30078, R.O.C.	35,779 / 76,315	8-inch wafer production	Leased (expires in February 2036)	Owned
Fab 8F, 3 Li-Hsin 6 th Rd., Hsinchu Science Park, Hsinchu, Taiwan 30078, R.O.C.	23,774 / 65,736	8-inch wafer production	Leased (expires in February 2038)	Owned
Fab 8S, 16 Creation 1 st Rd., Hsinchu Science Park, Hsinchu, Taiwan 30077, R.O.C.	20,365 / 65,614	8-inch wafer production	Leased (expires in December 2023)	Owned
HJ, 333, Xinghua St., Suzhou Industrial Park, Suzhou, Jiangsu Province 215025, PRC	215,621 / 100,908	8-inch wafer production	Leased (expires in December 2052)	Owned

Location	Size (Land/Building) (in square meters)	Primary Use	Land (Owned or Leased)	Building (Owned or Leased)
Fab 12A, 18, 20 Nan-Ke 2 nd Rd., & 57, Nan-ke 3rd Rd., Tainan Science Park, Sinshih, Tainan, Taiwan 74147, R.O.C.	243,250 / 633,904	12-inch wafer production	Leased (expires in November 2034)	Owned
Fab 12i, 3 Pasir Ris Drive 12 Singapore 519528	84,836 / 146,323	12-inch wafer production	Leased (expires in March 2031)	Owned
USCXM, 899 Wan Jia Chun Road, Xiang'an District, Xiamen, PRC	254,698 / 348,537	12-inch wafer production	Leased (expires in January 2065)	Owned
United Tower, 3 Li-Hsin 2 nd Rd., Hsinchu Science Park, Hsinchu, Taiwan 30078, R.O.C.	8,985 / 85,224	Administration office	Leased (expires in December 2033)	Owned
Neihu Rd. office, 8F, 68. Sec. 1, Neihu Rd., Taipei, Taiwan 11493, R.O.C.	626 / 4,817	Administration office	Owned	Owned
Testing Building, 1, Chin-Shan, 7 th St., Hsinchu, Taiwan 30080, R.O.C.	10,762 / 41,318	Leased to several companies	Owned	Owned
R&D Building, 18 Nan-Ke 2 nd Rd., Tainan Science Park, Sinshih, Tainan, Taiwan 74147, R.O.C.	42,000 / 47,396	Research and development	Leased (expires in December 2023)	Owned
Nexpower, 2, Houke S. Rd., Houli District, Taichung, Taiwan 42152, R.O.C.	57,556 / 82,699	Solar PV modules production	Leased (expires in December 2026)	Owned
Wavetek, 10, Chuangxin 1 st Rd., Baoshan Township, Hsinchu, Taiwan 30076, R.O.C.	27,898 / 34,609	6-inch wafer production	Leased (expires in December 2034)	Owned

Process Technology

Process technology is a set of specifications and parameters that we implement for manufacturing the critical dimensions of the patterned features of the circuitry of semiconductors. Our process technologies are currently among the most advanced in the foundry industry. These advanced technologies have enabled us to provide flexible production schedules to meet our customers' particular needs.

We pioneered the production of numerous semiconductor products. Our continued enhancement of our process technologies has enabled us to manufacture semiconductor devices with smaller geometries. In 2013, we successfully developed and released into production 28nm Poly-SiON and High-k/metal gate technologies. In 2015, we provided a High-k/ metal gate with high performance compact, or HPC, solution and improved to a high performance compact plus, or HPC+, solution by the end of 2017 for speed-intensive and optimized power consumption products. In 2018, 22nm ULP (ultra-Low Power) and ULL (ultra-Low Leakage) technology was developed to provide cost effective solutions and to obtain better chip performance for IoT applications. We also joined International Business Machines Corporation, or IBM chip alliance, for advanced process development. With IBM's know-how and support, we aim to continue to improve our internally developed 14nm FinFET technology, so as to offer a 14nm competitive low-power enhanced technology for mobile computing and communication products. In March 2017, we commenced the shipment of 14nm wafers to customers and have achieved production quality yields for the advanced process that is being utilized for consumer electronic applications. UMC's 14nm FinFET technology features 55% higher speed and twice the gate density over 28nm process technology. The 14nm process also consumes approximately 50% less power than for 28nm. We also partnered with Avalanche for joint development and production of MRAM to replace embedded flash in 2018 for 28/22nm technologies.

Furthermore, we have also successfully developed specialty technologies such as 55/40/28nm embedded memory used for MCU and automotive products, 55/40/28nm embedded high voltage device used for display drivers, 55nm BSI-CSI for image sensors and 110/55nm BCD for power management circuits. We also developed ReRAM for advanced node embedded solutions, and RF-SOI technologies of 110/90/55nm nodes covering both custom and platform for RF device applications. All of these specialty technologies can provide system on chip solutions.

The table below sets forth our actual process technology range, categorized by line widths, or the minimum physical dimensions of the transistor gate of integrated circuits in production by each fab, in 2018, and the estimated annual full capacity of each fab, actual total annual output and capacity utilization rates in 2016, 2017 and 2018:

	Years of Commencement of Operation	Year Ended December 31, 2018 Range of Process Technologies (in microns)	Years Ended December 31,		
			2016	2017	2018
			(in thousands of 8-inch wafer equivalents, except percentages)		
Wavetek	1989	0.5	238	237	223
Fab 8A	1995	0.5 to 0.25	827	825	825
Fab 8C	1998	0.35 to 0.11	348	357	383
Fab 8D	2000	0.13 to 0.09	342	341	347
Fab 8E	1998	0.5 to 0.18	419	418	418
Fab 8F	2000	0.18 to 0.11	401	417	431
Fab 8S	2000	0.18 to 0.11	336	347	372
HJ	2003	0.5 to 0.11	750	753	771
Fab 12A	2002	0.13 to 0.014	1,990	2,182	2,243
Fab 12i	2004	0.13 to 0.040	1,313	1,209	1,248
USCXM	2016	0.040 to 0.028	19	218	413
Total estimated capacity	—	—	6,983	7,304	7,673
Total output (actual)	—	—	6,190	6,896	7,143
Average capacity utilization	—	—	88.6%	94.4%	93.1%

Capacity and Utilization

The fabs in Taiwan that we own directly are named Wavetek, Fab 8A, Fab 8C, Fab 8D, Fab 8E, Fab 8F, Fab 8S and Fab 12A. All of them are located in the Hsinchu Science Park except for Fab 12A located in the Tainan Science Park. The fab in Singapore is named Fab 12i. The fabs in China are named HJ and USCXM, located in Suzhou and Xiamen, respectively.

Our average capacity utilization rate was 88.6% in 2016, 94.4% in 2017 and 93.1% in 2018.

Equipment

Considering the performance and productivity of our manufacturing capability highly relies on the quality of our capital equipment, we generally purchase equipment that not only meet the demand of our existing process technology, but also have the capability to be upgraded to match our future needs. The principal equipment we use to manufacture semiconductor devices are scanners/steppers, cleaners and track equipment, inspection equipment, etchers, furnaces, wet stations, strippers, implanters, sputters, CVD equipment, probers, testers and so on. We own all of the production equipment except for a few demonstration tools.

Our policy is to purchase high-quality equipment that demonstrates stable performance from vendors with dominant market share to ensure our continued competitiveness in the semiconductor field.

Some of the equipment is available from a limited number of qualified vendors and/or is manufactured in relatively limited quantities, and some equipment has only recently been developed. We believe that our relationships with equipment suppliers are strong enough that we can leverage our position as a major purchaser to purchase equipment on competitive terms, including shorter lead time, compared with the terms received by several other foundries.

Although we face the challenge of procuring the right equipment in sufficient quantity necessary for ramp-up or expansion of our fabrication facilities under constraint of short lead times, we have not in the past experienced any material problems in procuring the latest generation equipment on a timely basis even in periods of unpredictably high market demand. We manage the risks in the procurement process through timely internal communications among different divisions, efficient market information collection, early reservation of appropriate delivery slots and constant communications with our suppliers as well as by utilizing our good relationships with the vendors.

Raw Materials

Our manufacturing processes use many raw materials, primarily silicon wafers, chemicals, gases and various types of precious sputtering targets. These raw materials are generally available from several suppliers. Our policy with respect to raw material purchases, similar to that for equipment purchases, is to select only a small number of qualified vendors who have demonstrated quality and reliability on delivery time of the raw materials. We may have any long-term supply contracts with our vendors if necessary.

Our general inventory policy is to maintain sufficient stock of each principal raw material for production and rolling forecasts of near-term requirements received from customers. In addition, we have agreements with several key material suppliers under which they hold similar levels of inventory in their warehouses for our use. However, we are not under any obligation to purchase raw material inventory that is held by our vendors for our benefit until we actually order it. We typically work with our vendors to plan our raw material requirements on a monthly basis, with indicative pricing generally set on a quarterly basis. The actual purchase price is generally determined based on the prevailing market conditions. In the past, prices of our principal raw materials have not been volatile to a significant degree. Although we have not experienced any shortage of raw materials that had a material effect on our operations, and supplies of raw materials we use currently are adequate, shortages could occur in various critical materials due to interruption of supply or an increase in industry demand.

The most important raw material used in our production processes is silicon wafer, which is the basic raw material from which integrated circuits are made. The principal makers for our wafers are Shin-Etsu, GlobalWafers, Siltronic and Sumco Group. We have in the past obtained and believe that we will continue to be able to obtain a sufficient supply of silicon wafers. We believe that we have close working relationships with our wafer suppliers. Based on such long-term relationships, we believe that these major suppliers will use their best efforts to accommodate our demand.

We use a large amount of water in our manufacturing process. We obtain water supplies from government-owned entities. We also use substantial amounts of dual loop electricity supplied by Taiwan Power Company in the manufacturing process. We maintain back-up generators that are capable of providing adequate amounts of electricity to maintain the required air pressure in our clean rooms in case of power interruptions. We believe our back-up devices are reasonably adequate in preventing business interruptions caused by power outages and emergency situations.

Quality Management

We believe that our advanced process technologies and reputation for high quality and reliable services and products have been important factors in attracting and retaining leading international and domestic semiconductor companies as customers.

We structure our quality management system in accordance with the latest international quality standards and our customers' strict quality and reliability requirements. Our quality management system incorporates comprehensive quality control programs into the entire business flow of foundry operation including, among others, new process development management, production release control, incoming raw material inspection, statistical process control and methodology development, process change management, technical documentation control, product final inspection, metrology tool calibration and measurement system analysis, quality audit program, nonconformity management, customer complaint disposition, eight-discipline problem solving and customer satisfaction monitoring.

We set a high quality goal to ensure consistent high yielding and reliable product performance. Our quality program is continually enhanced through top-down annual Business Policy Management and bottom-up Total Quality Management activities. In addition, our efforts to observe best practices among fabs in the foundry industry have also contributed to the improvement of our overall quality management system.

Many of our customers perform physical production site qualification process in the early development phase and routine quality conformance audits in the volume production phase. These audits include both quality system review and physical fabrication area inspection for verification of conformity with the international quality standard and customers' quality requirement. Our quality management system and quality control programs have been qualified and routinely audited by numerous customers who are recognized as world-class semiconductor companies with best-in-class quality standards.

Our Quality Assurance Division and Reliability Technology and Assurance Division collaborate to provide quality and reliability performance to customers. With our wafer processing quality and reliability conformance monitor program, we monitor the product quality and reliability at various stages of the entire manufacturing process before shipment to customers.

All our fabs are certified in compliance with IATF 16949 and QC080000 IECQ HSPM standards. IATF 16949 sets the criteria for developing a fundamental quality management system emphasizing on customer satisfaction in quality management, continual improvement, defect prevention and variation and waste reduction. QC080000 IECQ HSPM sets the criteria for developing a process management system for hazardous substances and focuses on developing environmentally friendly manufacturing processes. We are committed to continuously improve our quality management system and to deliver high quality product to our customers.

Services and Products

We primarily engage in wafer fabrication for foundry customers. To optimize fabrication services for our customers, we work closely with them as they finalize circuit design and contract for the preparation of masks to be used in the manufacturing process. We also offer our customers turnkey services by providing subcontracted assembly and test services. We believe that this ability to deliver a variety of foundry services in addition to wafer fabrication enables us to accommodate the needs of a full array of integrated device manufacturers, system companies and fabless design customers with different in-house capabilities.

Wafer manufacturing requires many distinct and intricate steps. Each step in the manufacturing process must be completed with precision in order for finished semiconductor devices to work as intended. The processes require taking raw wafers and turning them into finished semiconductor devices generally through five steps: circuit design, mask tooling, wafer fabrication, assembly and test. The services we offer to our customers in each of these five steps are described below.

Circuit Design. At this initial design stage, our engineers generally work with our customers to ensure that their designs can be successfully and cost-effectively manufactured in our facilities. We have assisted an increasing number of our customers in the design process by providing them with access to our partners' electronic design analysis tools, IP and design services as well as by providing them with custom embedded memory macro-cells. In our Silicon Shuttle program, we offer customers and IP providers early access to actual silicon samples with their desired IP and content in order to enable early and rapid use of our advanced technologies. The Silicon Shuttle program is a multi-chip test wafer program that allows silicon verification of IP and design elements. In the Silicon Shuttle program, several different vendors can test their IP using a single mask set, greatly reducing the cost of silicon verification for us and the participating vendors. The high cost of masks for advanced processes makes this program attractive to IP vendors. In our alliances with them, we coordinate with leading suppliers of IP, design and ASIC services to ensure their offerings are available to our customers in an integrated, easy to use manner which matches customers' need to our technologies. With a view to lowering customer design barriers, we expanded our design support functions from conventional design support to adding IP development to complement third-party intellectual properties and to provide customers with the widest range of silicon-verified choices. Our offerings range from design libraries to basic analog mixed-mode intellectual properties which, together, have helped shorten our customer's design cycle time.

Mask Tooling. Our engineers generally assist our customers to design and/or obtain masks that are optimized for our advanced process technologies and equipment. Actual mask production is usually provided by independent third parties specializing in mask tooling.

Wafer Fabrication. As described above, our manufacturing service provides all aspects of the wafer fabrication process by utilizing a full range of advanced process technologies. During the wafer fabrication process, we perform procedures in which a photosensitive material is deposited on the wafer and exposed to light through the mask to form transistors and other circuit elements comprising of a semiconductor. The unwanted material is then etched away, leaving only the desired circuit pattern on the wafer. As part of our wafer fabrication services, we also offer wafer probing services, which test, or probe, individual die on the processed wafers and identify dice that fail to meet required standards. We prefer to conduct wafer probing internally to obtain speedier and more accurate data on manufacturing yield rates.

Assembly and Testing. We offer our customers turnkey services by providing the option to purchase finished semiconductor products that have been assembled and tested. We outsource assembly and test services to leading assembly and test service providers, including Siliconware Precision Industries Co., Ltd., or Siliconware, and Advanced Semiconductor Engineering Inc. in Taiwan. After final testing, the semiconductors are shipped to our customers' designated locations.

In addition to our foundry business, we also engage in the research, development and manufacture of products in the solar energy and LED industries.

Customers and Markets

Our primary customers, in terms of our sales revenues, include premier integrated device manufacturers, such as Texas Instruments and Intel Mobile, plus leading fabless design companies, such as Broadcom, MediaTek, Realtek, Qualcomm and Novatek. Although we are not dependent on any single customer, a significant portion of our operating revenues has been generated from sales to a few customers. Our top ten customers accounted for approximately 51.3% of our operating revenues in 2018. Set forth below is a geographic breakdown of our operating revenues in 2016, 2017 and 2018 by the location of our customers.

Region	Years Ended December 31,		
	2016	2017	2018
	%	%	%
Taiwan	31.4	32.8	36.4
Singapore	18.1	20.6	16.4
China (including Hong Kong)	9.3	12.7	12.2
Japan	3.0	3.2	3.9
USA	9.3	12.2	15.6
Europe	19.8	9.6	8.3
Others	9.1	8.9	7.2
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

We believe our success in attracting these end customers is a direct result of our commitment to high quality service and our intense focus on customer needs and performance. As an independent semiconductor foundry, most of our operating revenue is generated by our sales of wafers. The following table presented the percentages of our wafer sales by types of customers for the years ended December 31, 2016, 2017 and 2018.

Customer Type	Years Ended December 31,		
	2016	2017	2018
	%	%	%
Fabless design companies	92.4	91.0	92.4
Integrated device manufacturers	7.6	9.0	7.6
Total	100.0	100.0	100.0

We focus on providing a high level of customer service in order to attract customers and maintain their ongoing loyalty. Our culture emphasizes responsiveness to customer needs with a focus on flexibility, speed and accuracy throughout our manufacturing and delivery processes. Our customer-oriented approach is especially evident in two types of services: customer design development services and manufacturing services. For example, in 2013, we expand our regional business by opening our UMC Korea office, in order to provide local support to our customers in Korea, and shorten time-to-market for our Korea-based customers designing and manufacturing on UMC process technologies. We believe that our large production capacity and advanced process technology enable us to provide better customer service than many other foundries through shorter turn-around time, greater manufacturing flexibility and higher manufacturing yields.

We work closely with our customers throughout the design development and prototyping processes. Our design support team closely interacts with customers and IP vendors to facilitate the design process and to identify their specific requirements for IP offerings. We are responsive to our customers' requirements in terms of overall turn-around time and production time-to-market by, for example, helping our customers streamline their IP offering processes and delivering prototypes in a timely and easy-to-use fashion. We also maintain flexibility and efficiency in our technical capability and respond quickly to our customers' design changes.

For IP offerings, we work with several leading IP vendors from digital, memory and analog fields in the semiconductor industry to deliver quality IP blocks that have been silicon validated using our advanced processes. Our alliances with major electronic design automation vendors provide our customers with digital/analog reference design procedures and easy-to-use design solutions. By continuously enhancing our IP offerings, reference design procedures and design services through collaboration with major vendors, we aim to provide complete, accurate and user-friendly design solutions to our customers.

As a design moves into manufacturing production, we continue to provide ongoing customer support through all phases of the manufacturing process. The local account manager works with our customer service representative to ensure the quality of our services, drawing upon our marketing and customer engineering support teams as required.

We offer an online service, "MyUMC", which gives our customers easy access to our foundry services by providing a total online supply chain solution. MyUMC offers 24-hour access to detailed account information such as manufacturing, engineering and design support documents through each customer's own customized start page. The features that are available to customers through MyUMC include (i) viewing the status of orders from the start of production to the final shipping stages; (ii) designing layouts to shorten customers' tape out time; (iii) collecting customer engineering requests; (iv) gathering and downloading documents for design purposes; and (v) and accessing online in real-time the same manufacturing data used by our fab engineers.

We also have a system-to-system connecting services to provide direct data exchange between our system and our customers' systems. These services, which include our "UMC Design View Room Cloud Service", facilitate our design collaborations with our customers to help reduce the cost of chip designs and reduce the time to market. In order to continue to improve our information security management, our Information Technology Division received the certification of ISO/IEC 27001:2005 in March 2008 and renewed ISO/IEC 27001:2013 certification in February 2015.

In addition, we have established a data-driven advanced semiconductor smart manufacturing system to provide world-class quality production, ensure information security and service quality, as well as improve customer satisfaction, operational and R&D efficiency. We achieved this by integrating a spectrum of innovative digital technologies, including Internet of Things, big data, cloud, artificial intelligence and information technology, and our enterprise information and semiconductor expertise.

We price our products on a per die or per wafer basis, taking into account the complexity of the technology, the prevailing market conditions, the order size, the cycle time, the strength and history of our relationship with the customer and our capacity utilization. Our main sales office is located in Taiwan, which is in charge of our sales activities in Asia. United Microelectronics (Europe) BV, our wholly-owned subsidiary based in Amsterdam, assists our sales to customers in Europe. Our sales in North America are made through UMC Group (USA), our subsidiary located in Sunnyvale, California. We also have sales offices in China, Japan and Korea to support our customers in those regions.

We typically designate a portion of our wafer manufacturing capacity to some of our customers primarily under two types of agreements: reciprocal commitment agreements and deposit agreements. Under a reciprocal commitment agreement, the customer agrees to pay for, and we agree to supply, a specified capacity at a specified time in the future. Under a deposit agreement, the customer makes in advance a cash deposit for an option on a specified capacity at our fabs for a stated period of time. Option deposits are credited to wafer purchase prices as shipments are made. If this customer does not use the specified capacity, it will forfeit the deposit but, in certain circumstances and with our permission, the customer may arrange for a substitute customer to utilize such capacity. In some cases, we also make available capacity to customers under other types of agreements, such as capacity commitment arrangements with technology partners.

We advertise in trade journals, organize technology seminars, hold a variety of regional and international sales conferences and attend a number of industry trade fairs to promote our products and services. We also publish a corporate newsletter for our customers.

Information Security Risk Management

Our information security risks and the mitigating measures we have taken are described in the following seven sections:

(1) Risk Management Organization

We have established an Enterprise Risk Management Committee to coordinate with key internal departments for risk management and control, jointly review and manage internal and external risks of the company, and prioritize risk response strategies for major risk issues across the company. It is combined with internal audit and control functions to ensure that the operational risks associated with operations are properly managed. In addition, we established the “Corporate Security Division” in 2018, which is responsible for our information security and physical security planning and related audit matters, and work together with our Information Technology Division to further strengthen information security.

(2) Information Security Policy (Internal Control and Protocol)

Our information security policy is based on the guiding principle: “To establish Information Security Management rules in accordance to customer’s requirement, to reach a consensus that information security is everyone’s responsibility through full awareness, to protect information Confidentiality, Integrity, Availability for the Company and Customer, and to provide safe production environment to ensure sustainable operation of the Company’s business.” Our major information security objectives are aimed at antivirus, anti-intrusion and anti-leakage through the building of multiple internal controls such as firewall, intrusion detection and antivirus systems to enhance our ability to defend against external attacks. Also, through regular educational and training programs, security operation/awareness is tightly involved and seamlessly integrated into every employee’s daily work.

(3) Establish Enterprise Risk Management System

Our Enterprise Risk Management Committee integrates the identified various risk items, including strategy, operation, finance, hazard, etc., evaluate the possibility and severity of their occurrence, defines the priority order and risk level of the risk items, and adopt corresponding risk management schemes. Regularly review the possibility of risk occurrence and the potential change of severity over time to grasp the effectiveness of risk management programs and related control operations. We comply with multiple ISO certification standards in the areas of quality, environment, water resources, carbon footprint and green energy. Related information security certification includes ISO15408, ISO22301 and ISO27001.

(4) Assessment of Information Security and Cyber Risks

We pay special attention to the security risks from external intrusion, and build a complete multi-layer defense mechanism including firewall, intrusion detection, antivirus system, vulnerability scanning, patch management procedure and penetration testing. We undertake annual self-assessment on cyber security defense capability on an average of three to four points (corresponding to Defined ~ Managed level in InfoSec Maturity Model). The found weakness items are listed as annual projects for improvement. In addition to self-assessment, we also leverage international professional security company's resources for overall security healthy inspection as a trusted third party verification and a basis for further improvement.

(5) Information Security Management System (ISMS) Verification

We have been listed on NYSE since 2000 and had complied with the Sarbanes-Oxley Act (SOX 404) for internal key financial processes. In 2019, we intend to strengthen information security by introducing ISO27001 information security management system certification to reduce security risk and production anomaly that may cause by human error. Continuous improvement of PDCA is then carried out through annual recertification.

In 2014, a cross-division security committee was established. Based on the need to produce secure products like smart card, we introduced ISO15408 (CC, Common Criteria) certification specifically designed for secure production procedures not only in data receiving, processing and destroying but also higher physical access control request for securing entire production line purpose. Continuous improvement of PDCA is then carried out through biennial recertification.

(6) Insurance against Information Security Risks

In view of recent reports about data leakage, virus infection, hacking event in Taiwan and the world, together with the ransomware incident of peer semiconductor manufacturer's information system in August 2018, whose operating loss in business interruption reached NT\$7.6 billion. There is no guarantee that enterprises will not become the target of attacks despite reasonable security protection in place. In view of this, we opt for cyber security insurance for partly transferring and mitigating the risk. This insurance is in effect since January 2019 with retroactive option which can trace back to undiscovered pre-existing threats. The initial insurance coverage is US\$10 million for all our fabs in Taiwan and Singapore.

(7) The Impact of Occurred Major Asset Security Incidents and Response Measures

In response to potential cyber-attacks, we upgraded the antivirus software with behavior-based detection capability and implementing strict information device in/out management, as well as updated critical patches for production line computers to defense against such worm-type viruses that may attack system vulnerabilities. We also set Access Control List (ACL) in production line network to grant necessary access between equipment tools, which can block the virus from spreading and minimize its impact. SEMICON TAIWAN subsequently formed a task force to study equipment information security standards, of which we are a member, to contribute as a local enterprise responsibility.

In short, while new invasive techniques are constantly refurbished but defense system is faced with zero-breach tolerance as past defense achievements do not necessarily mean or guarantee that anomaly will not happen in the future. Enterprises must keep pace with the times, face the ever-changing and growing information security threat. Information security has a long way to go and requires continuous improvement. UMC will uphold to "Customer-orientation, Integrity, Innovation, Accountability, Efficiency" as corporate culture and well fulfill 'due care/due diligence' management responsibility to provide customers with a secure production environment to reduce operational risk and reward shareholders with highest investment value as possible.

Competition

The worldwide semiconductor foundry industry is highly competitive, particularly during periods of overcapacity and inventory correction. We compete internationally and domestically with dedicated foundry service providers as well as with integrated device manufacturers and final product manufacturers which have in-house manufacturing capacity or foundry operations. Some of our competitors have substantially greater production, financial, research and development and marketing resources than we have. As a result, these companies may be able to compete more aggressively over a longer period of time than we can. In addition, several new dedicated foundries have commenced operations and compete directly with us. Any significant increase in competition may erode our profit margins and weaken our earnings.

We believe that our primary competitors in the foundry services market are Taiwan Semiconductor Manufacturing Company Limited, Semiconductor Manufacturing International (Shanghai) Corporation and Globalfoundries Inc., as well as the foundry operation services of some integrated device manufacturers such as IBM, Samsung, Intel and Toshiba. Other competitors such as DongbuAnam Semiconductor, Grace Semiconductor Manufacturing Corp., X-FAB Semiconductors Foundries AG and Silterra Malaysia Sdn. Bhd. have initiated efforts to develop substantial new foundry capacity, although much of such capacity involves less cost-effective production than the 12-inch fabs for which we possess technical know-how. New entrants in the foundry business are likely to initiate a trend of competitive pricing and create potential overcapacity in legacy technology. The principal elements of competition in the semiconductor foundry industry include technical competence, production speed and cycle time, time-to-market, research and development quality, available capacity, manufacturing yields, customer service and price. We believe that we compete favorably with the new competitors on each of these elements, particularly our technical competence and research and development capabilities.

Intellectual Property

Our success depends in part on our ability to obtain patents, licenses and other intellectual property (IP) rights covering our production processes and activities. To that end, we have acquired certain patents and patent licenses and intend to continue to seek patents on our production processes. As of December 31, 2018, we held 5,678 U.S. patents and 7,313 patents issued outside of the United States.

Our ability to compete also depends on our ability to operate without infringing on the proprietary rights of others. The semiconductor industry is generally characterized by frequent claims and litigation regarding patent and other IP rights. As is the case with many companies in the semiconductor industry, we have from time to time received communications from third parties asserting patents that allegedly cover certain of our technologies and alleging infringement of certain IP rights of others. We expect that we will receive similar communications in the future. Irrespective of the validity or the successful assertion of such claims, we could incur significant costs and devote significant management resources to the defense of these claims, which could seriously harm our company. See “Item 3. Key Information—D. Risk Factors—Our inability to obtain, preserve and defend IP rights could harm our competitive position.”

In order to minimize our risks from claims based on our manufacture of semiconductor devices or end-use products whose designs infringe on others’ IP rights, we in general accept orders only from companies that we believe enjoy satisfactory reputation and for products that are not identified as risky for potential infringement claims. Furthermore, we obtain indemnification rights from customers. We also generally obtain indemnification rights from equipment vendors to hold us harmless from any losses resulting from any suit or proceedings brought against our company involving allegation of infringement of IP rights on account of our use of the equipment supplied by them.

We have entered into various patent cross-licenses with major technology companies, including a number of leading international semiconductor companies, such as IBM and LSI. Our cross licenses may have different terms and expiry dates. Depending upon our competitive position and strategy, we may or may not renew our cross licenses and further, we may enter into different and/or additional technology and/or IP licenses in the future.

Research and Development

In 2016, 2017 and 2018, we spent NT\$13,532 million, NT\$13,669 million and NT\$13,025 million (US\$426 million), respectively, on research and development, which represented 9.2%, 9.2% and 8.6%, respectively, of our operating revenues of such years. Our research and development efforts mainly focus on delivering comprehensive foundry solutions that consist of the key process technologies encompassing logic as well as specialty manufacturing technologies that address customers' needs. These resources provide our foundry customers with improved opportunities to develop diverse product lines that supply the global semiconductor market. Our commitment to research and development can be illustrated by our 2018 research and development expenditures, which reached approximately 8.6% of operating revenues.

As of December 31, 2018, we employed 1,821 professionals in our research and development activities. In addition, other management and operational personnel are also involved in research and development activities but are not separately identified as research and development professionals.

Our Investments

Depending on the market conditions, we intend to gradually reduce our investments through open market trading and other measures available to our company.

The following table sets forth the sales of our investments in 2016:

Investees	Number of shares sold (in millions)	Proceeds from disposal (in NT\$ millions)
Nien Made Enterprise Co., Ltd.	5	1,593
Superalloy Industrial Co., Ltd.	6	870
Motech Industries, Inc.	17	599
Easou Holdings Company Limited (formerly Yeti Group Ltd.)	14	295

The following table sets forth the sales of our investments in 2017:

Investees	Number of shares sold (in millions)	Proceeds from disposal (in NT\$ millions)
Superalloy Industrial Co., Ltd.	5	534
Nien Made Enterprise Co., Ltd.	1	414
GlobalWafers Co., Ltd.	2	343
Chunghwa Telecom Co., Ltd.	0	208

The following table sets forth the sales of our investments in 2018:

Investees	Number of shares sold (in millions)	Proceeds from disposal (in NT\$ millions)	Proceeds from disposal (in US\$ millions)
All-Stars Xmi Ltd.	0	471	15
Motech Industries, Inc.	22	300	10
Bora Pharmaceuticals Co, Ltd.	2	225	7
Epic! Creations, Inc.	2	183	6

Environmental, Safety and Health Matters

UMC implemented extensive ESH management systems since 1996. These systems enable our operations to identify applicable ESH regulations, assist in evaluating compliance status and timely establish loss preventive and control measures. The systems we implemented in all our fabs have been certified as meeting the ISO 14001 and OHSAS 18001 standards. ISO 14001 consists of a set of standards that provide guidance to the management of organizations to achieve an effective environmental management system. Procedures are established at manufacturing locations to ensure that all accidental spills and discharges are properly addressed. OHSAS 18001 is a recognizable occupational health and safety management system standard, which may be applied to assess and certify our management systems. Our goal in implementing ISO 14001 and OHSAS 18001 systems is to continually improve our ESH management, comply with ESH regulations and to be a sustainable green foundry. UMC's major ESH policies include:

Environmental Protection Aspects:

- With zero pollution as the goal, strive to be a sustainable green corporation by complying with or going above and beyond the requirements of environmental laws and international conventions.
- Implement and integrate an environmental management system into the overall organizational management system. Commit to ongoing improvement of environmental performance.
- Actively introduce and develop green technologies, and apply to production activities and product service processes. Strive to reduce environmental loads in all life cycle stages to achieve green design, production and operation.
- Comply with international environmental protection trends, properly utilize and recycle energy and resources, promote circular economy, and become a leader in green technology.
- Fulfill corporate social responsibility, and cooperate with the government, the public and global business partners in ecological improvement and rehabilitation.
- Promote environmental ethics education and green concepts to encourage eco awareness, action and responsibility in corporations, upstream and downstream supply chains and the general public.
- Disclose environmental information and maintain ongoing communication with stakeholders. Exercise due diligence in promoting environmental sustainability.

Safety and Health Aspects:

- Meet or exceed the requirements of industry safety and health laws, aiming for zero disaster. The company is committed to steady development while making safety a priority.
- Promote safety and health management system and risk improvement processes to achieve and maintain world-class safety/health and risk management performance.
- Use advanced safety and health technologies as well as risk and disaster rescue techniques to aggressively enhance all safety aspects in a pioneering manner.

- Implement prevention management and auditing systems to ensure the safety of the work environment and operations, protecting the physical and mental health of employees to put the minds of workers and customers at ease.
- Make it a responsibility for personnel of all levels to exercise influence, eliminate hazard factors, prevent occurrence of accidents and work-related illnesses, and promote effective safety and health interactions through cooperation and sharing.
- Continue conducting safety and health education and advocacy; encourage active participation in safety and health activities, allow for health and safety to be a habit and a way of life for all employees.

As a member of the global community and a semiconductor industry leader, we have implemented measures to deal with environmental problems and mitigate climate change. We have introduced green concepts in our operations, including green commitment, management, procurement, production, products, recycling, office, education and marketing.

In order to conquer the green barrier formed by the RoHS (the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) Directive, we established a cross-division HSPM (Hazardous Substances Process Management) committee to manage all development and implementation of related work. We completed the final system audit for QC 080000 ICEQ HSPM qualification, a certification for having a hazardous substance process management system that meets the RoHS Directive, on June 9, 2006 and became the first semiconductor manufacturer worldwide to achieve HSPM certification for all fabs. In 2009, we completed the report on the carbon footprint verification for integrated circuit wafers produced at our facilities, the first such report in the foundry industry. In 2010, we completed water footprint verification for our 200 mm and 300 mm wafers. These verifications provide scientific and reliable statistics on the carbon and water information of products manufactured in our fabs as well as self-reviews of environmental impact.

With respect to safety and health management, we realized that lowering the risks in equipment and processes can reduce accidents, but cannot guarantee the safety of all employees. In order to achieve the goal of “zero-accident”, we intend to promote the concept of “safety is my responsibility”. We have educated the employees with the concepts of “be aware of your own safety well as the safety of others” and “safety is everyone’s responsibility, and my personal accountability.”

Furthermore, we have implemented the FMEA method to foster employees’ capabilities in risk analysis. Therefore, we established a channel for communication to encourage and ensure the employees to fully express their opinions for professional response and assistance. By doing so, we hope to establish a working attitude of “Safety and health first” to further improve the quality of our working environment, and eventually to become a good example of global safety and health management.

The following list sets forth some of the important awards that we received in environmental protection, safety and health:

- Selected as a member of Dow Jones Sustainability Indexes for the eleventh straight year since 2008;
- Achieved Leadership Status (score level: A-) on CDP’s Climate Change Assessment Program (2016-2018);
- Awarded “Watermark Award” by Singapore’s National Water Agency (2018);
- Awarded “Corporate Sustainability Report Award” by Taiwan Institute for Sustainable Energy (2008-2018);
- Awarded “Enterprises Environmental Award of the Republic of China” by the Environmental Protection Administration of Executive Yuan, R.O.C. (2003-2018);

- Awarded “The Best Participation of Green Procurement for Enterprises” by the Environmental Protection Administration of Executive Yuan, R.O.C. (2011-2018); and
- Awarded “Excellent Occupational Safety and Health Executive Organization of Hsinchu Science Park” by the Science Park Administration (1998-2018).

Climate Change

Our climate change policies announced on April 22, 2010 include: (i) achieving carbon neutral status via carbon management, (ii) becoming a comprehensive low-carbon emissions solution provider, and (iii) leveraging corporate resources to cultivate a low-carbon emissions economy. In order to implement these policies, we set greenhouse gas reduction goals as to various phases. By 2015, we completed resource and energy productivity improvement plan named “369+-project” which consisted of reducing the usage of electricity by 3%, the usage of pipe water by 6% and the waste generation by 9% compared with the base year 2012. Currently, we announced our latest “Green 2020” goals to demonstrate our long-term commitment to sustainable environment and achieved our annual targeted goal in 2018. We will be more proactive with self-motivated action and more stringent standards. The goal is to further reduce water, energy and waste by 10% over current levels by 2020. Meanwhile, we also strive to reduce carbon emissions through the following two measures: (1) we continue to implement a greenhouse gas emission reduction plan to assist customers in establishing a low-carbon emissions supply chain, and (2) we continue to enhance our research and development in advanced processes to provide low-power products and reduce carbon emissions at the consumer level.

Since 1999, we have been a pioneer in the foundry industry to implement measures to reduce per-fluorinated compounds, and we completed the replacement of C₃F₈ with C₄F₈ in 2011. We have made a significant achievement by reducing normalized per-fluorinated compounds, which is one of the major greenhouse gas reduction objectives of the World Semiconductor Council. From 2013 to 2014, UMC participated in the Environmental Protection Administration, or the EPA, early reduction project and acquired a carbon reduction allowance of 3.02 million tons. We subsequently executed a contract with Dragon Steel Corporation to trade 2 million tons of carbon emission credits. It was the first trade of carbon emissions credits that was reviewed and recorded by the EPA, indicating a significant milestone in Taiwan’s carbon emission credits trading market. Proceeds derived from the carbon trading transaction was wholly used by us to enforce environmental protection and promote environmental protection measures and to continue contributing towards environmental sustainability.

We also support timely disclosure of carbon information and ensuring data quality. Since 2006, we have participated in the Carbon Disclosure Project formed by global institutional investors and disclosed our annual greenhouse gas emission volume, reduction goals and results. In 2018, we achieved a leadership level score of A- in the CDP’s Climate Change Assessment Program. Moreover, we engage third-party verifiers to ensure the quality of the data. We completed the verification on greenhouse gas emission and reduction records for all of our fabs in both Taiwan and Singapore on an annual basis.

Risk Management

Risk and safety matters are administered by our Risk Management and Environmental Safety Health Division, or the GRM & ESH, established in 1998. We are pursuing the goal of a highly protected risk status in the semiconductor industry through the implementation of strict engineering safety procedures, regular enforcement of safety codes and standards, and compliance of detailed industry safety guidelines.

We have adopted the Triple Star Ranking System of AIG Insurance, a global leader in risk management and insurance, since 1999. All fabs have been ranked as top-class following AIG’s risk evaluation and risk improvement recommendations. The ranking system focuses on 20 items, including ten Physical Protection Elements and ten Human Elements. All of our 12-inch fabs had obtained triple-stars in all 20 elements in every Triple Star Audit. Furthermore, we were awarded the “Outstanding Performance Award in Risk Management” by AIG Insurance in 2013. For our new expansion 12-inch line, Fab12A P5/6, is built with international loss control standards, and had received the top-class ranking by AIG within six months after tool move-in in November 2015.

Taiwan is located at the Pacific fire rim, and it is therefore imperative for us to take proactive measures against the risk for earthquake. During the 2016 earthquake in Southern Taiwan, our preventive actions helped to minimize damages caused in Fab 12A. In addition, we have two more production bases located in Singapore and China, which can help to allocate production and avoid disruption. In order to reduce potential damages to our production facilities and equipment from earthquakes in the future, we continue to import the latest anti-seismic technologies, such as a seismic isolation platform for reticle stocker and furnace; furthermore install earthquake warning system within Fab 12A that will provide us with enhanced response time in the event of an earthquake.

Nowadays, extreme weather has become a risk to various business operations. In order to understand the potential impact to us, a flood risk simulation project has been implemented in 2014. Since Hsinchu Science-Based Industrial Park is located in higher terrain; we believe there is no potential flood risk. However, for Fab12A in Tainan, we had conducted a physical improvement plan by installing floodgates in specific entrances to upgrade the protection level to a 500-year flood. For our latest 12 inch fab, Fab12A Phase 5 & 6, we adopt a fundamental solution to avoid flood impact by raising the finished floor of the fab building 2m high above the adjacent public road. Those efforts have been confirmed by FM insurance company, the leader of loss control standards around the world, in 2015.

In addition, we are fully aware of the impact presented by business interruption. We are also devoted in the pursuit of corporate resilience and continuity by committing non-interrupted services to satisfy our valued customers and important stakeholders. In 2013, we were the first foundry in the world to receive ISO 22301 certification for its business continuity management system which demonstrates our commitment to developing our disaster response abilities and our mechanisms for quick recovery. We will keep improving this system and extend the scope to our suppliers.

Insurance

We maintain industrial all risk insurance for our buildings, facilities, equipment and inventories as well as third-party properties. The insurance for fabs and their equipment covers losses from physical damage and business interruption up to their respective policy limits except for policy exclusions. For example, in early 2016, we experienced a severe earthquake which adversely affected our 300mm Fab 12A wafer manufacturing operations in Taiwan and we had settled our insurance policies which partially recovered the losses resulting from this earthquake. In addition, we purchase directors and officers liability insurance for our board directors and executive officers, covering the liabilities incurred in relation to his/her/its operation of business and legally responsible for. We also maintain public liability insurance for losses to third parties arising from our business operations. We believe that our insurance arrangement is adequate to cover all major types of losses relevant to the semiconductor industry practice. However, significant damage to any of our production facilities, whether as a result of fire or other causes, could seriously harm our business.

C. Organizational Structure

The following list shows our corporate structure as of December 31, 2018:

Company	Jurisdiction of Incorporation	Percentage of Ownership as of December 31, 2018
UMC Group (USA)	U.S.A.	100.00%
United Microelectronics (Europe) B.V.	The Netherlands	100.00%
UMC Capital Corp.	Cayman Islands	100.00%
TLC Capital Co., Ltd.	Taiwan, R.O.C.	100.00%
Green Earth Limited	Samoa	100.00%
Fortune Venture Capital Corp.	Taiwan, R.O.C.	100.00%
UMC Investment (Samoa) Limited	Samoa	100.00%
UMC Capital (USA)	U.S.A.	100.00%
ECP Vita Pte. Ltd.	Singapore	100.00%
Soaring Capital Corp.	Samoa	100.00%

Company	Jurisdiction of Incorporation	Percentage of Ownership as of December 31, 2018
Unitruth Advisor (Shanghai) Co., Ltd.	China	100.00%
Tera Energy Development Co., Ltd.	Taiwan, R.O.C.	100.00%
United Microchip Corporation	Cayman Islands	100.00%
Nexpower Technology Corp.	Taiwan, R.O.C.	93.36%
Wavetek Microelectronics Corporation	Taiwan, R.O.C.	78.47%
Everrich Energy Investment (HK) Limited	China	100.00%
Everrich (Shandong) Energy Co., Ltd.	China	100.00%
SocialNex Italia 1 S.R.L.	Italy	93.36%
Wavetek Microelectronics Investment (Samoa) Limited	Samoa	78.47%
Wavetek Microelectronics Corporation (USA)	U.S.A.	78.47%
Best Elite International Limited	British Virgin Islands	100.00%
Infoshine Technology Limited	British Virgin Islands	100.00%
Oakwood Associates Limited	British Virgin Islands	100.00%
Hejian Technology (Suzhou) Co., Ltd.	China	98.14%
UnitedDS Semiconductor (Shandong) Co., Ltd.	China	98.14%
United Semiconductor (Xiamen) Co., Ltd.	China	64.95%
UMC Group Japan	Japan	100.00%
UMC Korea Co., Ltd.	Korea	100.00%
Omni Global Limited	Samoa	100.00%
United Microtechnology Corporation (California)	U.S.A.	100.00%
United Microtechnology Corporation (New York)	U.S.A.	100.00%
Sino Paragon Limited	Samoa	100.00%
UMC Technology Japan Co., Ltd.	Japan	100.00%

D. Property, Plants and Equipment

Please refer to “—B. Business Overview—Manufacturing Facilities” for a discussion of our property, plants and equipment.

ITEM 4A. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

Unless stated otherwise, the discussion and analysis of our financial condition and results of operations in this section apply to our financial information as prepared in accordance with IFRSs. You should read the following discussion of our financial condition and results of operations together with the consolidated financial statements and the notes to such statements included in this annual report. This discussion may contain forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under “Item 3. Key Information—D. Risk Factors” or in other parts of this annual report on Form 20-F.

For the convenience of readers, NT dollar amounts used in this section for, and as of, the year ended December 31, 2018 have been translated into U.S. dollar amounts using US\$1.00 = NT\$30.61, the foreign exchange rate on December 31, 2018 as released by the Board of Governors of the Federal Reserve System. The U.S. dollar translation appears in parentheses next to the relevant NT dollar amount.

Overview

We are one of the world's leading independent semiconductor foundries, providing comprehensive wafer fabrication services and technologies to our customers based on their designs.

Cyclicalities of the Semiconductor Industry

As the semiconductor industry is highly cyclical, revenues varied significantly over this period. It can take several years to plan and construct a fab and bring it to operations. Therefore, during periods of favorable market conditions, semiconductor manufacturers often begin building new fabs or acquiring existing fabs in response to anticipated demand growth for semiconductors. In addition, after commencement of commercial operations, fabs can increase production volumes rapidly. As a result, large amounts of semiconductor manufacturing capacity typically become available during the same time period. Absent a proportional growth in demand, this increase in supply often results in semiconductor manufacturing overcapacity, which has led to a sharp decline in semiconductor prices and significant capacity under-utilization. Our average capacity utilization rate was 88.6%, 94.4% and 93.1% for the years ended December 31, 2016, 2017 and 2018, respectively. We believe that our operating results in 2016, 2017 and 2018 continue to reflect the ongoing uncertainty in the global economy.

Pricing

We price our products on either a per die or a per wafer basis, taking into account the complexity of the technology, the prevailing market conditions, the order size, the cycle time, the strength and history of our relationship with the customer and our capacity utilization. Because semiconductor wafer prices tend to fluctuate frequently, we in general review our pricing on a quarterly basis. As a majority of our costs and expenses are fixed or semi-fixed in nature, fluctuations in our products' average selling price historically have had a substantial impact on our margins. Our average selling price decreased by approximately 4.9% from 2016 to 2017, and further decreased by 3.4% in 2018, reflecting the continuing nominal price erosion in 2017 and 2018.

We believe that our current level of pricing is comparable to that of other leading foundries in each respective geometry. We believe that our ability to provide a wide range of advanced foundry services and process technologies as well as large manufacturing capacity will enable us to compete effectively with other leading foundries at a comparable price level.

Capacity Utilization Rates

Our operating results are characterized by relatively high fixed costs. In 2016, 2017 and 2018, approximately 67.8%, 69.0% and 68.6%, respectively, of our manufacturing costs consisted of depreciation, a portion of indirect material costs, amortization of license fees and indirect labor costs.

If our utilization rates increase, our costs would be allocated over a larger number of units, which generally leads to lower unit costs. As a result, our capacity utilization rates can significantly affect our margins. Our utilization rates have varied from period to period to reflect our production capacity and market demand. Our average capacity utilization rate was 88.6%, 94.4% and 93.1% for the years ended December 31, 2016, 2017 and 2018, respectively. Utilization rates were primarily affected by global macroeconomic factors. Other factors affecting utilization rates are efficiency in production facilities, product flow management, the complexity and mix of the wafers produced, overall industry conditions, the level of customer orders, mechanical failure, disruption of operations due to expansion of operations, relocation of equipment or disruption of power supply and fire or natural disaster.

Our production capacity is determined based on the capacity ratings of the equipment in the fab, provided by the engineers, adjusted for, among other factors, actual output during uninterrupted trial runs, expected down time due to set up for production runs and maintenance, expected product mix and research and development. Because these factors include subjective elements, our measurement of capacity utilization rates may not be comparable to those of our competitors.

Change in Product Mix and Technology Migration

Because the price of wafers processed with different technologies varies significantly, the mix of wafers that we produce is among the primary factors that affect our revenues and profitability. The value of a wafer is determined principally by the complexity and performance of the processing technology used to produce the wafer, as well as by the yield and defect density. Production of devices with higher levels of functionality and performance, with better yields and lower defect density as well as with greater system-level integration requires better manufacturing expertise and generally commands higher wafer prices. The increase in price generally has more than offset associated increases in production cost once an appropriate economy of scale is reached.

Prices for wafers of a given level of technology generally decline over the processing technology life cycle. As a result, we have continuously been migrating to increasingly sophisticated technologies to maintain the same level of profitability. We began our volume production with 65-nanometer and 40-nanometer technologies in 2006 and 2009, respectively. We introduced our 28-nanometer technology to customers in 2011 and started large-scale commercial production in 2014. Our 28nm and below technologies contributed approximately 17.3%, 17.1% and 15.2% of our foundry revenue in 2016, 2017 and 2018, respectively.

The table below sets forth a breakdown of percentage of our wafer sales by process technologies in 2016, 2017 and 2018.

Process Technologies	Years Ended December 31,		
	2016	2017	2018
	%	%	%
14 nanometers and under	0.0	0.9	2.6
28 nanometers	17.3	16.2	12.6
40 nanometers	27.2	28.4	25.3
65 nanometers	16.5	12.3	12.5
90 nanometers	3.5	4.9	8.3
0.11/0.13 micron	11.0	11.5	11.6
0.15/0.18 micron	11.4	12.4	13.7
0.25/0.35 micron	9.9	10.0	10.1
0.50 micron or higher	3.2	3.4	3.3
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Manufacturing Yields

Manufacturing yield per wafer is measured by the number of functional dice on that wafer over the maximum number of dice that can be produced on that wafer. A small portion of our products is priced on a per die basis, and our high manufacturing yields have assisted us in achieving higher margins. In addition, with respect to products that are priced on a per wafer basis, we believe that our ability to deliver high manufacturing yields generally has allowed us to either charge higher prices per wafer or attract higher order volumes, resulting in higher margins.

We continually upgrade our process technologies. At the beginning of each technological upgrade, the manufacturing yield utilizing the new technology is generally lower, sometimes substantially lower, than the yield under the current technology. The yield is generally improved through the expertise and cooperation of our research and development personnel and process engineers, as well as equipment and at times raw material suppliers. Our policy is to offer customers new process technologies as soon as the new technologies have passed our internal reliability tests.

Investments

Most of our investments were made to improve our market position and for strategy considerations, a significant portion of which are in foundry-related companies including fabless design customers, raw material suppliers and IP vendors. Historically, we also made investments in companies in the solar manufacturing and LED industries.

We have, from time to time, disposed of investments for financial, strategic or other purposes in recent years. See “Item 4. Information on the Company—B. Business Overview—Our Investments” for a description of our investments.

Treasury Share Programs

We have from time to time announced plans, none of which were binding on us, to buy back up to a fixed amount of our common shares on the Taiwan Stock Exchange at the price range set forth in the plans. On May 11, 2016, our board of directors resolved to purchase up to 200 million common shares on the Taiwan Stock Exchange at a price between NT\$7.90 and NT\$18.70 per share during the period from May 12, 2016 to July 11, 2016 to transfer to our employees as employee compensation. On March 7, 2018, our board of directors resolved to purchase up to 200 million common shares on the Taiwan Stock Exchange at a price between NT\$9.85 and NT\$21.30 per share during the period from March 8, 2018 to May 7, 2018 for cancellation. On November 5, 2018, our board of directors resolved to purchase up to 300 million common shares on the Taiwan Stock Exchange at a price between NT\$7.55 and NT\$20.80 per share during the period from November 6, 2018 to January 5, 2019 for cancellation.

During 2016, 2017 and 2018, we purchased an aggregate of 200 million, nil and 480 million, common shares, respectively, and transferred nil, nil and 200 million of such common shares that we repurchased under these plans to our employees as employee compensation in 2016, 2017 and 2018, respectively.

Critical Accounting Policies

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

The key assumptions concerning the future and other key sources of estimating uncertainty at the reporting date that would have a significant risk for a material adjustment to the carrying amounts of assets or liabilities within the next fiscal year are discussed below. We based our assumptions and estimates on information available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond our control. Such changes are reflected in the assumptions when they occur.

Classification and Measurement of Financial Instruments

Financial assets and financial liabilities are recognized when we become a party to the contractual provisions of the instrument. We determine the classification of our financial assets at initial recognition. In accordance with “IAS 39—Financial Instruments: Recognition and Measurement” (IAS 39) prior to January 1, 2018, our financial assets are classified as financial assets at fair value through profit or loss, available-for-sale financial assets, held-to-maturity financial assets and notes, accounts and other receivables. Our financial liabilities are classified as financial liabilities at fair value through profit and loss and financial liabilities carried at amortized cost. We adopted “IFRS 9 - Financial Instruments” (IFRS 9) having recognized the cumulative effect on January 1, 2018. Please refer to Note 3 to our audited consolidated financial statements included elsewhere in this annual report for further details. Following the adoption of IFRS 9 on January 1, 2018, our financial assets are classified as financial assets at fair value through profit or loss, financial assets at fair value through other comprehensive income, and financial assets measured at amortized cost. Our financial liabilities are classified as financial liabilities at fair value through profit or loss and financial liabilities measured at amortized cost. Purchase or sale of financial assets and liabilities are recognized using trade date accounting. All financial instruments are recognized initially at fair value plus, in the case of investments not at fair value through profit or loss, directly attributable costs, and are subsequently measured at fair value or amortized cost using the effective interest method, less impairment, based on the classification. In accordance with IAS 39 prior to January 1, 2018, we assess whether objective evidence of impairment exists for a financial asset or a group of financial assets at each reporting date. Following the adoption of IFRS 9 on January 1, 2018, we measure, at each reporting date, an allowance for expected credit losses (ECLs) for debt instrument investments measured at fair value through other comprehensive income and financial assets measured at amortized cost.

Where the fair values of the Level 3 financial assets and financial liabilities recorded on the balance sheet cannot be derived from active markets, they are determined by the application of an appropriate valuation method including the income approach and market approach. The valuation of these financial assets and financial liabilities involves significant judgment in the preparation of cash flow forecasts, a selection of comparable companies or equity transaction prices, as well as the application of assumptions such as discount rates, discounts for lack of marketability, and valuation multiples, etc. Changes in assumptions about these factors could affect the reported fair value of the financial assets and financial liabilities. Please refer to Note 11 to our audited consolidated financial statements included elsewhere in this annual report for more details.

Inventories

Inventories are accounted for on a perpetual basis. Raw materials are stated at actual purchase costs, while the work in process and finished goods are stated at standard costs and subsequently adjusted to weighted-average costs at the end of each month. The cost of work in process and finished goods comprises raw materials, direct labor, other direct costs and related production overheads. Allocation of fixed production overheads to the costs of conversion is based on the normal capacity of the production facilities. Cost associated with underutilized capacity is expensed as incurred.

Inventories are valued at the lower of cost and net realizable value item by item. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale. Please refer to Note 6(4) to our audited consolidated financial statements included elsewhere in this annual report. Costs of completion include direct labor and overhead, including depreciation and maintenance of production equipment, indirect labor costs, indirect material costs, supplies, utilities and royalties that is expected to be incurred at normal production level. We estimate normal production level taking into account loss of capacity resulting from planned maintenance, based on historical experience and current production capacity.

Bonds

Convertible bonds

We evaluate the terms of the convertible bonds issued to determine whether it contains both a liability and an equity component. Furthermore, we assess if the economic characteristics and risks of the put and call options embedded in the convertible bonds are closely related to the economic characteristics and risk of the host contract before separating the equity element.

For the liability component excluding the derivatives, its fair value is determined based on the effective interest rate applied at that time by the market to instruments of comparable credit status. The liability component is classified as a financial liability measured at amortized cost using the effective interest rate method before the instrument is converted or settled. For the embedded derivative that is not closely related to the host contract, it is classified as a liability component and subsequently measured at fair value through profit or loss unless it qualifies as an equity component. The equity component is recognized initially at the difference between the fair value of the compound financial instrument as a whole and the fair value of the liability component. Its carrying amount is not remeasured in the subsequent accounting periods. If the convertible bond issued does not have an equity component, it is accounted for as a hybrid instrument in accordance with the requirements under IFRS 9 (prior to January 1, 2018: IAS 39).

If the convertible bondholders exercise their conversion right before maturity, we shall adjust the carrying amount of the liability component. The adjusted carrying amount of the liability component at conversion and the carrying amount of equity component are credited to common stock and additional paid-in capital—premiums. No gain or loss is recognized upon bond conversion.

In addition, the liability component of convertible bonds is classified as a current liability if within 12 months the bondholders may exercise the put right. After the put right expires, the liability component of the convertible bonds should be reclassified as a non-current liability if it meets the definition of a non-current liability in all other respects.

Post-Employment Benefits

Under defined contribution pension plans, the contribution payable to the plan in exchange for the service rendered by an employee during a period shall be recognized as an expense. The contribution payable, after deducting any amount already paid, is recognized as a liability. Under defined benefit pension plans, the net defined benefit liability (asset) shall be recognized as the amount of the present value of the defined benefit obligation, deducting the fair value of any plan assets and adjusting for any effect of the asset ceiling. Service cost and net interest on the net defined benefit liability (asset) are recognized as expenses in the period of service. Remeasurement of the net defined benefit liability (asset), which comprises actuarial gains and losses, the return on plan assets and any change in the effect of the asset ceiling, excluding any amounts included in net 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 shall not be reclassified to profit or loss in a subsequent period.

Defined benefit costs and the present value of the defined benefit obligation for a pension plan are determined using the projected unit credit method. An actuarial valuation involves making various assumptions, which include the determination of the discount rate, future salary increase rate, mortality rate, etc., and may differ from actual developments in the future. In determining the appropriate discount rate, management considers the interest rates of the government bonds extrapolated from maturity corresponding to the expected duration of the defined benefit obligation. As for the rate of future salary increase, management takes account of past experiences, comparisons within the industry and the geographical region, inflation and the discount rate. Due to the complexity of the actuarial valuation and its long-term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. The assumptions used are disclosed in Note 6(14) to our audited consolidated financial statements included elsewhere in this annual report.

Revenue Recognition

2016 and 2017

Revenue is recognized to the extent that it is probable that the economic benefits will flow to us and the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable. The specific criteria described below must also be met before revenue is recognized.

Sales revenue

We manufacture semiconductors for creditworthy customers based on their design specifications, pursuant to manufacturing agreements and/or purchase orders at contractual prices. We ship wafers mainly under the trade term, Free Carrier (“FCA”), through which the title and risk of loss for the wafers are transferred to the customers upon delivery to carriers approved by the customers. Sales revenue is recognized at this point, having also fulfilled all of the following criteria pursuant to IAS 18, paragraph 14:

- a. the significant risks and rewards of ownership of the goods have been transferred to the customer;
- b. neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold have been retained;
- c. the amount of revenue can be measured reliably;

- d. it is probable that the economic benefits associated with the transaction will flow to the entity; and
- e. the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Sales revenue is measured at the fair value of the consideration received or receivable, net of sales returns and discounts, which are estimated based on customer complaints, historical experience and other known factors. Sales returns and discounts are recorded in the same period in which sales are made.

2018

We adopted “IFRS 15 - Revenue from Contracts with Customers” (IFRS 15) using the modified retrospective method having recognized the cumulative effect on January 1, 2018. Please refer to Note 3 to our audited consolidated financial statements included elsewhere in this annual report for further details.

Revenue from Contracts with Customers

We recognize revenue from contracts with customers by applying the following steps of IFRS 15:

- a. identify the contract with a customer;
- b. identify the performance obligations in the contract;
- c. determine the transaction price;
- d. allocate the transaction price to the performance obligations in the contract; and
- e. recognize revenue when (or as) the entity satisfies its performance obligations.

Revenues on our contracts with customers for the sales of wafers and joint technology development are recognized as we satisfy our performance obligations to customers upon transfer of control of promised goods and services. We recognize revenue at transaction price that are determined using contractual prices reduced by sales returns and allowances which we estimate based on historical experience having determined that a significant reversal in the amount of cumulative revenue recognized are not probable to occur. We recognize refund liabilities for estimated sales return and allowances based on the customer complaints, historical experience, and other known factors.

We recognize accounts receivable when we transfer control of the goods or services to customers and have a right to an amount of consideration that is unconditional. Such accounts receivable are short term and do not contain a significant financing component. For certain contracts that do not provide us unconditional rights to the consideration, and the transfer of controls of the goods or services has been satisfied, we recognize contract assets and revenues.

Consideration received from customers prior to having satisfied our performance obligations are accounted for as contract liabilities which are transferred to revenue after the performance obligations are satisfied. We recognize costs to fulfill a contract when the costs relate directly to the contract, generate or enhance resources to be used to satisfy performance obligations in the future, and are expected to be recovered. The costs and revenues are recognized when we satisfy our performance obligations to customers upon transfer of control of promised goods and services.

Impairment of Property, Plant and Equipment

At each reporting date or whenever events indicate that the asset's value has declined or significant changes in the market with an adverse effect have taken place, we assess whether there is an indication that an asset in the scope of "IAS 36—Impairment of Assets" may be impaired. If any indication exists, we complete impairment testing for the cash-generating unit ("CGU") to which the individual assets belong. Where the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. The recoverable amount of an individual asset or CGU is the higher of fair value less costs of disposal and its value in use. The fair value less costs of disposal is based on best information available to reflect the amount that an entity could obtain from the disposal of the asset in an orderly transaction between market participants after deducting the costs of disposal. The value in use is measured at the net present value of the future cash flows the entity expects to derive from the asset or CGU. Cash flow projection involves subjective judgments and estimates which include the estimated useful lives of property, plant and equipment, capacity that generates future cash flows, capacity of physical output, potential fluctuations of economic cycle in the industry and our operating situation.

Income Tax

Income tax expense (benefit) is the aggregate amount of current income tax and deferred income tax included in the determination of profit or loss for the period. Current income tax assets and liabilities for the current period and prior periods are measured using the tax rates and tax laws that have been enacted or substantively enacted by the end of the reporting period. Current income tax relating to items recognized directly in other comprehensive income or equity is recognized in other comprehensive income or equity rather than profit or loss.

Deferred income tax is determined using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts in financial statements at the reporting date. Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realized or the liability is settled, based on tax rates and tax laws that have been enacted or substantively enacted at the reporting date. The measurement of deferred tax assets and liabilities reflects the tax consequences that would follow the manner in which we expect, at the end of the reporting period, to recover or settle the carrying amount of our assets and liabilities. Deferred tax relating to items recognized outside profit or loss is not recognized in profit or loss but rather in other comprehensive income or directly in equity. Deferred tax assets are reassessed and recognized at each reporting date. Unrecognized deferred tax assets are reassessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax assets to be recovered. Deferred tax assets and liabilities offset each other, if a legally enforceable right exists to set off current income tax assets against current income tax liabilities, and the deferred taxes relate to the same taxable entity and the same taxation authority.

Uncertainties exist with respect to the interpretation of complex tax regulations, changes in tax laws, and the amount and timing of future taxable income. We establish provisions, based on reasonable estimates, for possible consequences of audits by the tax authorities of the respective countries in which we operate. The amount of such provisions is based on various factors, such as experience of previous tax audits and different interpretations of tax regulations made by the taxable entity and the responsible tax authority. Such differences of interpretation may arise on a wide variety of issues depending on the conditions prevailing in our respective domicile.

Deferred tax assets are recognized for all carryforward of unused tax losses, tax credits and deductible temporary differences to the extent that it is probable that future taxable profit will be available or there are sufficient taxable temporary differences against which the unused tax losses, unused tax credits or deductible temporary differences can be utilized. The amount of deferred tax assets determined to be recognized is based upon the likely timing and the level of future taxable profits and taxable temporary differences. Please refer to Note 6(24) to our audited consolidated financial statements included elsewhere in this annual report for more details on unrecognized deferred tax assets.

A. Operating Results

Operating Revenues

We generate our operating revenues primarily from the manufacture and sales of wafer fabricating semiconductor devices, solar energy and new generation LED. We also derive a small portion of our operating revenues from wafer probe services that we perform internally as well as mask tooling services and assembly and test services that we subcontract to other companies.

Operating Costs

Our operating costs consist principally of:

- overhead, including depreciation and maintenance of production equipment, indirect labor costs, indirect material costs, supplies, utilities and royalties;
- wafer costs;
- direct labor costs; and
- service charges paid to subcontractors for mask tooling, assembly and test services.

Our total depreciation expenses were NT\$49,691 million, NT\$50,965 million and NT\$49,949 million (US\$1,632 million) in 2016, 2017 and 2018, respectively.

Operating Expenses

Our operating expenses consist of the following:

- Sales and marketing expenses. Sales and marketing expenses consist primarily of intellectual property development expenses, salaries and related personnel expenses, wafer sample expenses and mask expenses. Wafer samples are actual silicon samples of our customers' early design ideas made with our most advanced processes and provided to those customers;
- General and administrative expenses. General and administrative expenses consist primarily of salaries for our administrative, finance and human resource personnel, fees for professional services, and cost of computer and communication systems to support our operations;
- Research and development expenses. Research and development expenses consist primarily of salaries and related personnel expenses, research testing related expenses and depreciation on the equipment used for our research and development; and
- Expected credit losses. For notes, accounts receivable and contract assets, we apply a simplified approach in calculating expected credit losses (ECLs) and recognize a loss allowance based on lifetime ECLs at each reporting date. ECLs are measured based on our historical credit loss experience and customers' current financial condition, adjusted for forward-looking factors, such as customers' economic environment.

Net Other Operating Income and Expenses

Net other operating income and expenses consist primarily of:

- amortization of deferred government grants related to machinery and equipment;
- gains or losses arising from disposal of property, plant and equipment; and
- net rental income or loss from property.

Non-operating Income and Expenses

Our non-operating income and expenses primarily consist of the following:

1. Other income, which consists of:
 - interest income, which is primarily derived from time deposits; and
 - dividend income, which is primarily derived from financial assets at fair value through profit or loss and financial assets at fair value through other comprehensive income.

2. Other gains and losses, which principally consist of:
 - gains or losses on valuation of financial assets and liabilities, which are primarily derived from disposal of and changes in the values of financial assets and liabilities classified as fair value through profit or loss, according to IFRS 9;
 - impairment loss, which is primarily derived from the loss recognized in investments accounted for under the equity method; and
 - gains or losses on disposal of investments, which are primarily derived from our disposal of investments accounted for under the equity method.
3. Finance costs, which principally consist of:
 - interest expenses, which are primarily derived from bonds payable and bank loans; and
 - financial expenses, which are primarily derived from stockholder services proxy fee.
4. Share of profit or loss of associates and joint ventures, which is primarily derived from the recognition of investee companies' net profit based on the ownership percentage we hold.

Taxation

The corporate income tax rate in the R.O.C. was previously 17% and is currently 20% starting January 1, 2018 according to the amendments to the Income Tax Act. Based on our status as a company engaged in the semiconductor business in Taiwan, we have been granted exemptions from income taxes in Taiwan with respect to income attributable to capital increases for the purpose of purchasing equipment related to the semiconductor business for a period of five years following each such capital increase. In addition, our branch in Singapore enjoys tax exemption for income derived from tax-exempted activities under Singapore's Income Tax Act and Economic Expansion Incentive (Relief from Income Tax) Act. These tax exemptions resulted in tax savings of approximately NT\$1,708 million, NT\$1,542 million and NT\$433 million (US\$14 million) in 2016, 2017 and 2018, respectively. We also benefit from other tax incentives generally available to technology companies in Taiwan, such as tax credits applicable against corporate income tax that range from 10% to 15% of qualified research and development expenditures. These tax incentives resulted in tax savings of approximately NT\$400 million, NT\$306 million and NT\$913 million (US\$30 million) in 2016, 2017 and 2018, respectively.

The R.O.C. government enacted the R.O.C. Income Basic Tax Act, also known as the "Alternative Minimum Tax Act", or the AMT Act, to impose an alternative minimum tax. AMT is a supplemental tax which is payable if the income tax payable pursuant to the R.O.C. Income Tax Act is below the minimum amount prescribed under the AMT Act. Most tax-exempt income under the R.O.C. Income Tax Act is considered to be taxable under the AMT Act, such as eligible income generated during tax holidays and capital gain from selling domestic securities, and tax credits are not allowed to deduct AMT. The tax rate for business entities is 12%.

In 1997, the R.O.C. Income Tax Act was amended to introduce the integrated income tax system and impose 10% tax on undistributed earnings generated from 1998. However, in early 2018, the passed amendments to the Income Tax Act abolished the integrated income tax system and reduced the tax rate of undistributed earnings by half.

After taking into account the tax exemptions and tax incentives discussed above, we recorded NT\$553 million, NT\$993 million and NT\$(1,130) million (US\$(37) million) of income tax expenses (benefit) in 2016, 2017 and 2018, respectively. Our effective income tax rate in 2018 was (53.35)%.

Comparisons of Results of Operations

The following table sets forth some of our results of operations data as a percentage of our operating revenues for the periods indicated.

	Years Ended December 31,		
	2016	2017	2018
	%	%	%
Operating revenues	100.0	100.0	100.0
Operating costs	(79.5)	(81.9)	(84.9)
Gross profit	20.5	18.1	15.1
Operating expenses			
Sales and marketing	(3.1)	(2.8)	(2.6)
General and administrative	(3.9)	(2.8)	(3.2)
Research and development	(9.2)	(9.2)	(8.6)
Expected credit losses	—	—	(0.3)
Subtotal	(16.2)	(14.8)	(14.7)
Net other operating income and expenses	(0.1)	1.1	3.4
Operating income	4.2	4.4	3.8
Non-operating income and expenses	(1.0)	0.7	(2.4)
Income from continuing operations before income tax	3.2	5.1	1.4
Income tax benefit (expense)	(0.4)	(0.6)	0.7
Net income	2.8	4.5	2.1
Total other comprehensive income (loss), net of tax	(2.7)	(3.2)	0.6
Total comprehensive income	0.1	1.3	2.7
Net income attributable to:			
Stockholders of the parent	5.8	6.5	5.1
Non-controlling interests	(3.0)	(2.0)	(3.0)
Total comprehensive income attributable to:			
Stockholders of the parent	3.1	3.3	5.7
Non-controlling interests	(3.0)	(2.0)	(3.0)

Year Ended December 31, 2018 Compared to Year Ended December 31, 2017

Operating revenues. Operating revenues increased by 1.3% from NT\$149,285 million in 2017 to NT\$151,253 million (US\$4,941 million) in 2018, primarily due to increased other operating revenues and a 4.0% increase in foundry wafer shipments from 6,837 thousand 8-inch equivalent wafers in 2017 to 7,108 thousand 8-inch equivalent wafers in 2018, which was partially offset by an annual decline of 3.4% in average selling price, and a 0.9% appreciation of the NTD in 2018 from 2017.

Operating costs. Operating costs increased by 5.1% from NT\$122,227 million in 2017 to NT\$128,413 million (US\$4,195 million) in 2018, primarily due to the increased direct material costs and indirect labor costs and an increase in shipments in response to capacity expansion.

Gross profit and gross margin. Gross profit decreased from NT\$27,058 million in 2017 to NT\$22,840 million (US\$746 million) in 2018. Our gross margin decreased from 18.1% in 2017 to 15.1% in 2018, primarily due to the increased operating costs.

Operating income and operating margin. Operating income decreased from NT\$6,568 million in 2017 to NT\$5,680 million (US\$186 million) in 2018. Our operating margin decreased from 4.4% in 2017 to 3.8% in 2018. The decrease in operating margin was largely due to the increase in operating costs. Operating costs increased by 5.1% from NT\$122,227 million in 2017 to NT\$128,413 million (US\$4,195 million) in 2018.

Sales and marketing expenses. Our sales and marketing expenses decreased by 7.8% from NT\$4,234 million in 2017 to NT\$3,902 million (US\$127 million) in 2018. The decrease in sales and marketing expenses was mainly due to a decrease of NT\$262 million (US\$9 million) in sample expenses, NT\$262 million (US\$9 million) in mask expenses and increase of NT\$67 million (US\$2 million) in personnel expenses, NT\$54 million (US\$2 million) in intellectual property royalty expenses. Our sales and marketing expenses as a percentage of our operating revenues decreased from 2.8% in 2017 to 2.6% in 2018.

General and administrative expenses. Our general and administrative expenses increased by 16.5% from NT\$4,240 million in 2017 to NT\$4,941 million (US\$161 million) in 2018, mainly due to an increase of NT\$287 million (US\$9 million) in personnel expenses, NT\$183 million (US\$6 million) in professional fee and NT\$58 million (US\$2 million) in depreciation expenses. Our general and administrative expenses as a percentage of our operating revenues increased from 2.8% in 2017 to 3.2% in 2018.

Research and development expenses. Our research and development expenses decreased by 4.7% from NT\$13,669 million in 2017 to NT\$13,025 million (US\$426 million) in 2018. The decrease in research and development expenses was mainly due to a decrease of NT\$378 million (US\$12 million) in depreciation expenses, NT\$358 million (US\$12 million) in wafer for research and development usage, NT\$159 million (US\$5 million) in maintenance expenses, NT\$128 million (US\$4 million) in indirect material expenses and increase of NT\$379 million (US\$12 million) in personnel expenses. Our research and development expenses as a percentage of our operating revenues decreased from 9.2% in 2017 to 8.6% in 2018.

Expected credit losses. Our expected credit losses increased from nil in 2017 to NT\$409 million (US\$13 million) in 2018. The increase in expected credit losses for the year ended December 31, 2018 was mainly due to the loss allowance on contract assets & accounts receivable assessed by us primarily at an amount equal to the assets' lifetime expected credit losses. The loss allowance on contract assets & accounts receivable mainly resulted from the indictment filed by the United States Department of Justice (DOJ) against us in relation to the joint technology development agreement that we have with Fujian Jinhua as further detailed in Item 8. Our expected credit losses as a percentage of our operating revenues increased from nil in 2017 to 0.3% in 2018.

Net other operating income and expenses. Net other operating income increased by 209.6% from NT\$1,653 million in 2017 to NT\$5,117 million (US\$167 million) in 2018, mainly due to an increase in government grants income from NT\$1,710 million in 2017 to NT\$5,221 million (US\$171 million) in 2018. Net other operating income and expenses as a percentage of our operating revenues increased from 1.1% in 2017 to 3.4% in 2018.

Non-operating income and expenses. Non-operating income and expenses decreased by 422.6% from an income of NT\$1,104 million in 2017 to a loss of NT\$3,562 million (US\$117 million) in 2018, mainly due to the decrease in other gains and losses from a gain of NT\$994 million in 2017 to a loss of NT\$1,128 million (US\$37 million) in 2018, a decrease in exchange gain from a gain of NT\$1,566 million in 2017 to a loss of NT\$357 million (US\$12 million) in 2018, and a decrease in share of profit or loss of associates and joint ventures from an income of NT\$158 million in 2017 to a loss of NT\$617 million (US\$20 million) in 2018.

Other comprehensive income (loss), net of tax. Our other comprehensive income, net of tax, increased from a loss of NT\$4,815 million in 2017 to an income of NT\$835 million (US\$27 million) in 2018. We attributed this change primarily to the decrease in the loss of exchange differences on translation of foreign operations from a loss of NT\$5,915 million in 2017 to a loss of NT\$76 million (US\$2 million) in 2018, and an increase in unrealized gain (loss) on financial assets at fair value through other comprehensive income from nil in 2017 to a gain of NT\$1,035 million (US\$34 million) in 2018, partially offset by the decrease in share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss from an income of NT\$571 million in 2017 to a loss of NT\$23 million (US\$1 million) in 2018, and the decrease in unrealized gain (loss) on available-for-sale financial assets from a gain of NT\$681 million in 2017 to nil in 2018.

Net income attributable to the stockholders of the parent. Due to the factors described above, our net income decreased by 20.6% from NT\$9,676 million in 2017 to NT\$7,678 million (US\$251 million) in 2018.

Total comprehensive income attributable to the stockholders of the parent. Due to the factors described above, our comprehensive income increased by 73.3% from NT\$4,973 million in 2017 to NT\$8,617 million (US\$281 million) in 2018.

Year Ended December 31, 2017 Compared to Year Ended December 31, 2016

Operating revenues. Operating revenues increased by 1.0% from NT\$147,870 million in 2016 to NT\$149,285 million in 2017, primarily due to increased demand in leading edge technologies, which resulted in a 10.8% increase in foundry wafer shipments from 6,172 thousand 8-inch equivalent wafers in 2016 to 6,837 thousand 8-inch equivalent wafers in 2017, which was partially offset by appreciation of the NTD in 2017, appreciating by approximately 5.8% from 2016, and a lower average selling price in 2017, decreasing by approximately 4.9% from 2016.

Operating costs. Operating costs increased by 4.0% from NT\$117,491 million in 2016 to NT\$122,227 million in 2017, primarily due to the increased direct material costs, indirect labor costs, and depreciation expense and an increase in shipments in response to capacity expansion and increased customer demands.

Gross profit and gross margin. Gross profit decreased from NT\$30,379 million in 2016 to NT\$27,058 million in 2017. Our gross margin decreased from 20.5% in 2016 to 18.1% in 2017, primarily due to the increased operating costs.

Operating income and operating margin. Operating income increased from NT\$6,194 million in 2016 to NT\$6,568 million in 2017. Our operating margin increased from 4.2% in 2016 to 4.4% in 2017. The increase in operating margin was largely due to the decrease in sales and marketing expenses and general and administrative expenses and increase in amortization of deferred government grants. Operating expenses decreased by 7.4% from NT\$23,922 million in 2016 to NT\$22,143 million in 2017.

Sales and marketing expenses. Our sales and marketing expenses decreased by 7.7% from NT\$4,589 million in 2016 to NT\$4,234 million in 2017. The decrease in sales and marketing expenses was mainly due to a decrease of NT\$262 million in intellectual property royalty expenses as a result of the decreased number of intellectual properties under which we were granted licenses, NT\$71 million in sample expenses and NT\$41 million in mask expenses. Our sales and marketing expenses as a percentage of our operating revenues decreased from 3.1% in 2016 to 2.8% in 2017.

General and administrative expenses. Our general and administrative expenses decreased by 26.9% from NT\$5,801 million in 2016 to NT\$4,240 million in 2017, mainly as a result of the setup costs of USCXM in 2016. Our general and administrative expenses as a percentage of our operating revenues decreased from 3.9% in 2016 to 2.8% in 2017.

Research and development expenses. Our research and development expenses increased by 1.0% from NT\$13,532 million in 2016 to NT\$13,669 million in 2017. The increase in research and development expenses was mainly due to an increase of NT\$469 million in personnel expenses, NT\$206 million in depreciation expenses and NT\$68 million in intellectual property royalty expenses. The decrease in research and development expenses was mainly due to a decrease of NT\$322 million in wafers for research and development usage, NT\$211 million in mask expenses and NT\$108 million in indirect material expenses. Our research and development expenses as a percentage of our operating revenues were both 9.2% in 2016 and 2017.

Net other operating income and expenses. Net other operating income increased by 728.9% from expenses of NT\$263 million in 2016 to income of NT\$1,653 million in 2017, mainly due to a decrease in impairment loss of property, plant, and equipment from NT\$455 million in 2016 to nil in 2017 and an increase in government grants income from NT\$243 million to NT\$1,710 million. Net other operating income and expenses as a percentage of our operating revenues were (0.1%) and 1.1% in 2016 and 2017, respectively.

Non-operating income and expenses. Non-operating income and expenses increased by 174.9% from a loss of NT\$1,473 million in 2016 to an income of NT\$1,104 million in 2017, mainly due to the increase in exchange gain from a loss of NT\$1,502 million in 2016 to a gain of NT\$1,566 million in 2017, and an increase in share of profit or loss of associates and joint ventures from a loss of NT\$316 million in 2016 to an income of NT\$158 million in 2017, partially offset by an increase in the finance cost from NT\$1,414 million in 2016 to NT\$2,495 million in 2017.

Other comprehensive income (loss), net of tax. Our other comprehensive loss, net of tax, increased from a loss of NT\$4,024 million in 2016 to a loss of NT\$4,815 million in 2017. We attributed this change primarily to the increase in the loss of exchange differences on translation of foreign operations from a loss of NT\$1,817 million in 2016 to a loss of NT\$5,915 million in 2017, partially offset by the increase in unrealized gain (loss) on available-for-sale financial assets from a loss of NT\$1,874 million in 2016 to a gain of NT\$681 million in 2017, and the increase in share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss from a loss of NT\$273 million in 2016 to an income of NT\$571 million in 2017.

Net income attributable to the stockholders of the parent. Due to the factors described above, our net income increased by 12.2% from NT\$8,621 million in 2016 to NT\$9,676 million in 2017.

Total comprehensive income attributable to the stockholders of the parent. Due to the factors described above, our comprehensive income increased by 7.4% from NT\$4,629 million in 2016 to NT\$4,973 million in 2017.

B. Liquidity and Capital Resources

The foundry business is highly capital intensive. Our development over the past three years has required investments. Additional expansion for the future generally will continue to require significant cash for acquisition of plant and equipment to support increased capacities, particularly for the production of 12-inch wafers, although our expansion program will be adjusted from time to time to reflect market conditions. In addition, the semiconductor industry has historically experienced rapid changes in technology. To maintain competitiveness at the same capacity, we are required to make adequate investments in plant and equipment. In addition to our need for liquidity to support the large fixed costs of capacity expansion and the upgrading of our existing plants and equipment for new technologies, as we ramp up production of new plant capacity, we require significant working capital to support purchases of raw materials for our production and to cover variable operating costs such as salaries until production yields provide sufficiently positive margins for a fabrication facility to produce operating cash flows.

Resource for Liquidity

We have financed our capital expenditure requirements in recent years from operating cash inflows, bank borrowings, as well as the issuance of bonds and equity-linked securities denominated in NT dollars and U.S. dollars. Operating cash inflows significantly exceed operating income, reflecting the significant non-cash depreciation expense.

As of December 31, 2018, we had NT\$83,662 million (US\$2,733 million) of cash and cash equivalents and NT\$528 million (US\$17 million) of financial assets at fair value through profit or loss. Cash equivalents included time deposits and commercial paper with original maturities of three months or less and repurchase agreements collateralized by government bonds and corporate bonds. These agreements bore interest rates ranging from 0.23% to 0.32%, 0.24% to 0.32% and 0.24% to 0.46% in 2016, 2017 and 2018, respectively. The terms of these agreements were typically less than one month. As of December 31, 2016, 2017 and 2018, we held repurchase agreements in the amount of NT\$6,188 million, NT\$9,259 million and NT\$9,495 million (US\$310 million), respectively.

In early June 2012, we issued five-year and seven-year domestic unsecured corporate bonds totaling NT\$10,000 million, with a face value of NT\$1 million per unit. The five-year domestic unsecured corporate bond was issued in the amount of NT\$7,500 million. Interest will be paid annually at 1.43%. The principal has been fully repaid. The seven-year domestic unsecured corporate bond was issued in the amount of NT\$2,500 million. Interest will be paid annually at 1.63%, and the principal will be repayable in June 2019 upon maturity. The proceeds of this offering were used for purchasing machinery and equipment. As of December 31, 2018, NT\$2,500 million aggregate principal amount of these bonds were outstanding.

In mid-March 2013, we issued another five-year and seven-year domestic unsecured corporate bonds totaling NT\$10,000 million, with a face value of NT\$1 million per unit. The five-year domestic unsecured corporate bond was issued in the amount of NT\$7,500 million. Interest will be paid annually at 1.35%. The principal has been fully repaid. The seven-year domestic unsecured corporate bond was issued in the amount of NT\$2,500 million. Interest will be paid annually at 1.50%, and the principal will be repayable in March 2020 upon maturity. The proceeds of this offering were used for purchasing machinery and equipment. As of December 31, 2018, NT\$2,500 million aggregate principal amount of these bonds were outstanding.

In mid-June 2014, we issued an aggregate principal amount of NT\$5,000 million of seven-year and ten-year domestic unsecured corporate bonds, with a denomination of NT\$1 million per bond. The seven-year domestic unsecured corporate bond was issued with an aggregate principal amount of NT\$2,000 million with an annual coupon bearing an interest rate of 1.7%. The ten-year domestic unsecured corporate bond was issued with an aggregate principal amount of NT\$3,000 million with an annual coupon bearing an interest rate of 1.95%. The proceeds of this offering were used for repay debts. As of December 31, 2018, NT\$5,000 million aggregate principal amount of these bonds were outstanding.

In mid-May 2015, we issued five-year US\$600 million aggregate principal amount of currency linked zero coupon convertible bonds due 2020. Each bond, at the option of the holder, were convertible into our common shares at NT\$14.8157 per share on December 31, 2018. The proceeds of this offering were used for purchasing machinery and equipment. As of December 31, 2018, no bonds had been converted or redeemed.

In late March 2017, we issued another five-year and seven-year domestic unsecured corporate bonds totaling NT\$8,300 million, with a face value of NT\$1 million per unit. The five-year domestic unsecured corporate bond was issued in the amount of NT\$6,200 million. Interest will be paid annually at 1.15%, and the principal will be repayable in March 2022 upon maturity. The seven-year domestic unsecured corporate bond was issued in the amount of NT\$2,100 million. Interest will be paid annually at 1.43%, and the principal will be repayable in March 2024 upon maturity. The proceeds of this offering were used for repay debts. As of December 31, 2018, NT\$8,300 million aggregate principal amount of these bonds were outstanding.

In early October 2017, we issued another five-year and seven-year domestic unsecured corporate bonds totaling NT\$5,400 million, with a face value of NT\$1 million per unit. The five-year domestic unsecured corporate bond was issued in the amount of NT\$2,000 million. Interest will be paid annually at 0.94%, and the principal will be repayable in October 2022 upon maturity. The seven-year domestic unsecured corporate bond was issued in the amount of NT\$3,400 million. Interest will be paid annually at 1.13%, and the principal will be repayable in October 2024 upon maturity. The proceeds of this offering were used for repay debts. As of December 31, 2018, NT\$5,400 million aggregate principal amount of these bonds were outstanding.

At our 2018 annual general meeting, our stockholders authorized our board of directors to raise capital from private placement, through issuing instruments such as common shares, depositary receipts (including but not limited to ADS), or Euro/Domestic convertible bonds (including secured or unsecured corporate bonds), based on market conditions and our needs. The amount of common shares issued or convertible is proposed to be no more than 10% of our issued and outstanding share capital (i.e., no more than 1,262,431,871 common shares). According to Item 6, Article 43-6 of the R.O.C. Security and Exchange Act, any private placement of our common shares must be conducted separately within one year after approval at the annual general meeting of stockholders. The approval to conduct a private placement of our common shares will expire on June 12, 2019.

Operating Activities

In 2018, net cash provided by operating activities was NT\$50,935 million (US\$1,664 million), primarily due to net income before income tax of NT\$2,118 million (US\$69 million) and the add-back of non-cash items, such as depreciation and amortization in the amount of NT\$52,049 million (US\$1,700 million).

In 2017, net cash provided by operating activities was NT\$52,474 million, primarily due to net income before income tax of NT\$7,672 million and the add-back of non-cash items, such as depreciation and amortization in the amount of NT\$53,099 million, partially offset by the change in other current assets of NT\$4,398 million.

In 2016, net cash provided by operating activities was NT\$46,450 million, primarily due to net income before income tax of NT\$4,721 million and the add-back of non-cash items, such as depreciation and amortization in the amount of NT\$51,984 million, partially offset by the change in other current assets of NT\$8,640 million.

Investing Activities

In 2018, net cash used in investing activities was NT\$15,500 million (US\$506 million), primarily due to cash used to purchase equipment at our fabs amounting to NT\$19,590 million (US\$640 million) and partially offset by proceeds of NT\$7,130 million (US\$233 million) from government grants related to assets acquisition.

In 2017, net cash used in investing activities was NT\$35,416 million, primarily due to cash used to purchase equipment at our fabs amounting to NT\$44,236 million, partially offset by proceeds of NT\$6,756 million from government grants related to assets acquisition and proceeds of NT\$2,179 million from disposal of financial assets.

In 2016, net cash used in investing activities was NT\$80,086 million, primarily due to cash used to purchase equipment at our fabs amounting to NT\$91,561 million, partially offset by proceeds of NT\$9,566 million from government grants related to assets acquisition and proceeds of NT\$4,370 million from disposal of financial assets.

Financing Activities

In 2018, net cash used in financing activities was NT\$33,485 million (US\$1,094 million), primarily due to the decrease in bank loans of NT\$14,168 million (US\$463 million), the net decrease from bonds redemption of NT\$7,500 million (US\$245 million), NT\$8,558 million (US\$280 million) for cash dividend payment, and treasury stock acquired and sold to employees of NT\$3,944 million (US\$129 million).

In 2017, net cash provided by financing activities was NT\$9,162 million, primarily due to the increase in bank loans of NT\$10,277 million and the net increase from bonds issuance and redemption of NT\$6,200 million, partially offset by NT\$6,103 million for cash dividend payment.

In 2016, net cash provided by financing activities was NT\$38,795 million, primarily due to the increase in bank loans of NT\$32,134 million and other financial liabilities of NT\$15,979 million, partially offset by NT\$6,907 million for cash dividend payment.

We had NT\$13,104 million (US\$428 million) in outstanding short-term loans as of December 31, 2018. We had total availability under existing short-term lines of credit of NT\$77,658 million (US\$2,537 million) as of December 31, 2018.

We had bonds payable of NT\$41,378 million (US\$1,352 million) in the aggregate as of December 31, 2018.

The following table sets forth our outstanding long-term bank loans as of December 31, 2018:

	Unsecured long-term bank loans		Secured long-term bank loans	
	(in NT\$ millions)	(in US\$ millions)	(in NT\$ millions)	(in US\$ millions)
Due in 2019	1,081	35	1,543	50
Due in 2020	334	11	3,832	125
Due in 2021	333	11	3,831	125
Due in 2022	—	—	7,646	250
Due in 2023	—	—	7,646	250
Due in 2024 & thereafter	—	—	4,582	150

The interest rates of our long-term bank loans range from 0.99% to 5.56%.

As of December 31, 2018, the current portion of bonds due within one year was NT\$2,499 million (US\$81 million), and the current portion of long-term bank loans due within one year was NT\$2,622 million (US\$86 million).

Capital Expenditures

We will continue to moderate the expansion pace for leading edge capacity to focus on diversifying existing logic and specialty technology offerings to our customers. As of December 31, 2018, the construction contracts amounted to NT\$3,075 million (US\$100 million) and the portion of the contracts not yet recognized was approximately NT\$936 million (US\$31 million). In 2016, 2017 and 2018, we incurred capital expenditures of approximately NT\$91,561 million, NT\$44,236 million and NT\$19,590 million (US\$640 million), respectively, primarily to purchase equipment for research and development and production.

We believe that our existing cash and cash equivalents and short-term investments will be sufficient to meet our working capital and capital expenditure requirements at least through the end of 2019. Due to rapid changes in technology in the semiconductor industry, however, we have frequent demand for investment in new manufacturing technologies. We cannot assure you that we will be able to raise additional capital, should that become necessary, on terms acceptable to us, or at all. If financing is not available on terms acceptable to us, management intends to reduce expenditures so as to delay the need for additional financing. To the extent that we do not generate sufficient cash flows from our operations to meet our cash requirements, we may rely on external borrowings and securities offerings to finance our working capital needs or our future expansion plans. The sale of additional equity or equity-linked securities may result in additional dilution to our stockholders. Our ability to meet our working capital needs from cash flow from operations will be affected by the demand for our products and change in our product mix, which in turn may be adversely affected by several factors. Many of these factors are beyond our control, such as economic downturns and declines in the average selling price of our products. The average selling price of our products have been subjected to downward pressure in the past and are reasonably likely to be subject to further downward pressure in the future. We have not historically relied on, and we do not plan to rely on in the foreseeable future, off-balance sheet financing arrangements to finance our operations or expansion.

Transactions with Related Parties

See “Item 7. Major Stockholders and Related Party Transactions—B. Related Party Transactions” and Note 7 to our audited consolidated financial statements included in this annual report.

Inflation/Deflation

We do not believe that inflation in the R.O.C. has had a material impact on our results of operations.

C. Research, Development, Patents and Licenses, Etc.

The semiconductor industry is characterized by rapid changes in technology, frequently resulting in obsolescence of process technologies and products. As a result, effective research and development is essential to our success. We invested approximately NT\$13,532 million, NT\$13,669 million and NT\$13,025 million (US\$426 million) in 2016, 2017 and 2018, respectively, in research and development, which represented 9.2%, 9.2% and 8.6%, respectively, of operating revenues for such years. We believe that our continuous spending on research and development will help us to achieve fruitful results in the development of advanced and specialty technologies. As of December 31, 2018, we employed 1,821 professionals in our research and development division.

Our current research and development activities seek to upgrade and integrate manufacturing technologies and processes, as well as to drive 14 nanometer technology in mass production with EUV (Extreme Ultraviolet) lithography, and FinFET (Fin Field-Effect Transistor). Although we emphasize firm-wide participation in the research and development process, we maintain central research and development teams primarily responsible for developing cost-effective technologies that can serve the manufacturing needs of our customers. Monetary incentives are provided to our employees if projects result in successful patents. We believe we have a strong foundation in research and development and intend to continue our efforts on technology developments. Our top management believes in the value of continued support of research and development efforts and intends to continue our foundry position by providing customers with comprehensive technology and SoC solutions in the industry.

D. Trend Information

Please refer to “Item 5. Operating and Financial Review and Prospects—Overview” for a discussion of the most significant recent trends in our production, sales, costs and selling prices. In addition, please refer to discussions included in this Item for a discussion of known trends, uncertainties, demands, commitments and events that we believe are reasonably likely to have a material effect on our operating revenues, income from continuing operations, profitability, liquidity or capital resources, or that would cause reported financial information not necessarily to be indicative of future operating results or financial condition.

E. Off-balance Sheet Arrangements

We do not generally provide letters of credit to, or guarantees for, or engage in any repurchase financing transactions with any entity other than our consolidated subsidiaries. We have in the past, from time to time, entered into foreign currency forward contracts to hedge our existing assets and liabilities denominated in foreign currencies and identifiable foreign currency purchase commitments. We do not engage in any speculative activities using derivative instruments. See “Item 11. Quantitative and Qualitative Disclosure About Market Risk.”

F. Tabular Disclosure of Contractual Obligations

The following table sets forth our contractual obligations and commitments with definitive payment terms on a consolidated basis which will require significant cash outlays in the future as of December 31, 2018.

	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	4-5 Years	After 5 Years
	(in NT\$ millions)				
Long-term debt ⁽¹⁾					
Unsecured bonds	41,896	2,500	22,696	8,200	8,500
Long-term loans	30,828	2,624	8,330	15,292	4,582
Operating lease obligations ⁽²⁾	7,408	601	1,227	1,187	4,393
Purchase obligations ⁽³⁾	6,430	1,696	1,075	780	2,879
Other long-term obligations ⁽⁴⁾	23,119	834	424	17,486	4,375
Total contractual cash obligations	<u>109,681</u>	<u>8,255</u>	<u>33,752</u>	<u>42,945</u>	<u>24,729</u>

(1) Assuming the domestic bonds are paid off upon maturity.

(2) Represents our obligations to make lease payments mainly to use machineries, equipment, office and land on which our fabs are located, primarily in the Hsinchu Science Park and the Tainan Science Park in Taiwan, Pasir Ris Wafer Fab Park in Singapore.

(3) Represents commitments for purchase of raw materials and construction contracts. These commitments are not recorded on our balance sheet as of December 31, 2018.

(4) Represents intellectual properties and royalties payable under our technology license agreements and the financial liability for the repurchase of other investors' investment. The amounts of payments due under these agreements are determined based on fixed contract amounts.

G. Safe Harbor

See “Forward-Looking Statements in This Annual Report May Not Be Realized.”

ITEM 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

A. Directors and Senior Management

The following table sets forth the name, age, position, tenure and biography of each of our directors and executives as of March 31, 2019. There is no family relationship among any of these persons.

The business address of our directors and executive officers is the same as our registered address.

Name	Age	Position	Year(s) with Us
Stan Hung	58	Chairman, Director and Chief Strategic Officer	27
SC Chien	61	Co-president and Director (Representative of Hsun Chieh Investment Co., Ltd.)	30
Jason Wang	56	Co-president and Director (Representative of Silicon Integrated Systems Corp.)	11
Cheng-Li Huang ⁽¹⁾	70	Independent Director	10
Lih J. Chen ⁽¹⁾	72	Independent Director	1
Jyuo-Min Shyu ⁽¹⁾	65	Independent Director	1
Wenyi Chu (1)	52	Independent Director	4
Chung-Laung Liu	85	Director	13
Ting-Yu Lin	57	Director	13
Chitung Liu	53	Chief Financial Officer and Vice President	18

(1) Member of the Audit Committee.

Stan Hung is a director, Chief Strategic Officer and the Chairman of our company. Mr. Hung was our chief financial officer and senior vice president from 2000 to 2007. He was also the Chairman of Epitech Technology Corporation in 2007 and ITE Technology Corporation for a portion of 2008, respectively. Prior to re-joining United Microelectronics Corporation in 1991, Mr. Hung was a financial manager at Optoelectronics Corporation. He is also the chairman of Fortune Venture Capital Corp., TLC Capital Co. Ltd., Faraday Technology Corporation, HeJian Technology (Suzhou) Co., Ltd., UMC Capital Corp., and a director of Triknight Capital Corporation, United Microelectronics (Europe) B.V. and UMC Capital (USA). Mr. Hung received a bachelor's degree in accounting from Tam Kang University in 1982.

SC Chien is a director and the President of our company. Mr. Chien is a representative of Hsun Chieh Investment Co., Ltd. and he is also a director of Fortune Venture Capital Corp., TLC Capital Co., Ltd., Wavetek Microelectronics Corporation, Epistar Corp., United Semiconductor (XIAMEN) Co., Ltd., and UMC Capital Corp. Mr. Chien received a bachelor's degree in chemical engineering from National Taiwan University.

Jason Wang is a director and the President of our company. Mr. Wang is a representative of Silicon Integrated Systems Corp. and also serves on the board of directors of UMC GROUP (USA) since 2004. Mr. Wang joined UMC as Vice President of Corporate Marketing in 2008, and from 2009 to 2014, served as President of UMC GROUP (USA) responsible for business operation efficiency enhancement and UMC North America strategic business development. Mr. Wang is also a director of Fortune Venture Capital Corp., TLC Capital Co., Ltd., Wavetek Microelectronics Corporation, United Microelectronics (Europe) B.V., UMC Capital Corp., UMC Capital (USA), United Microtechnology Corporation (New York), United Microtechnology (California) and Sino Paragon Limited. Mr. Wang did his undergraduate study in Business Administration at San Jose State University.

Cheng-Li Huang is an independent director of our company. Professor Huang was a professor of Tamkang University and served as its Comptroller. He was also the chief executive of Tamkang Accounting Education Foundation and the publisher of Journal of Contemporary Accounting. Professor Huang received a Ph.D. degree in accounting from University of Warwick in 1999.

Lih J. Chen is an independent director of our company. Professor Chen is the Distinguished Chair Professor of National Tsing Hua University. Professor Chen received a Ph.D. degree in physics from University of California, Berkeley in 1974.

Jyuo-Min Shyu is an independent director of our company. Dr. Shyu is a professor of Computer Science at National Tsing Hua University. He was also the Minister of Ministry of Science and Technology and the President of Industrial Technology Research Institute. Professor Shyu received a Ph.D. degree in Electrical Engineering and Computer Science from University of California, Berkeley in 1988.

Wenyi Chu is an independent director of our company. Professor Chu is a professor of business administration at National Taiwan University. Professor Chu was the chairwoman of Graduate Institute of Business Administration and Department of Business Administration in National Taiwan University from 2012 to 2014. Professor Chu received a Ph.D. degree in Strategy and International Management from London Business School, United Kingdom in 1997.

Chung-Laung Liu is a director of our company. Professor Liu was the William M.W. Mong Honorary Chair Professor of National Tsing Hua University. Professor Liu is also the Chairman of TrendForce Corp., a supervisor of Andes Technology Corporation, an independent director of Microelectronics Technology Inc., Powerchip Semiconductor Corp., Far EasTone Telecommunications Co., Ltd., Accton Technology Corporation, as well as a director of Macronix International Co., Ltd., UBI BioPharma Inc. and GeoThings, Inc. Professor Liu received a doctorate degree in science from Massachusetts Institute of Technology in 1962.

Ting-Yu Lin is a director of our company. Mr. Lin is also the chairman of Sunrox International Inc. Mr. Lin received a master's degree in international finance from Meiji University in 1993.

Chitung Liu is the Chief Financial Officer and the Vice President of our company. Prior to joining our company in 2001, Mr. Liu was a managing director of UBS. Mr. Liu is a director of Fortune Venture Capital Corp., TLC Capital Co., Ltd., Unimicron Technology Corp., Novatek Microelectronic Corp., Hejian Technology (Suzhou) Co., Ltd., UMC Group (USA), Green Earth Limited, ECP Vita Pte. Ltd., Omni Global Limited, UMC Capital Corp., United Microchip Corporation, UMC Technology Japan Co., Ltd., Sino Paragon Limited, Mie Fujitsu Semiconductor Limited, United Microtechnology Corporation (New York) and United Microtechnology Corporation (California). Mr. Liu received an executive MBA degree from National Taiwan University in 2009.

B. Compensation

The aggregate compensation paid and benefits in kind granted to our directors in 2018 were approximately NT\$14.6 million (US\$0.5 million). The remuneration was out of our 2018 earnings distribution plan, and the distribution percentage for directors is 0.21%. See "Item 10. Additional Information—B. Memorandum and Articles of Association—Dividends and Distributions". Some of the remuneration was paid to the legal entities that certain directors represent. The aggregate compensation paid and benefits in kind granted to our executive officers in 2018 were approximately NT\$602.8 million (US\$19.7 million), which include NT\$50.2 million (US\$1.6 million) as bonus.

C. Board Practices

All of our directors were elected in June 2018 for a term of three years. Neither we nor any of our subsidiaries has entered into a contract with any of our directors by which our directors are expected to receive benefits upon termination of their employment.

Audit Committee

Our board of directors established an audit committee in March 2005. In the annual general meeting held on June 13, 2008, we amended our articles of incorporation to introduce the mechanism of an Audit Committee. See “Item 10. Additional Information—B. Memorandum and Articles of Association—Directors”. After the re-election of directors in the annual general meeting on June 12, 2018, our board of directors appointed Cheng-Li Huang, Lih J. Chen, Jyuo-Min Shyu and Wenyi Chu to be the members of the audit committee. Each audit committee member is an independent director who is financially literate with accounting or related financial management expertise. The audit committee meets as often as it deems necessary to carry out its responsibilities. Pursuant to an audit committee charter, the audit committee has responsibility for, among other things, overseeing the qualifications, independence and performance of our internal audit function and independent auditors, and overseeing the accounting policies and financial reporting and disclosure practices of our company. The audit committee also has the authority to engage special legal, accounting or other consultants it deems necessary in the performance of its duties.

Remuneration Committee

The R.O.C. Securities and Exchange Act, as amended on November 24, 2010, further introduced the mechanism of a “Remuneration Committee”, which requires all the publicly listed companies in the R.O.C., including our company, to adopt a remuneration committee. On March 18, 2011, R.O.C. FSC promulgated the Regulations Governing the Establishment and Exercise of Powers by Compensation Committees of Public Companies, according to which, public listed companies of our size shall set up the remuneration committee no later than September 30, 2011 and the remuneration committee shall be composed of no less than three members commissioned by the board of directors. In addition, for a company with independent directors, such as us, at least one of the remuneration committee members shall be the independent director of such company. We established a remuneration committee in accordance with Article 14-6 of the R.O.C. Securities and Exchange Act on April 27, 2011. We amended our articles of incorporation to implement the mechanism of our remuneration committee during the annual general meeting held on June 15, 2011. After the re-election of directors in the annual general meeting on June 12, 2018, our board of directors appointed Cheng-Li Huang, Lih J. Chen, Jyuo-Min Shyu and Wenyi Chu to be the members of the remuneration committee.

In November 2003, the Securities and Exchange Commission approved changes to the NYSE’s listing standards related to the corporate governance practices of listed companies. Under these rules, listed foreign private issuers, like us, must disclose any significant ways in which their corporate governance practices differ from those followed by NYSE-listed U.S. domestic companies under the NYSE’s listing standards. A copy of the significant differences between our corporate governance practices and NYSE corporate governance rules applicable to U.S. companies is available on our website http://www.umc.com/English/investors/Corp_gov_difference.asp.

Nominating Committee

Our board of directors established a nominating committee in December 2017. Our nominating committee initially consists of Chung-Laung Liu, Cheng-Li Huang and Wenyi Chu, each of whom is an independent director. The nominating committee is to assist the board to enhance the management mechanism and to improve corporate governance for our sustainable development. The objectives of our nominating committee include: (i) to constitute the nomination policy and succession plans of the directors and the executives, and to review and propose the candidate list of the directors and the executives accordingly; (ii) to construct and to develop the operation of our board and the board committees, as well as to plan and to execute the performance assessment of the board, the board committees and the executives, and (iii) to enhance the corporate governance system and practices in order to protect the interests of our stakeholders.

D. Employees

As of December 31, 2018, we had 19,929 employees, which included 11,651 engineers, 7,494 technicians and 784 administrative staff performing administrative functions on a consolidated basis. We have in the past implemented, and may in the future evaluate the need to implement, labor redundancy plans based on the work performance of our employees.

	As of December 31,		
	2016	2017	2018
Employees			
Engineers	11,596	11,846	11,651
Technicians	7,123	7,432	7,494
Administrative Staff	820	798	784
Total	19,539	20,076	19,929

Employee salaries are reviewed annually. Salaries are adjusted based on industry standards, inflation and individual performance. As an incentive, additional bonuses in cash may be paid at the discretion of management based on the performance of individuals. In addition, except under certain circumstances, R.O.C. law requires us to reserve from 10% to 15% of any offerings of our new common shares for employees' subscription.

Our employees participate in our profit distribution pursuant to our articles of incorporation. Employees are entitled to receive additional bonuses based on a certain percentage of our allocable surplus income. On March 6, 2019, our board of directors proposed an employee bonus in cash in the amount of NT\$1,401 million (US\$46 million) in relation to retained earnings in 2018.

Our employees are not covered by any collective bargaining agreements. We believe we have a good relationship with our employees.

E. Share Ownership

As of March 31, 2019, each of our directors and executive officers held common shares and/or ADSs of United Microelectronics, either directly for their own account or indirectly as the representative of another legal entity on our board of directors, except for Cheng-Li Huang, Lih J. Chen, Jyuo-Min Shyu and Wenyi Chu, our independent directors. As of April 14, 2019, our most recent record date, Hsun Chieh Investment Co. held approximately 441 million of our common shares, representing approximately 3.64% of our issued and outstanding share capital. Silicon Integrated Systems Corp. held approximately 285 million of our common shares, representing approximately 2.35% of our issued and outstanding share capital. Chairman Mr. Hung held approximately 40 million of our common shares, representing approximately 0.33% of our issued and outstanding share capital. Ting-Yu Lin held approximately 13 million of our common shares, representing approximately 0.1% of our issued and outstanding share capital.

We have adopted employee stock option plans in the past, pursuant to which options may be granted to our full-time regular employees, including those of our domestic and overseas subsidiaries. The exercise price for the options would be the closing price of our common shares on the Taiwan Stock Exchange on the day the options are granted, while the expiration date for such options is six years from the date of its issuance. All stock options we previously granted had expired.

According to our Employee Stock Options Plan, an option holder may exercise an increasing portion of his or her options starting two years after the grant of the options. According to the vesting schedule, 50%, 75% and 100% of such option holder's options shall vest two, three and four years after the grant of the options, respectively. Upon a voluntary termination or termination in accordance with the R.O.C. Labor Law, the option holder shall exercise his or her vested options within 30 days, subject to exceptions provided therein, and after the termination otherwise such options shall terminate. If termination was due to death, the heirs of such option holder have one year starting from the date of the death to exercise his or her vested options. If termination was due to retirement or occupational casualty, the option holder or his or her heirs may exercise all his or her options within a certain period as provided. The options are generally not transferable or pledgeable by the option holders.

ITEM 7 MAJOR STOCKHOLDERS AND RELATED PARTY TRANSACTIONS

A. Major Stockholders

The following table sets forth information known to us with respect to the beneficial ownership of our common shares as of (i) April 14, 2019, our most recent record date, and (ii) as of certain record dates in each of the preceding three years, for (1) the stockholders known by us to beneficially own more than 2% of our common shares and (2) all directors and executive officers as a group. Beneficial ownership is determined in accordance with Securities and Exchange Commission rules.

Name of Beneficial Owner	As of April 10, 2017	As of April 14, 2018	As of April 14, 2019	
	Number of common shares beneficially owned	Number of common shares beneficially owned	Number of common shares beneficially owned	Number of common shares beneficially owned
Hsun Chieh Investment Co., Ltd. ⁽¹⁾	3.50%	3.50%	441,371,000	3.64%
Silicon Integrated Systems Corp.	2.50%	2.50%	285,380,424	2.35%
Directors and executive officers as a group	6.33%	6.32%	808,293,626	6.67%

(1) 36.49% owned by United Microelectronics Corporation as of March 31, 2019.

None of our major stockholders have different voting rights from those of our other stockholders. To the best of our knowledge, we are not directly or indirectly controlled by another corporation, by any foreign government or by any other natural or legal person severally or jointly.

For information regarding our common shares held or beneficially owned by persons in the United States, see “Item 9. The Offer and Listing—A. Offer and Listing Details—Market Price Information for Our American Depositary Shares” in this annual report.

B. Related Party Transactions

From time to time we have engaged in a variety of transactions with our affiliates. The sales and purchase prices with related parties are determined through mutual agreement in reference to market conditions.

The following table shows our aggregate ownership interest, on a consolidated basis, in major related fabless design companies that we enter into transactions from time to time as of December 31, 2018.

Name	Ownership %
Silicon Integrated Systems Corp.	20.54
Faraday Technology Corp.	13.78

We provide foundry services to this fabless design company and the sales price was determined through mutual agreement in reference to market conditions. We derived NT\$1,963 million, NT\$1,388 million and NT\$1,319 million (US\$43 million) of our operating revenues in 2016, 2017 and 2018, respectively, from the provision of our foundry services. For more information, please refer to Note 7 to our audited consolidated financial statements included in this annual report.

C. Interests of Experts and Counsel

Not applicable.

ITEM 8. FINANCIAL INFORMATION

A. Consolidated Statements and Other Financial Information

Please refer to Item 18 for a list of all financial statements filed as part of this annual report on Form 20-F.

Legal and Administrative Proceedings

We may, from time to time, become a party to various legal or administrative proceedings arising in the ordinary course of our business.

On July 1, 2016, INTERNATIONAL BUSINESS MACHINES CORPORATION (IBM) filed a complaint in the United States District Court for the Southern District of New York alleging that UMC failed to pay the technology license fee in accordance with the technology license agreement. UMC appealed a judgment issued on September 15, 2017 by the United States District Court of Southern District of New York for the subject matter. The United States Court of Appeals for the Second Circuit made a summary order on March 11, 2019, vacated part of the district court's judgment and remanded the case. On March 27, 2019, UMC and IBM reached a settlement.

On August 31, 2017, the Taichung District Prosecutors Office indicted us for the Trade Secret Act of the R.O.C., alleging that our employees misappropriated the trade secrets of Micron Technology Inc., or Micron. The case is currently in progress and we have appointed counsels to prepare answers against these charges.

On December 5, 2017, Micron filed a civil action with similar cause against us with the United States District Court, Northern District of California. Micron claimed entitlement to the actual damages, treble damages and relevant fees and requested the court to issue an order that enjoins us from using its trade secrets in question. The case is currently in progress and we have appointed counsels to prepare answers against these charges.

On January 12, 2018, we filed three patent infringement actions with the Fuzhou Intermediate People's Court against, among others, Micron (Xi'an) Co., Ltd. and Micron (Shanghai) Trading Co., Ltd., requesting the court to order the defendants to stop manufacturing, processing, importing, selling, and committing to sell the products deploying the infringing patents in question, and also to destroy all inventories and related molds and tools. On July 3, 2018, the Fuzhou Intermediate People's Court ruled against the aforementioned two defendants, holding that the two defendants must immediately cease to manufacture, sell, and import products that infringe our patent rights. The lawsuit filed by UMC is still on trial.

On November 1, 2018, the Department of Justice of the United States, or the DOJ, unsealed an indictment against us, Fujian Jinhua Integrated Circuit Co., Ltd. or Jinhua, and three individuals, including one current employee and two former employees of ours, alleging that we and others conspired to steal trade secrets of Micron, and used that information to develop technology that was subsequently transferred to Jinhua. On the same day, the DOJ filed a civil complaint enjoining the aforementioned defendants from exporting to the United States any products containing DRAM manufactured by us or Jinhua and preventing the defendants from transferring the trade secrets to anyone else. Please refer to Item 10 C. Material Contracts—DRAM Technology Cooperation Agreement, dated May 13, 2016, between UMC and Fujian Jinhua" for further details about the cooperation arrangement with Jinhua. The indictment and civil complaint are still on trial. The Company has appointed counsel to prepare answers against these charges.

Given these litigations are still in the preliminary stages, the Company cannot assess the legal proceeding and probable outcome or impact.

Other than the abovementioned legal proceedings, we are not currently involved in any material litigation or other proceedings that may have, or have had in the recent past, significant effects on our financial position or profitability.

Dividend Policy

As for our policy on dividend distributions, see "Item 10. Additional Information—B. Memorandum and Articles of Association—Dividends and Distributions". On June 8, 2016, our stockholders approved a cash distribution of NT\$0.55 per common share for an aggregate of NT\$6,906,973,103. On June 15, 2016, our board of directors resolved to adjust the cash dividend ratio to NT\$0.56501906 per common share because the number of outstanding common shares had changed as a result of our repurchase and cancellation of treasury common shares. On June 8, 2017, our stockholders approved a cash distribution of NT\$0.50 per common share for an aggregate of NT\$6,112,159,358. On June 12, 2018, our stockholders approved a cash dividend of NT\$0.7 per common share for an aggregate of NT\$8,557,023,101. On June 12, 2018, our board of directors resolved to adjust the cash dividend ratio to NT\$0.71164307 per common share because the number of outstanding common shares had changed as a result of our repurchase of treasury common shares. On March 6, 2019, our board of directors proposed dividends of NT\$6,916,104,855 (approximately NT\$0.58 per common share) which are expected to be approved at our annual general meeting on June 12, 2019.

The following table sets forth the cash dividends per share and stock dividends per share as a percentage of common shares outstanding paid during each of the years indicated in respect of common shares outstanding at the end of each such year, except as otherwise noted.

	Cash Dividend per Share NT\$	Stock Dividend per Share NT\$	Total Number of Common Shares Issued as Stock Dividend	Number of Outstanding Common Shares at Year End
1997	—	3.0	868,629,276	4,117,758,265
1998	—	2.9	1,199,052,940	5,480,221,725
1999	—	1.5	834,140,790	6,638,054,462
2000	—	2.0	1,809,853,716	11,439,016,900
2001	—	1.5	1,715,104,035	13,169,235,416
2002	—	1.5	1,968,018,212	15,238,578,646
2003	—	0.4	607,925,145	15,941,901,463
2004	—	0.8	1,288,558,185	17,550,800,859
2005	0.1029	1.029	1,758,736,435	18,856,632,324
2006	0.409141420	0.10228530	179,031,672	19,131,192,690
2007	0.7	—	—	13,214,494,883
2008	0.75	0.45	562,958,816	12,987,771,315
2009	—	—	—	12,987,771,315
2010	0.5	—	—	12,987,912,315
2011	1.11164840	—	—	13,084,341,565
2012	0.49980232	—	—	12,951,805,540
2013	0.40639654	—	—	12,692,081,665
2014	0.50	—	—	12,725,207,790
2015	0.54969673	—	—	12,758,132,915
2016	0.56501906	—	—	12,624,318,715
2017	0.50	—	—	12,624,318,715
2018	0.71164307	—	—	12,424,318,715

- (1) We declare stock dividends in an NT dollar amount per share, but we pay the stock dividends to our stockholders in the form of common shares. The amount of common shares distributed to each stockholder is calculated by multiplying the dividend declared by the number of common shares held by the given stockholder, divided by the par value of NT\$10 per share. Fractional common shares are not issued but are paid in cash.

B. Significant Changes

For the significant subsequent events following the close of the last financial year up to the date of this annual report on Form 20-F, please refer to Note 10 to our audited consolidated financial statements included elsewhere in this annual report.

ITEM 9 THE OFFER AND LISTING

- (1) Offer and Listing Details

Market Information for Our Common Shares

Our common shares have been listed on the Taiwan Stock Exchange under the symbol “2303” since July 1985. There is no public market outside Taiwan for our common shares.

Market Information for Our American Depositary Shares

Our ADSs have been listed on the NYSE under the symbol “UMC” since September 19, 2000. The outstanding ADSs are identified by the CUSIP number 910873405. Each of our ADSs represents the right to receive five common shares.

As of March 31, 2019, there were a total of 143,204,659 ADSs listed on the NYSE. With certain limited exceptions, holders of common shares that are not R.O.C. persons are required to hold these common shares through a brokerage or custodial account in the R.O.C. As of March 31, 2019, 716,023,295 common shares were registered in the name of a nominee of JPMorgan Chase & Co., the depositary under the deposit agreement. JPMorgan Chase & Co. has advised us that, as of March 31, 2019, 143,188,961 ADSs representing these 715,944,805 common shares were held of record by Cede & Co., and 15,698 ADSs were held by U.S. registered stockholders. We have no further information as to common shares held or beneficially owned by U.S. persons.

C. Plan of Distribution

Not applicable.

D. Markets

The principal trading markets for our common shares are the Taiwan Stock Exchange and the New York Stock Exchange, on which our common shares trade in the form of ADSs.

E. Selling Stockholders

Not applicable.

F. Dilution

Not applicable.

G. Expenses of the Issue

Not applicable.

ITEM 10. ADDITIONAL INFORMATION

A. Share Capital

Not applicable.

B. Memorandum and Articles of Association

The following statements summarize the material elements of our capital structure and the more important rights and privileges of stockholders conferred by the R.O.C. law and our articles of incorporation.

Objects and Purpose

The scope of business of United Microelectronics as set forth in Article 2 of our articles of incorporation, includes, among others, (i) integrated circuits; (ii) semiconductor parts and components; (iii) parts and components of microcomputers, microprocessors, peripheral support and system products; (iv) parts and components of semiconductor memory systems products; (v) semiconductor parts and components for digital transceiver product and system products; (vi) semiconductor parts and components for telecom system and system products; (vii) testing and packaging of integrated circuits; (viii) mask production; (ix) metals, derived fuels and chemical products generated simultaneously from our manufacturing process; (x) management consulting service in regard to sustainable development, energy/resources conservation technologies and semiconductor fab related affairs; (xi) clearance, recycle and disposal of waste and manufacturing outputs; research and development, design, production, sales, promotion and after-sale services related to our business; and (xii) export/import trade related to our business.

Directors

The R.O.C. Company Act and our articles of incorporation provide that our board of directors is elected by stockholders and is responsible for the management of our business. As of March 31, 2019, our board of directors consisted of nine directors, out of which four are independent directors. In the annual general meeting held on June 11, 2007, we amended our articles of incorporation to abolish the managing director mechanism. In the annual general meeting held on June 13, 2008, we amended our articles of incorporation to introduce the mechanism of an Audit Committee. The Chairman presides at all meetings of our board of directors, and also has the authority to represent our company. The term of office for our directors is three years, and our directors are elected by our stockholders by means of cumulative voting. The amendment to our articles of incorporation on June 11, 2007 also adopts a nomination system which provides that holders of one percent or more of the issued and outstanding shares of our company would be entitled to submit a roster of candidates to be considered for nomination to our company's board of directors at an annual general meeting involving the election of directors. Pursuant to the R.O.C. Company Act, entity that owns our common shares may be elected as a director, in which case a natural person must be designated to act as the legal entity's representative. A legal entity that is our stockholder may designate its representative to be elected as our director on its behalf. In the event several representatives are designated by the same legal entity, any or all of them may be elected. A director who serves as the representative of a legal entity may be removed or replaced at any time at the discretion of such legal entity, and the replacement director may serve the remainder of the term of office of the replaced director. As of March 31, 2019, two of our nine directors are representatives of other legal entities, as shown in "Item 6. Directors, Senior Management and Employees—A. Directors and Senior Management."

According to the R.O.C. Company Act and the rules promulgated under the R.O.C. Securities and Exchange Act, a director who has a personal interest in a matter to be discussed at the meeting of the board of directors, shall explain the essential contents of such personal interest in the meeting of the board of directors. Moreover, where the spouse, a blood relative within the second degree of kinship of a director, or any company which has a controlling or subordinate relation with a director has interests in a matter to be discussed at the meeting of the board of directors, such director shall be deemed to have a personal interest in the matter. In case that such personal interest may impair the interests of us, such director shall abstain from joining the discussion and voting on such matter. In case that such director is the representative designated by a legal entity stockholder to be elected as our director and such legal entity stockholder has personal interest in the matter to be discussed at the meeting of the board of directors, the rules abovementioned shall also apply. Our articles of incorporation provide that our board of directors is authorized, by taking into account of the extent of his/her/its involvement of our operation activities and the value of his/her/its contribution, to determine the compensation for each director at a comparable rate adopted by other companies of the same industry regardless of the profit received by our company. In addition, according to our articles of incorporation, we may distribute a maximum of 0.1% of the annual profits before tax as remuneration to directors. Please refer to "—Dividends and Distributions" in this item below for more details. Our articles of incorporation do not impose a mandatory retirement age limit for our directors. Furthermore, our articles of incorporation do not impose a shareholding qualification for each director, while the laws and regulations require the aggregate shareholding of all directors, excluding independent directors, to meet certain thresholds considering the paid-in capital and the numbers of the independent directors. According to our current internal Loan Procedures, we shall not extend any loan to our directors.

In order to strengthen corporate governance of companies in Taiwan, effective from January 1, 2007, the amended R.O.C. Securities and Exchange Act authorizes the R.O.C. FSC, after considering certain factors, including the scale, shareholding structure and business nature of a public company, to require that a public company, such as our company, meet certain criteria, including having at least two independent directors but not less than one fifth of the total number of directors.

In addition, pursuant to the R.O.C. Securities and Exchange Act, a public company is required to either establish an audit committee, or R.O.C. Audit Committee, or retain supervisors, provided that the R.O.C. FSC may, after considering the scale and business nature of a public company and other necessary situation, require the company to establish an audit committee in place of its supervisors. We have amended our articles of incorporation in the annual general meeting held on June 13, 2008, introducing the mechanism of an R.O.C. Audit Committee. On February 20, 2013, the R.O.C. FSC has ruled that a public company with certain scale or of certain business nature, including us, shall establish an R.O.C. Audit Committee instead of the supervisors. According to our articles of incorporation and audit committee charter, our R.O.C. Audit Committee is composed of all independent directors and performs the power and duties provided by applicable laws and regulations, including without limitation the powers and the duties of supervisors provided under the R.O.C. Company Act. A company is not allowed to maintain both supervisors and a R.O.C. Audit Committee, so we chose to eliminate our supervisors when we established our R.O.C. Audit Committee in 2009.

According to our current articles of incorporation, we may purchase directors and officers liability insurance for our directors, covering the liabilities incurred in relation to his/her/its operation of business and legally responsible for.

Common Shares

As of December 31, 2018, our authorized share capital was NT\$260 billion, divided into 26 billion common shares, of which 12,424,318,715 common shares were issued and outstanding. All common shares presently issued are fully paid and in registered form, and existing stockholders are not subject to any capital calls. We do not have any outstanding warrants or option to purchase our common shares.

Employee Stock Option

According to our Employee Stock Options Plan, options may be granted to our full-time regular employees, including those of our domestic and overseas subsidiaries. Since 2004 to 2009, we obtained approvals by relevant R.O.C. authorities to grant up to an aggregate of 1,500 million stock options to acquire our common shares under our Employee Stock Option Plan. According to the plan, an option holder may exercise an increasing portion of his or her options in time starting two years after the grant of the options. According to the vesting schedule, 50%, 75% and 100% of such option holder's options shall vest two, three and four years after the grant of the options, respectively.

New Common Shares and Preemptive Rights

New common shares may only be issued with the prior approval of our board of directors. If our issuance of any new common shares will result in any change in our authorized share capital, we are required under R.O.C. law to amend our articles of incorporation and obtain approval of our stockholders in a stockholders' meeting. We must also obtain the approval of, or submit a registration with, the R.O.C. FSC and the Science Park Administration. According to the R.O.C. Company Act, when a company issues capital stock for cash, 10% to 15% of the issue must be offered to its employees. In addition, if a listed company intends to offer new common shares for cash, at least 10% of the issue must also be offered to the public. This percentage can be increased by a resolution passed at a stockholders' meeting, which will reduce the number of new common shares in which existing stockholders may have preemptive rights. Unless the percentage of the common shares offered to the public is increased by a resolution, existing stockholders of the company have a preemptive right to acquire the remaining 75% to 80% of the issue in proportion to their existing shareholdings. According to the Corporate Merger and Acquisition Act of the R.O.C., as effective on February 8, 2002 and amended on May 5, 2004 and July 8, 2015 which took effect on January 8, 2016, if new common shares issued by our company are solely for the purpose of merger, acquisition, share swap or spin-off, the above-mentioned restrictions, including the employee stock ownership plan, the preemptive rights of the existing stockholders and the publicity requirement of a listed company, to such issuance of new common shares may not be applied.

Stockholders

We only recognize persons registered in our register as our stockholders. We may set a record date and close our register of stockholders for specified periods to determine which stockholders are entitled to various rights pertaining to our common shares.

Transfer of Common Shares

Under the R.O.C. Company Act, a company may issue individual share certificates or no certificate at all, to evidence common shares. Our articles of incorporation, provide that we may deliver common shares in book-entry form instead of by means of issuing physical share certificates. We have issued our common shares in uncertificated/scripless form since 2007. Therefore, the transfer of our common shares is carried out on the book-entry system. The settlement of trading of our common shares is normally carried out on the book-entry system maintained by the Taiwan Depository and Clearing Corporation. Transferees must have their names and addresses registered on our register in order to assert stockholder's rights against us. Our stockholders are required to file their respective specimen seals with our share registrar, Horizon Securities Co., Ltd.

Stockholders' Meetings

We are required to hold an annual ordinary stockholders' meeting once every calendar year within six months from the end of each fiscal year. Our board of directors may convene an extraordinary meeting whenever the directors deem necessary, and they must do so if requested in writing by stockholders holding no less than 3% of our issued common shares who have held these common shares for more than a year. At least 15 days' advance written notice must be given of every extraordinary stockholders' meeting and at least 30 days' advance written notice must be given of every annual ordinary stockholders' meeting. In addition, stockholder(s) who have continuously held more than 50% of our issued common shares for a period of three months or longer may convene an extraordinary shareholders' meeting without any approval of our board of directors. The period during which a stockholder holds the shares and the number of shares held by a stockholder shall be determined based on our register of stockholders as of the book close date of the relevant extraordinary stockholders' meeting. Unless otherwise required by law or by our articles of incorporation, voting for an ordinary resolution requires an affirmative vote of a simple majority of those present. A distribution of cash dividends would be an example of an ordinary resolution. The R.O.C. Company Act and, in the case of certain merger and acquisition deals, the Corporate Merger and Acquisition Act, also provides that in order to approve certain major corporate actions, including any amendment of our articles of incorporation, dissolution, merger or spin-off, share swap, entering into, amendment, or termination of any contract for lease of the company's business in whole, or for entrusted business, or for joint operation with others, on regular basis, the transfer of all or an essential part of the business or assets, accept all of the business or assets of any other company which would have a significant impact on our operations, removing directors or the distribution of dividend in stock form, a special resolution shall be adopted by the holders of the majority of our common shares represented at a stockholders' meeting at which holders of at least two-thirds of our issued and outstanding common shares are present; provided that, in the case of a public company, such as our company, such resolution may be adopted by the holders of at least two-thirds of the common shares represented at a stockholders' meeting at which holders of at least a majority of our issued and outstanding common shares are present; provided, further, that in the case of merger, spin-off, transfer of all or essential part of business or asset, or share swap which meets the specific criteria provided under the Corporate Merger and Acquisition Act, such as short-form merger/spin-off/share swap or whale-minnow merger/spin-off/share-swap (as defined therein), such corporate action can be approved by a board resolution adopted by majority consent at a meeting with at least two-thirds of our directors present without stockholders' approval. Notwithstanding the foregoing, in the event such transaction will result in our delisting, the approval from holders of at least two-thirds of our issued and outstanding common shares is required.

Voting Rights

Each common share is generally entitled to one vote and no voting discount will be applied. However, treasury common shares and our common shares held by (i) an entity in which we own more than 50% of the voting shares or paid-in capital, or (ii) a third party in which we and an entity controlled by us jointly own, directly or indirectly, more than 50% of the voting shares or paid-in capital are not entitled to any vote. Except as otherwise provided by law or our articles of incorporation, a resolution can be adopted by the holders of a simple majority of the issued and outstanding common shares represented at a stockholders' meeting. The quorum for a stockholders' meeting to discuss the ordinary resolutions is a majority of the issued and outstanding common shares. Pursuant to the R.O.C Company Act amended on December 28, 2011, the election of directors by our stockholders shall be conducted by means of cumulative voting rather than other voting mechanisms adopted in our articles of incorporation. Except as otherwise provided under applicable laws and regulations, in all other matters, a stockholder must cast all his or her votes in the same manner when voting on any of these matters.

Our stockholders may be represented at an ordinary or extraordinary stockholders' meeting by proxy if a valid proxy form is delivered to us five days before the commencement of the ordinary or extraordinary stockholders' meeting, unless such proxy has been revoked no later than two days before the date of the stockholders' meeting. Voting rights attached to our common shares exercised by our stockholders' proxy are subject to the proxy regulation promulgated by the R.O.C. FSC.

Authorized by the R.O.C Company Act, the R.O.C. FSC has issued an administrative order on February 20, 2012 to require Taiwan Stock Exchange-listed companies, such as our company, and Taipei Exchange (previously known as "GreTai Securities Market")-listed companies in the R.O.C. with NT\$10 billion or more of paid-in share capital and with 10,000 or more stockholders as of the first date of the close period applicable to the stockholders' meeting to adopt an e-voting system for the stockholders' meeting. According to the administrative order by the R.O.C. FSC, commencing from January 1, 2018, all listed companies shall adopt the e-voting system for the stockholders' meeting. The e-voting system provides a new platform for stockholders to exercise their voting rights online. As a company that meets the foregoing criteria, we have successfully adopted the e-voting system in the 2012 stockholders' meeting and voted by poll on each agenda item for discussion.

Any stockholder who has a personal interest in a matter to be discussed at our stockholders' meeting, the outcome of which may impair our interests, shall not vote or exercise voting rights on behalf of another stockholder on such matter.

According to the R.O.C. Company Act amended on January 4, 2012, a stockholder of a public company who holds common shares for others, such as a depository, may choose to exercise his/her/its voting power separately. On April 13, 2012, R.O.C. FSC promulgated the Regulations Governing the Split Voting of the Stockholders and Compliance Matters for Public Companies, the implementation rules of such split voting method, which stipulates that the depository of the overseas depository receipts may exercise its voting power separately in accordance with the instructions of the respective holders of the ADS. Notwithstanding the foregoing, before any amendment to the currently effective Deposit Agreement is made, holders of our ADSs generally will not be able to exercise voting rights on the common shares underlying their ADSs on an individual basis.

Dividends and Distributions

We are not allowed under R.O.C. law to pay dividends on our treasury common shares. We may distribute dividends on our issued and outstanding common shares if we have earnings. Before distributing a dividend to stockholders, among other things, we must recover any past losses, pay all outstanding taxes and set aside a legal reserve equivalent to 10% of our net income until our legal reserve equals our paid-in capital, and a special reserve, if any.

At an annual ordinary stockholders' meeting, our board of directors submits to the stockholders for their approval proposals for the distribution of dividends or the making of any other distribution to stockholders from our net income or reserves for the preceding fiscal year. Dividends are paid to stockholders proportionately. Dividends may be distributed either in cash or in common shares or a combination of cash and common shares, as determined by the stockholders at such meeting.

Previously, the employee bonus and directors' remuneration were categorized as "profit sharing" items and were calculated and distributed based on earnings after tax basis. However, according to Articles 235 and 235-1 of the Company Act, both amended and added on May 20, 2015, employee bonus and directors' remuneration shall no longer be a profit sharing item but shall be calculated based on earnings before tax and distributed as "expenses." Our articles of incorporation currently in effect, provide that where we make profits before tax for the annual financial year, subject to a board resolution adopted by majority consent at a meeting with at least two-thirds of our directors present, we shall appropriate (i) no less than 5% of such annual profits before tax as employee bonus, and (ii) a maximum of 0.1% as directors' remunerations. The employees eligible for the distribution include our employees and employees of our subsidiaries and the form of employee bonus may be made in stock or cash. The qualification of such employees is to be determined by our board of directors. Notwithstanding the foregoing, if we have accumulated losses of the previous years, we shall set aside the amount of such accumulated losses prior to the allocation of the employee bonus and the above directors' remuneration. For the purpose of calculation of the above employee bonus and the directors' remunerations, such "annual profits before tax" shall be without giving effect of the deduction and distribution of such employee bonus and the directors' remunerations.

The remaining amount may be distributed according to the distribution plan proposed by our board of directors based on our dividend policy, and submitted to the stockholders' meeting for approval. Our articles of incorporation also specify that the amount distributable as dividend shall be the sum of (x) the balance of our earnings deducted by (i) payment of all taxes and dues, (ii) deduction of any past losses, (iii) allocation of 10% of our net income as a statutory reserve (which may be exempted if the accumulated amount of legal reserve has amounted to our paid-in capital); and (iv) special reserve, if any, plus (y) the retained earnings of previous years. In the annual general meeting held in June 2005, our stockholders approved a change of the percentage of stock dividend issued to our stockholders, if any, to no more than 80% and cash dividend, if any, to no less than 20%.

In addition to permitting dividends to be paid out of net income, we are permitted under the R.O.C. Company Act to make distributions to our stockholders of additional common shares by capitalizing reserves, including the legal reserve and capital surplus of premiums from issuing stock and earnings from gifts received, or make such distributions by cash, if we do not have losses. However, where legal reserve is distributed by capitalization or in cash, only the portion of legal reserve which exceeds 25 percent of the paid-in capital may be distributed.

For information as to R.O.C. taxes on dividends and distributions, see “—R.O.C. Tax Considerations” in this Item.

Acquisition of Our Common Shares by Us

An R.O.C. company may not acquire its own common shares, except under certain exceptions provided in the R.O.C. Company Act or the R.O.C. Securities and Exchange Act. Under the R.O.C. Company Act, a company may purchase up to 5% of its issued common shares for transfer to employees as employee compensation in accordance with a resolution of its board of directors, passed by a majority vote, at a meeting with at least two-thirds of the directors present.

Under Article 28-2 of the R.O.C. Securities and Exchange Act, we may, by a board resolution adopted by majority consent at a meeting with two-thirds or more of our directors present, purchase up to 10% of our issued common shares on the Taiwan Stock Exchange or by a tender offer, in accordance with the procedures prescribed by the R.O.C. FSC, for any of the following purposes:

- to transfer our common shares to our employees as employee compensation;
- to transfer upon conversion of bonds with warrants, preferred shares with warrants, convertible bonds, convertible preferred shares or certificates of warrants issued by us; or
- if necessary, to maintain our credit and our stockholders' equity; provided that the common shares so purchased shall be canceled thereafter.

We have from time to time announced plans, none of which was binding on us, to buy back up to a fixed amount of our common shares on the Taiwan Stock Exchange at the price range set forth in the plans disclosed in “Item 16E — Purchase Of Equity Securities By The Issuer And Affiliated Purchasers.” We may not spend more than the aggregate amount of the retained earnings, the premium from issuing stock and the realized portion of the capital reserve to purchase our common shares. Historically, we have cancelled some of the repurchased common shares and transferred some of the repurchased common shares to our employees as employee compensation. In 2010, 2013 and 2015, we purchased an aggregate of 300 million, 200 million and 200 million, respectively, of our common shares under these plans. From February 3, 2010 to April 2, 2010, we purchased 300 million of our common shares on the Taiwan Stock Exchange at an average price of NT\$16.15 per share to transfer to our employees as employee compensation. From March 14, 2013 to May 13, 2013, we purchased 200 million of our common shares on the Taiwan Stock Exchange at an average price of NT\$11.23 per share to transfer to our employees as employee compensation. From July 30, 2015 to September 29, 2015, we purchased 200 million of our common shares on the Taiwan Stock Exchange at an average price of NT\$11.02 per share to transfer to our employees as employee compensation. During 2016, 2017 and 2018, we purchased an aggregate of 200 million, nil and 480 million, common shares, respectively, and transferred nil, nil and 200 million of such common shares that we repurchased under these plans to our employees as employee compensation in 2016, 2017 and 2018, respectively.

On March 14, 2012, our board of directors approved the cancellation of 157,934,400 treasury common shares, which were purchased from December 17, 2008 to February 16, 2009. On April 24, 2013, our board of directors approved the cancellation of 300,000,000 treasury common shares, which were purchased from February 3, 2010 to April 2, 2010.

We may not pledge or hypothecate any purchased common shares. In addition, we may not exercise any stockholders' rights attached to such common shares. In the event that we purchase our common shares on the Taiwan Stock Exchange, our affiliates, directors, managers and their respective spouses and minor children and/or nominees are prohibited from selling any of our common shares during the period in which we purchase our common shares.

In addition to the share purchase restriction, the Company Act provides that our subsidiaries may not acquire our common shares or the equity securities of our majority-owned subsidiaries if the majority of the outstanding voting equity securities or paid-in capital of such subsidiary is directly or indirectly held by us.

Liquidation Rights

In a liquidation, you will be entitled to participate in any surplus assets after payment of all debts, liquidation expenses and taxes proportionately.

Rights to Bring Stockholders' Suits

Under the R.O.C. Company Act, a stockholder may bring suit against us in the following events:

- within 30 days from the date on which a stockholders' resolution is adopted, a stockholder may file a lawsuit to annul a stockholders' resolution if the procedure for convening a stockholders' meeting or the method of resolution violates any law or regulation or our articles of incorporation. However, if the court is of the opinion that such violation is not material and does not affect the result of the resolution, the court may reject the stockholder's claim.
- if the substance of a resolution adopted at a stockholders' meeting contradicts any applicable law or regulation or our articles of incorporation, a stockholder may bring a suit to determine the validity of such resolution.

Stockholders may bring suit against our directors under the following circumstances:

- Stockholder(s) who have continuously held 1% or more of our issued common shares for a period of six months or longer may request in writing that the audit committee institutes an action against a director on our behalf. In case the audit committee fails to institute an action within 30 days after receiving such request, the stockholder(s) may institute an action on our behalf. In the event stockholder(s) institute an action, a court may, upon the defendant's motion, order such stockholder(s) to furnish appropriate security.
- Stockholder(s) who hold more than 3% or more of our total issued common shares may institute an action with a court to remove a director of ours who has materially violated the applicable laws or our articles of incorporation or has materially damaged the interests of our company if a resolution for removal on such grounds has first been voted on and rejected by our stockholders and such suit is filed within 30 days of such stockholders' vote.

- In the event that any director, manager or stockholder holding more than 10% of our common shares or any respective spouses or minor children and/or nominees of any of them sells common shares within six months after acquisition of such common shares, or repurchases the common shares within six months after the sale, we may claim for recovery of any profits realized from the sale and purchase. If our board of directors or audit committee fail to claim for recovery, any stockholder may set forth a 30-day period for our board of directors or audit committee to exercise the right. In the event our directors or audit committee fail to exercise the right during such 30-day period, such requesting stockholder shall have the right to claim such recovery on our behalf. Our directors shall be jointly and severally liable for damages suffered by us as a result of their failure to exercise the right of claim.

Other Rights of Stockholders

Under the R.O.C. Company Act and the Corporate Merger and Acquisition Act, dissenting stockholders are entitled to appraisal rights in the event of a spin-off or a merger and various other major corporate actions. Dissenting stockholders may request us to redeem all their common shares at a then fair market price to be determined by mutual agreement. If no agreement can be reached, the valuation will be determined by a court. Subject to applicable law, dissenting stockholders may, among other things, exercise their appraisal rights by notifying us in writing before the related stockholders' meeting and/or by raising and registering their dissent at the stockholders' meeting and also waive their voting rights.

One or more stockholders who have held 3% or more of the issued and outstanding common shares one year or longer may require our board of directors to call an extraordinary stockholders' meeting by sending a written request to our board of directors. In addition, stockholder(s) who have continuously held more than 50% of our issued common shares for a period of three months or longer may convene an extraordinary shareholders' meeting without any approval of our board of directors. The period during which a stockholder holds the shares and the number of shares held by a stockholder shall be determined based on our register of stockholders as of the book close date of the relevant extraordinary stockholders' meeting.

Moreover, the R.O.C. Company Law allows stockholder(s) holding 1% or more of the total issued common shares of a company to, during the period of ten days or more prescribed by the company, submit one proposal in writing or by way of electronic transmission containing no more than three hundred words (in terms of Chinese characters) for discussion at the annual ordinary stockholders' meeting.

Financial Statements

For a period of at least 10 days before our annual ordinary stockholders' meeting, we must make available our annual financial statements at our principal offices in Hsinchu, Taiwan, and our share registrar in Taipei for our stockholders' inspection.

Transfer Restrictions

Our directors, managers and stockholders holding more than 10% of our common shares are required to report any changes in their shareholding to us on a monthly basis. In addition, the number of common shares that they can sell or transfer on the Taiwan Stock Exchange on a daily basis is limited by R.O.C. law. Further, they may sell or transfer our common shares on the Taiwan Stock Exchange only after reporting to the R.O.C. FSC at least three days before the transfer, provided that such reporting is not required if the number of common shares transferred does not exceed 10,000 in one business day.

C. Material Contracts

Cross License Agreement, dated as of January 1, 2006, between United Microelectronics Corporation and International Business Machines Corporation.

We entered into a five-year cross license agreement with IBM effective as of January 1, 2006, which provides for the cross license of certain semiconductor patents including process, topography and design. Under this agreement, IBM had granted to us and our subsidiaries, nonexclusive and non-transferable licenses, without the right to grant sublicenses, for making our and our subsidiaries' licensed products in R.O.C., Japan and Singapore and selling, leasing, licensing, using and/or transferring our and our subsidiaries' licensed products worldwide under IBM's patents filed prior to January 1, 2011; we granted IBM, royalty-free, worldwide and non-transferable licenses, without the right to grant sublicenses, for the term of the cross license for making, selling, leasing, licensing, using and/or transferring IBM's licensed products under our patents filed prior to January 1, 2011. We also agreed to pay IBM certain royalty fees under this agreement. This five-year cross license agreement with IBM terminated on December 31, 2010. We entered into a new "life-of-the-patents" cross license agreement with IBM that will be effective until June 30, 2029, the expiration date of the last-to-expire of the licensed patents thereunder. Under this agreement, IBM has granted to us and our subsidiaries, nonexclusive and non-transferable licenses, without the right to grant sublicenses, for making our and our subsidiaries' licensed products in R.O.C., Japan, Singapore and PRC and selling, leasing, licensing, using and/or transferring our and our subsidiaries' licensed products worldwide under IBM's patents filed effectively prior to July 1, 2009; we granted IBM, royalty-free, worldwide and non-transferable licenses, without the right to grant sublicenses, for the term of the cross license for making, selling, leasing, licensing, using and/or transferring IBM's licensed products under our patents filed effectively prior to July 1, 2009. We also agreed to pay IBM certain royalty fees under this agreement. In addition, we have renewed the aforesaid patent cross license agreement with IBM on June 13, 2013, under which IBM grants us a license under all its patents with an effective filing date prior to December 31, 2015.

Technology Agreement, dated as of June 29, 2012, between United Microelectronics Corporation and International Business Machines Corporation.

We entered into a technology license agreement with International Business Machines Corporation ("IBM") on June 29, 2012. Under this agreement, IBM granted us a perpetual license under its 20nm bulk industry standard CMOS technology and developmental processes associated with manufacturing integrated circuits using a three dimensional FinFet device technology for using, offering for sale, selling, importing or otherwise transferring our licensed products.

Other Patent License Agreements in 2015

In addition, we signed a Patent License Agreement with NXP B.V., effective from September 30, 2015 to September 29, 2020, under which, both NXP B.V. and we agree to grant to the other party a license under its patents and patent applications. We also agree to pay NXP B.V. certain royalty under this agreement.

12-inch Fab Semiconductor Manufacture Technology License Agreements, dated as of December 1, 2015 and April 5, 2017, between UMC and USCXM

In order to facilitate USCXM to build up its semiconductor manufacture technology and capability, we licensed 28 nm and 40/55 nm semiconductor manufacture technology approved by the relevant R.O.C. authorities to USCXM. The 40/55 nm license is effective from December 1, 2015 to December 31, 2019, while the 28 nm license is effective from April 1, 2017 to March 31, 2022. USCXM will pay us certain royalty under these agreements.

DRAM Technology Cooperation Agreement, dated May 13, 2016, between UMC and Fujian Jinhua

We entered into a technology cooperation agreement with Fujian Jinhua on May 13, 2016 to jointly develop DRAM related technologies. Under the agreement, Fujian Jinhua will provide us with related equipment for our research and development, as well as service fees subject to the progress of the technology development. We will develop DRAM related technologies for Fujian Jinhua and deliver such development results to Fujian Jinhua before May 12, 2021. These developed technologies will be jointly owned by both parties. As a result of the legal proceedings disclosed in "Item 8. Financial Information—Consolidated Statements and Other Financial Information—Legal and Administrative Proceedings," we have suspended the joint development process.

12-inch Fab Semiconductor Manufacturing Technology License Agreement, dated as of November 23, 2018 between UMC and USCXM

We licensed 80nm semiconductor manufacture technology and capability to USCXM to fulfill customers' growing wafer demand. The granting of the 80nm license to USCXM has been approved by the relevant governmental authorities in Taiwan November 2018, which is subject to review in November 2028.

Cross License Agreement, dated as of September 29, 2018, between United Microelectronics Corporation and Avago Technologies International Sales Pte. Limited.

We entered into cross license agreement with Avago Technologies International Sales Pte. Limited, effective from September 29, 2018 to December 31, 2023, which provides for the license of semiconductive device under certain licensed patents. Under this agreement, Avago grants to us and our subsidiaries a non-exclusive and non-transferable license for making, selling, importing or otherwise disposing of our and our subsidiaries' licensed products. In exchange, we agree to pay Avago certain royalty fees under this agreement.

Major Long-term Supply and Marketing Agreements

We have entered into long-term distribution, sales, service and marketing agreements with the following companies: UMC Group (USA), an agreement effective from January 1, 2013 through December 3, 2018; UMC Group Japan Co., Ltd., an agreement effective from January 1, 2018 through December 31, 2022; United Microelectronics (Europe) BV, an agreement effective from January 1, 2018 through December 31, 2022; and Hejian, an agreement effective from January 1, 2018 through December 31, 2018.

Major Construction Agreements

We entered into construction agreements in connection with the USCXM facility with several companies, such as L&K Engineering (Suzhou) Co.,Ltd., Wholetech Group (Shanghai) Trading Co. Ltd., and Jiashan Tanhou Semiconductor Exhaust Industry Co.,Ltd for the construction of the Fab 12X in Xiamen, Fujian Province, China. These agreements are effective from January 1, 2018 to December 31, 2018, and the total contractual amount exceeds US\$13.3 million.

We also entered into various major facility construction agreements in connection with our Fab 12A fab facility, piping, and various material supply systems, with companies such as Wholetech System Hitech Limited, SUMITRONICS TAIWAN CO., LTD., K. J. FILTRATION TECHNOLOGIES LTD., and Versum Materials Taiwan CO., LTD. for the phase 5 facilities in our Fab12A in the Tainan Science Park. These agreements are effective from January 2017 to December 2018, and the total contractual amount exceeds NT\$1.2 billion.

D. Exchange Controls

Foreign Investment and Exchange Controls in Taiwan

We have extracted from publicly available documents the information presented in this section. Please note that citizens of the People's Republic of China and entities organized in the People's Republic of China are subject to special R.O.C. laws, rules and regulations, which are not discussed in this section.

General

Historically, foreign investments in the securities market of Taiwan were restricted. However, commencing in 1983, the Taiwan government has from time to time enacted legislation and adopted regulations to make foreign investment in the Taiwan securities market possible. Initially, only overseas investment trust funds of authorized securities investment trust enterprises established in Taiwan were permitted to invest in the Taiwan securities market. Since January 1, 1991, qualified foreign institutional investors are allowed to make investments in the Taiwan public securities market. Since March 1, 1996, non-resident foreign institutional and individual investors, called "general foreign investors", are permitted to make direct investments in the Taiwan public securities market. On September 30, 2003, the Executive Yuan amended the Regulations Governing Investment in Securities by Overseas Chinese and Foreign Nationals, or the Investment Regulations, under which the "Qualified Foreign Institutional Investors", or QFII, designations have been abolished and the restrictions on foreign portfolio investors have been revised. According to the Investment Regulations, "Foreign Institutional Investor", or FINI, means an entity which is incorporated under the laws of countries other than the R.O.C. or the branch of a foreign entity that is established within the territory of the R.O.C., and "Foreign Individual Investor", or FIDI, means an overseas Chinese or a foreign natural person. In addition, the Investment Regulations also lifted some restrictions and simplified procedures of investment application.

On April 30, 2009, the R.O.C. FSC promulgated regulations allowing QDIIs under PRC regulations and certain other PRC persons to invest in the securities of R.O.C. companies. However, prior approval from the Investment Commission of the R.O.C. Ministry of Economic Affairs is required for QDIIs or certain other PRC persons to own 10% or more of the issued and outstanding share capital of a listed R.O.C. company.

Foreign Ownership Limitations

Foreign ownership of the issued share capital in a Taiwan Stock Exchange-listed company or a Taipei Exchange-listed company has been limited to 50% in the past. Since December 30, 2000, the 50% limit has been lifted. Foreign investors can now hold such investments without any foreign ownership percentage limitations, unless the law has imposed restrictions otherwise.

Foreign Investors

Each FINI who wishes to invest directly in the R.O.C. securities market is required to register with the Taiwan Stock Exchange and obtain an investment identification number if the FINI is a non-resident and has no sub-investment accounts in the R.O.C. Each FIDI who wishes to invest directly in the R.O.C. securities market is also required to register with the Taiwan Stock Exchange and obtain an investment identification number. The R.O.C. FSC has lifted the limitation on the amount of investment in the R.O.C. securities market for a non-resident FIDI. Except for some restrictions imposed by specific laws and regulations, the individual and aggregate foreign ownership of the issued share capital in a Taiwan Stock Exchange-listed company or a Taipei Exchange-listed company is not restricted. An R.O.C. custodian for a non-resident FINI or FIDI is required to submit to the CBC, and the Taiwan Stock Exchange a report of trading activities, inward and outward remittance of capital and status of assets under custody and other matters every month. Foreign institutional investors are not subject to any ceiling for investment in the R.O.C. securities market.

Foreign Investment Approval

Foreign investors (both institutional and individual) who wish to make direct investments in the common shares of R.O.C. companies are required to submit a “foreign investment approval” application to the Investment Commission of the R.O.C. MOEA, or other government authority and enjoy benefits granted under the Statute for Foreigner’s Investment and the Statute for Overseas Chinese’s Investment. The Investment Commission of the R.O.C. MOEA or other government authority reviews each foreign investment approval application and approves or disapproves the application after consultation with other governmental agencies, if necessary. Any non-R.O.C. person possessing a foreign investment approval may repatriate annual net profits and interests attributable to an approved investment. Investment capital and capital gains attributable to the investment may be repatriated with approval of the Investment Commission of the R.O.C. MOEA or other government authority.

In addition to the general restrictions against direct investments by foreign investors in R.O.C. companies, foreign investors are currently prohibited from investing in certain prohibited industries in Taiwan under the “Negative List”. The prohibition on direct foreign investment in the prohibited industries in the Negative List is absolute in the absence of a specific exemption from the application of the Negative List. Under the Negative List, some other industries are restricted so that foreign investors may directly invest only up to a specified level and with the specific approval of the relevant authority responsible for enforcing the legislation that the Negative List is intended to implement. Our business does not operate in a restricted industry under the Negative List.

In June 2009, the R.O.C. MOEA further allowed PRC persons to make direct investments in Taiwan. However, such direct investment is still subject to various restrictions, such as that only the industries listed in the Positive List, as promulgated by the Executive Yuan, are legally permitted targets and that all the PRC persons who wish to make direct investments in R.O.C. are required to submit an “investment approval” application to the Investment Commission of the R.O.C. MOEA.

Exchange Controls

Taiwan's Foreign Exchange Control Statute and regulations provide that all foreign exchange transactions must be executed by banks designated to handle foreign exchange transactions by the Ministry of Finance and the CBC. Current regulations favor trade-related foreign exchange transactions. Consequently, foreign currency earned from exports of merchandise and services may now be retained and used freely by exporters. All foreign currency needed for the importation of merchandise and services may be purchased from the designated foreign exchange banks.

Aside from trade-related foreign exchange transactions, R.O.C. companies and residents may remit to and from Taiwan foreign currencies of up to US\$50 million (or its equivalent) and US\$5 million, (or its equivalent) respectively in each calendar year. These limits apply to remittances involving a conversion between NT dollars and U.S. dollars or other foreign currencies. A requirement is also imposed on all private enterprises to register all medium- and long-term foreign debt with the CBC.

In addition, foreign currency earned from or needed to be paid for direct investment or portfolio investments, which are approved by the competent authorities, may be retained or sold by the investors or purchased freely from the designated bank.

Aside from the transactions discussed above, a foreign person without an alien resident card (or who has relevant resident card with a validity of less than one year) or an unrecognized foreign entity may remit to and from Taiwan foreign currencies of up to US\$100,000 per remittance without obtaining prior approval or permit if required documentation is provided to Taiwan authorities. This limit applies to remittances involving a conversion between NT dollars and U.S. dollars or other foreign currencies.

Depository Receipts

In April 1992, the R.O.C. SFB (the predecessor of the R.O.C. FSC) began allowing R.O.C. companies listed on the Taiwan Stock Exchange to sponsor the issuance and sale of depository receipts evidencing depository shares. Notifications for these issuances are still required. In December 1994, the Ministry of Finance began allowing companies whose shares are traded on the Taipei Exchange to sponsor the issuance and sale of depository receipts evidencing depository shares. On October 24, 2002, the R.O.C. SFB began allowing public companies that are not listed on the Taiwan Stock Exchange or the Taipei Exchange to sponsor the issuance and sale of depository receipts by way of private placements outside the R.O.C.

A holder of depository shares wishing to withdraw common shares underlying depository shares is required to appoint a local agent or representative with qualifications set forth by the R.O.C. FSC to, among other things, open a securities trading account with a local brokerage firm, pay R.O.C. taxes, remit funds, and exercise stockholders' right. In addition, the withdrawing holder is also required to appoint a custodian bank or a securities firm with qualifications set forth by the R.O.C. FSC to hold payments and the securities in safekeeping, make confirmations, settle trades and report all relevant information in which the securities firm is appointed as the custodian, and the payments be held in safekeeping in a special account opened in a bank approved by the R.O.C. FSC. Without making this appointment and the opening of accounts, the withdrawing holder would be unable to subsequently sell the common shares withdrawn from a depository receipt facility on either the Taiwan Stock Exchange or the Taipei Exchange.

After the issuance of a depository share, a holder of the depository share may immediately, comparing to a three-month waiting period restriction which was lifted in 2003, request the depository issuing the depository share to cause the underlying common shares to be sold in the R.O.C. or to withdraw the common shares represented by the depository receipt and deliver the common shares to the holder. On April 30, 2009 and July 3, 2009, the R.O.C. Executive Yuan approved the Regulations Governing Securities Investment and Futures Trading in Taiwan by Mainland Area Investors and the Regulations Governing Investment in Taiwan by Mainland Area Persons, respectively, under which qualified PRC persons are permitted to invest in Taiwan companies under limited circumstances, including purchase of the depository receipts issued by a Taiwan company. However, prior approval from the Investment Commission of the R.O.C. Ministry of Economic Affairs is required for a qualified PRC person's ownership of 10% or more of the issued and outstanding share capital of a listed R.O.C. company or certain other manners of investment by a qualified PRC person.

No deposits of common shares may be made in a depositary receipt facility and no depositary receipts may be issued against deposits without specific R.O.C. FSC approval, unless they are:

- (A) stock dividends;
- (B) free distributions of common shares;
- (C) due to the exercise by a holder of his or her preemptive rights in the event of capital increases for cash; or
- (D) permitted under the deposit agreement and the custody agreement, due to the direct purchase of common shares or purchase through the depositary in the domestic market or the surrender of common shares under the possession of investors and then delivery of such common shares to the custodian for deposit in the depositary receipt facility, provided that the total number of depositary receipts outstanding after an issuance cannot exceed the number of issued depositary shares previously approved by the R.O.C. FSC in connection with the offering plus any depositary shares issued pursuant to the events described in (A), (B) and (C) above. These issuances may only be made to the extent previously issued depositary shares have been withdrawn.

A depositary may convert New Taiwan dollars from the proceeds of the sale of common shares or cash distributions received into other currencies, including U.S. dollars. A depositary may be required to obtain foreign exchange approval from the CBC on a payment-by-payment basis for conversion into New Taiwan dollars of subscription payments for rights offerings or conversion into foreign currencies from the proceeds from the sale of subscription rights for new common shares. It is expected that the CBC will grant this approval as a routine matter.

A holder of depositary shares may convert NT dollars into other currencies from proceeds from the sale of any underlying common shares. Proceeds from the sale of the underlying common shares withdrawn from the depositary receipt facility may be used for reinvestment in securities listed on both the Taiwan Stock Exchange and the Taipei Exchange, provided that the investor designates a local securities firm or financial institution as agent to open an NT dollar bank account in advance.

E. Taxation

R.O.C. Tax Considerations

The following summarizes the principal R.O.C. tax consequences of owning and disposing of the ADSs or common shares to a holder of ADSs or common shares that is not a resident of the R.O.C. A foreign individual holder will be considered as not a resident of the R.O.C., or a non-R.O.C. resident, for the purposes of this section if he or she is not physically present in Taiwan for 183 days or more during any calendar year. An entity holder will be considered as not a resident of the R.O.C., or a non-R.O.C. resident, if it is organized under the laws of a jurisdiction other than Taiwan for profit making purpose and has no fixed place of business or other permanent establishment or business agent in the R.O.C. Prospective purchasers of ADSs or common shares should consult their own tax advisors concerning the tax consequences of owning ADSs or common shares in the R.O.C. and any other relevant taxing jurisdiction to which they are subject.

Dividends

Dividends, whether in cash or common shares, declared by us out of retained earnings and paid out to a holder that is not an R.O.C. resident in respect of common shares represented by ADSs are subject to R.O.C. withholding tax at the time of distribution. The rate of withholding is currently 21% of the amount of the distribution in the case of cash dividends or of the par value of the common shares distributed in the case of stock dividends. Under current practice adopted by tax authorities, a 21% withholding rate is applied to a non-R.O.C. resident ADS holder without requiring the holder to apply for or obtain foreign investment approval. As discussed in the section “—Tax Reform” below, certain of our retained earnings will be subject to a certain percentage of undistributed retained earnings tax. There is no withholding tax with respect to stock dividends declared out of our capital surplus of premiums from issuing stock resulting from the capital paid by the shareholders.

Capital Gains

The R.O.C. Income Tax Act was amended and promulgated on December 2, 2015 and took effect from January 1, 2016. According to the amended R.O.C. Income Tax Act, the provisions regarding the capital gain from securities transaction were deleted. Accordingly, under the R.O.C. law, gains realized on R.O.C. securities transactions are primarily exempt from income tax.

Subject to the AMT Act, gains realized from various securities transactions by an R.O.C.-resident entity shall be calculated as taxable income for the purpose of the AMT Act and may further be subject to income tax. If the above entity has held common shares for more than three (3) years, 50% of capital gain may be exempted from AMT. In addition, gains realized from transfers of ADSs by non-R.O.C. resident holders are not regarded as income from sources in the R.O.C. and, as a result, any gains derived therefrom are currently not subject to R.O.C. income tax.

Securities Transaction Tax

The R.O.C. government imposes a securities transaction tax that will apply to sales of common shares, but not to sales of ADSs. The securities transaction tax, which is payable by the seller, is generally levied on sales of common shares at the rate of 0.3% of the sales proceeds. Withdrawals of our common shares from our depositary facility are not subject to the R.O.C. securities transaction tax.

Preemptive Rights

Distribution of statutory preemptive rights for common shares by us in compliance with the R.O.C. Company Act is not subject to R.O.C. tax. Proceeds derived from sales of statutory preemptive rights evidenced by securities are subject to the R.O.C. securities transaction tax, currently at the rate of 0.3% of the gross amount received, as well as the R.O.C. securities income tax. Proceeds derived from sales of statutory preemptive rights that are not evidenced by securities are subject to capital gains tax at the rate of 20% of the gains realized for non-R.O.C. resident entities and non-R.O.C. resident individuals. Subject to compliance with the R.O.C. law, we have sole discretion to determine whether statutory preemptive rights are evidenced by securities or not.

Estate Taxation and Gift Tax

R.O.C. estate tax is payable on any property within the R.O.C. of a deceased individual who is a non-resident individual or a non-R.O.C. citizen and R.O.C. gift tax is payable on any property located within the R.O.C. donated by any such person. Under the newly amended Articles 13 and 19 of the R.O.C. Estate and Gift Tax Act, which became effective on May 12, 2017, tax brackets and rates of estate tax are as follows: (1) if the net taxable estate is no more than NT\$50,000,000, the tax rate shall be 10%; (2) if the net taxable estate is more than NT\$50,000,000 but no more than NT\$100,000,000, the estate tax payable shall be NT\$5,000,000 plus 15% for the amount in excess of NT\$50,000,000; and (3) if the net taxable estate is more than NT\$100,000,000, the estate tax payable shall be NT\$12,500,000 plus 20% for the amount in excess of NT\$100,000,000; tax brackets and rates of gift tax are as follows: (1) if the net taxable gifts are no more than NT\$25,000,000, the tax rate shall be 10%; (2) if the net taxable gifts are more than NT\$25,000,000 but no more than NT\$50,000,000, the gift tax payable shall be NT\$2,500,000 plus 15% for the amount in excess of NT\$25,000,000; and (3) if the net taxable gifts are more than NT\$50,000,000, the gift tax payable shall be NT\$6,250,000 plus 20% for the amount in excess of NT\$50,000,000. Under R.O.C. estate and gift tax laws, the common shares will be deemed located in the R.O.C. irrespective of the location of the owner. It is unclear whether a holder of ADSs will be considered to own common shares for this purpose.

Tax Treaties

The Republic of China does not have an income tax treaty with the United States. On the other hand, the Republic of China has income tax treaties with Indonesia, Singapore, South Africa, Australia, Vietnam, New Zealand, Malaysia, Macedonia, Swaziland, the Netherlands, the United Kingdom, Gambia, Senegal, Sweden, Belgium, Denmark, Israel, Paraguay, Hungary, France, India, Slovakia, Switzerland, Germany, Thailand, Kiribati, Luxembourg, Italy, Japan, Canada, Poland and Austria which may limit the rate of Republic of China withholding tax on dividends paid with respect to common shares in Taiwan companies. It is unclear whether a non-R.O.C. holder of ADSs will be considered to own common shares for the purposes of such treaties. Accordingly, a holder of ADSs who is otherwise entitled to the benefit of a treaty should consult its own tax advisors concerning eligibility for benefits under the treaty with respect to the ADSs.

Tax Reform

An amendment to the R.O.C. Income Tax law was enacted on January 1, 1998, to integrate the corporate income tax and the stockholder dividend tax with the aim of eliminating the double taxation effect for resident stockholders of Taiwanese corporations. In order to improve Taiwan's tax system and to keep up with the trend of international tax reform, the R.O.C. Income Tax law was further amended in 2018 to replace the old tax system which integrated the corporate income tax and the stockholder dividend tax. Except for limited exceptions, the amendment shall take effect retroactively from January 1, 2018.

Under this amendment, a 10% retained earnings tax will be imposed on a company for its after-tax earnings generated after January 1, 1998 that are not distributed in the following year; while a 5% retained earning tax will be imposed for after-tax earnings generated from January 2018. The retained earnings tax so paid will further reduce the retained earnings available for future distribution. Under the old tax system, when we declared dividends out of those retained earnings, up to a maximum amount of half of the amount of such tax of the declared dividends was credited against the withholding tax imposed on the non-R.O.C. resident holders of our ADSs or common shares; while from January 1, 2019, the benefit no longer exists and no retained earnings tax is credited.

U.S. Federal Income Tax Considerations for U.S. Persons

The following is a summary of certain U.S. federal income tax consequences for beneficial owners of our common shares or ADSs that hold the common shares or ADSs as capital assets and that are U.S. holders that are not citizens of the R.O.C., do not have a permanent establishment in the R.O.C. and are not physically present in the R.O.C. for 183 days or more within a calendar year. You are a U.S. holder if you are, for U.S. federal income tax purposes, any of the following:

- an individual citizen or resident of the United States;
- a corporation (or other entity or arrangement treated as a corporation for U.S. federal income tax purposes) created or organized in or under the laws of the United States, any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source;
- a trust that is subject to the primary supervision of a court within the United States and that has one or more U.S. persons with the authority to control all substantial decisions of the trust; or
- a trust that has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person.

This summary is based on the provisions of the Internal Revenue Code of 1986, as amended, or the Code, and regulations, rulings and judicial decisions thereunder as of the date hereof, and such authorities may be replaced, revoked or modified so as to result in U.S. federal income tax consequences different from those discussed below. It is for general purposes only and you should not consider it to be tax advice. In addition, it is based in part on representations by the depositary and assumes that each obligation under the deposit agreement and any related agreement will be performed in accordance with its terms. This summary does not represent a detailed description of all the U.S. federal income tax consequences to you in light of your particular circumstances and does not address the Medicare tax on net investment income or the effects of any state, local or non-U.S. tax laws (or other U.S. federal tax consequences, such as U.S. federal estate or gift tax consequences). In addition, it does not represent a detailed description of the U.S. federal income tax consequences applicable to you if you are subject to special treatment under the U.S. federal income tax laws, including if you are:

- a dealer in securities or currencies;
- a trader in securities if you elect to use a mark-to-market method of accounting for your securities holdings;
- a financial institution or an insurance company;
- a tax-exempt organization;
- a regulated investment company;
- a real estate investment trust;
- a person liable for alternative minimum tax;
- a person holding common shares or ADSs as part of a hedging, integrated or conversion transaction, constructive sale or straddle;
- a partnership or other pass-through entity for U.S. federal income tax purposes;
- a person owning, actually or constructively, 10% or more of our stock (by vote or value);
- a person required to accelerate the recognition of any item of gross income with respect to our common shares or ADSs as a result of such income being recognized on an applicable financial statement; or
- a U.S. holder whose “functional currency” is not the U.S. dollar.

We cannot assure you that a later change in law will not alter significantly the tax considerations that we describe in this summary.

If a partnership (or other entity or arrangement treated as a partnership for U.S. federal income tax purposes) holds our common shares or ADSs, the tax treatment of a partner will generally depend upon the status of the partner and the activities of the partnership. If you are a partner of a partnership holding our common shares or ADSs, you should consult your tax advisor.

You should consult your own tax advisor concerning the particular U.S. federal income tax consequences to you of the ownership and disposition of the common shares or ADSs, as well as the consequences to you arising under the laws of any other taxing jurisdiction.

In general, for U.S. federal income tax purposes, a U.S. person who is the beneficial owner of an ADS will be treated as the owner of the common shares underlying its ADS. Accordingly, deposits or withdrawals of common shares by U.S. holders for ADSs generally will not be subject to U.S. federal income tax.

Taxation of Dividends

Except as discussed below with respect to the passive foreign investment company rules, the amount of distributions (including net amounts withheld in respect of R.O.C. withholding taxes) you receive on your common shares or ADSs (other than certain pro rata distributions of common shares to all stockholders) will generally be treated as dividend income to you if the distributions are made from our current and accumulated earnings and profits as calculated according to U.S. federal income tax principles. In determining the net amounts withheld in respect of R.O.C. taxes, any reduction in the amount withheld on account of an R.O.C. credit in respect of the retained earnings tax imposed on us is not considered a withholding tax and will not be treated as distributed to you or creditable by you against your U.S. federal income tax. Such income (including withheld taxes) will be includible in your gross income as ordinary income on the day you actually or constructively receive it, which in the case of an ADS will be the date actually or constructively received by the depository. The amount of any distribution of property other than cash will be the fair market value of such property on the date it is distributed. You will not be entitled to claim a dividend received deduction with respect to distributions you receive from us.

With respect to non-corporate U.S. holders (including individuals), certain dividends received from a qualified foreign corporation may be subject to reduced rates of taxation. A foreign corporation is treated as a qualified foreign corporation with respect to dividends paid by that corporation on common shares (or ADSs backed by such common shares) that are readily tradable on an established securities market in the United States. U.S. Treasury Department guidance indicates that our ADSs (which are listed on the NYSE), but not our common shares, are readily tradable on an established securities market in the United States. Thus, subject to the discussion below with respect to the passive foreign investment company rules, we believe that dividends we pay on our ADSs will meet the conditions required for these reduced tax rates. Since we do not expect that our common shares will be listed on an established securities market in the United States, we do not believe that dividends we pay on our common shares that are not represented by ADSs currently meet the conditions required for these reduced tax rates. Moreover, there can be no assurance that our ADSs will continue to be readily tradable on an established securities market in later years. Non-corporate U.S. holders that do not meet a minimum holding period requirement during which they are not protected from the risk of loss or that elect to treat the dividend income as “investment income” pursuant to Section 163(d) (4) of the Code will not be eligible for the reduced rates of taxation regardless of our status as a qualified foreign corporation. In addition, the rate reduction will not apply to dividends if the recipient of a dividend is obligated to make related payments with respect to positions in substantially similar or related property. This disallowance applies even if the minimum holding period has been met. Non-corporate U.S. holders will also not be eligible for the reduced rates of taxation on dividends if we are a passive foreign investment company in the taxable year in which such dividends are paid or in the preceding taxable year. U.S. holders should consult their own tax advisors regarding the application of these rules given their particular circumstances.

The amount of any dividend paid in NT dollars will equal the U.S. dollar value of the NT dollars you receive (calculated by reference to the exchange rate in effect on the date you actually or constructively receive the dividend, which in the case of an ADS will be the date actually or constructively received by the depository), regardless of whether the NT dollars are actually converted into U.S. dollars. If the NT dollars received as a dividend are converted into U.S. dollars on the date they are actually or constructively received, you generally will not be required to recognize foreign currency gain or loss in respect of the dividend income. If the NT dollars received as a dividend are not converted into U.S. dollars on the date of receipt, you will have a basis in the NT dollars equal to their U.S. dollar value on the date of receipt. Any gain or loss you realize if you subsequently sell or otherwise dispose of the NT dollars will be ordinary income or loss from sources within the United States for foreign tax credit limitation purposes.

Subject to certain limitations under the Code, you may be entitled to a credit or deduction against your U.S. federal income taxes for the net amount of any R.O.C. taxes that are withheld from dividend distributions made to you. The election to receive a credit or deduction must be made annually, and applies to all foreign taxes for the applicable tax year. The limitation on foreign taxes eligible for credit is calculated separately with respect to specific classes of income. For this purpose, dividends we pay with respect to common shares or ADS will generally be considered passive category income from sources outside the United States. Furthermore, you will not be allowed a foreign tax credit for foreign taxes imposed on dividends paid on common shares or ADSs if you (1) have held the common shares or ADSs for less than a specified minimum period during which you are not protected from risk of loss, or (2) are obligated to make payments related to the dividends. The rules governing the foreign tax credit are complex. We therefore urge you to consult your tax advisors regarding the availability of the foreign tax credit under your particular circumstances.

To the extent that the amount of any distribution you receive exceeds our current and accumulated earnings and profits for a taxable year, as determined under U.S. federal income tax principles, the distribution will first be treated as a tax-free return of capital, causing a reduction in your adjusted basis in the common shares or ADSs and thereby increasing the amount of gain, or decreasing the amount of loss, you will recognize on a subsequent disposition of the common shares or ADSs. The balance in excess of adjusted basis, if any, will be taxable to you as capital gain recognized on a sale or exchange. However, we do not expect to keep earnings and profits in accordance with U.S. federal income tax principles. Therefore, you should expect that a distribution will generally be treated as a dividend (as discussed above).

It is possible that pro rata distributions of common shares or ADSs to all stockholders may be made in a manner that is not subject to U.S. federal income tax. In the event that such distributions are tax-free, the basis of any new common shares or ADSs so received will generally be determined by allocating the U.S. holder's basis in the old common shares or ADSs between the old common shares or ADSs and the new common shares or ADSs, based on their relative fair market values on the date of distribution. For U.S. federal income tax purposes, any such tax-free share or ADS distribution generally would not result in foreign source income to you. Consequently, you may not be able to use the foreign tax credit associated with any R.O.C. withholding tax imposed on such distributions unless you can use the credit against U.S. federal income tax due on other foreign source income in the appropriate category for foreign tax credit purposes. You should consult your own tax advisors regarding all aspects of the foreign tax credit.

Taxation of Capital Gains

Except as discussed below with respect to the passive foreign investment company rules, when you sell or otherwise dispose of your common shares or ADSs, you will generally recognize capital gain or loss in an amount equal to the difference between the U.S. dollar value of the amount realized for the common shares or ADSs and your basis in the common shares or ADSs, determined in U.S. dollars. If you are an individual or other non-corporate holder, and the common shares or ADSs being sold or otherwise disposed of are capital assets that you have held for more than one year, your gain recognized will be eligible for reduced rates of taxation. Your ability to deduct capital losses is subject to limitations. Any gain or loss you recognize will generally be treated as U.S. source gain or loss for foreign tax credit limitation purposes. Consequently, you may not be able to use the foreign tax credit arising from any R.O.C. tax imposed on the disposition of common shares or ADSs unless such credit can be applied (subject to applicable limitations) against tax due on other income treated as derived from foreign sources.

If you pay any R.O.C. securities transaction tax, such tax is not treated as an income tax for U.S. federal income tax purposes, and therefore will not be a creditable foreign tax for U.S. federal income tax purposes. However, subject to limitations under the Code, such tax may be deductible. You are urged to consult your tax advisors regarding the U.S. federal income tax consequences of these taxes.

Passive Foreign Investment Company

Based on the composition of our income and assets, and the valuation of our assets, we do not believe that we are currently (or that we were in 2018) a passive foreign investment company, or PFIC, and we do not expect to become one in the future, although there can be no assurance in this regard.

In general, a company is considered a PFIC for any taxable year if either:

- at least 75% of its gross income is passive income, which generally includes income derived from certain dividends, interest, royalties and rents (other than royalties and rents derived in the active conduct of a trade or business and not derived from a related person), annuities or property transactions; or

- at least 50% of the value of its assets is attributable to assets that produce or are held for the production of passive income.

The 50% of value test is based on the average of the value of our assets for each quarter during the taxable year. If we own at least 25% by value of another company's stock, we will be treated, for purposes of the PFIC rules, as owning our proportionate share of the assets and receiving our proportionate share of the income of that company.

In addition, the determination of whether we are a PFIC is made annually. Accordingly, it is possible that we may become a PFIC in the current or any future taxable year due to changes in our asset or income composition. A decrease in the price of our common shares and ADSs may also result in our becoming a PFIC. If we are a PFIC for any taxable year during which you hold common shares or ADSs, you will be subject to special tax rules discussed below.

If we are a PFIC for any taxable year during which you hold common shares or ADSs and you do not make a timely mark-to-market election as described below, you will be subject to special tax rules with respect to any "excess distribution" that you receive and any gain you realize from a sale or other disposition (including a pledge) of common shares or ADSs. Distributions you receive in a taxable year that are greater than 125% of the average annual distributions you received during the shorter of the three preceding taxable years or your holding period for the common shares or ADSs will be treated as excess distributions. Under these special tax rules:

- the excess distribution or gain will be allocated ratably over your holding period for the common shares or ADSs;
- the amount allocated to the current taxable year, and any taxable year prior to the first taxable year in which we were a PFIC, will be treated as ordinary income; and
- the amount allocated to each other year will be subject to tax at the highest tax rate in effect for that year and the interest charge generally applicable to underpayments of tax will be imposed on the resulting tax attributable to each such year.

If you hold common shares or ADSs in any year in which we are a PFIC, you are generally required to file Internal Revenue Service Form 8621.

If we are a PFIC for any taxable year and any of our non-U.S. subsidiaries is also a PFIC, you would be treated as owning a proportionate amount (by value) of the common shares of the lower-tier PFIC for purposes of the application of these rules. You are urged to consult your tax advisors about the application of the PFIC rules to any of our subsidiaries.

Under certain circumstances, a U.S. holder, in lieu of being subject to the rules discussed above with respect to excess distributions and recognized gains, may make an election to include gain on the stock of a PFIC as ordinary income under a mark-to-market method provided that such stock is regularly traded on a qualified exchange (within the meaning of the applicable Treasury regulations). Under this method, any difference between the stock's fair market value and its adjusted basis at the end of the year is accounted for by either an inclusion in income or, subject to limitations, a deduction from income, as described below. Under current U.S. Treasury Department guidance, the mark-to-market election may be available to holders of ADSs because the ADSs are listed on the NYSE, which constitutes a qualified exchange, although there can be no assurance that the ADSs will be "regularly traded" for purposes of the mark-to-market election. You should also note that only the ADSs and not the common shares are listed on the NYSE. Our common shares are listed on the Taiwan Stock Exchange, which must meet certain trading, listing, financial disclosure and other requirements to be treated as a qualified exchange under applicable U.S. Treasury regulations for purposes of the mark-to-market election, and no assurance can be given that the common shares will be "regularly traded" for purposes of the mark-to-market election.

If you make an effective mark-to-market election, you will include in income each year that we are a PFIC as ordinary income the excess of the fair market value of your common shares or ADSs at the end of the year over your adjusted tax basis in the common shares or ADSs. You will be entitled to deduct as an ordinary loss in each such year the excess of your adjusted tax basis in the common shares or ADSs over their fair market value at the end of the year, but only to the extent of the net amount previously included in income as a result of the mark-to-market election. If you make an effective mark-to-market election, in each year that we are a PFIC any gain you recognize upon the sale or other disposition of your common shares or ADSs will be treated as ordinary income and any loss will be treated as ordinary loss, but only to the extent of the net amount of previously included income as a result of the mark-to-market election.

Your adjusted tax basis in common shares or ADSs will be increased by the amount of any income inclusion and decreased by the amount of any deductions under the mark-to-market rules. If you make a mark-to-market election it will be effective for the taxable year for which the election is made and all subsequent taxable years unless the common shares or ADSs are no longer regularly traded on a qualified exchange or the Internal Revenue Service consents to the revocation of the election. You should consult your tax advisors about the availability of the mark-to-market election, and whether making the election would be advisable under your particular circumstances.

Alternatively, a U.S. holder of common shares or ADSs in a PFIC can sometimes avoid the rules described above by electing to treat the PFIC as a “qualified electing fund” under Section 1295 of the Code. This option is not available to you because we do not intend to comply with the requirements necessary to permit you to make this election.

Non-corporate U.S. holders will not be eligible for reduced rates of taxation on any dividends received from us if we are a PFIC in the taxable year in which such dividends are paid or in the preceding taxable year. You should consult your own tax advisors concerning the U.S. federal income tax consequences of holding common shares or ADSs if we are considered a PFIC in any taxable year.

Information Reporting and Backup Withholding

In general, unless you are an exempt recipient such as a corporation, information reporting will apply to dividends in respect of the common shares or ADSs and to the proceeds from the sale, exchange or other disposition of your common shares or ADSs that are paid to you within the United States (and in some cases, outside of the United States). Additionally, if you fail to provide your taxpayer identification number, or fail either to report in full dividend and interest income or to make the necessary certifications of your exempt status, you may be subject to backup withholding.

Backup withholding is not an additional tax and any amounts withheld under the backup withholding rules will be allowed as a refund or a credit against your U.S. federal income tax liability, provided you furnish the required information to the Internal Revenue Service.

F. Dividends and Paying Agents

Not applicable.

G. Statement by Experts

Not applicable.

H. Documents on Display

We have filed this annual report on Form 20-F, including exhibits, with the Securities and Exchange Commission. As allowed by the Securities and Exchange Commission, in Item 19 of this annual report, we incorporate by reference certain information we filed with the Securities and Exchange Commission. This means that we can disclose important information to you by referring you to another document filed separately with the Securities and Exchange Commission. The information incorporated by reference is considered to be part of this annual report.

You may read and copy this annual report, including the exhibits incorporated by reference in this annual report, at the Securities and Exchange Commission's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549 and at the Securities and Exchange Commission's regional offices in New York, New York and Chicago, Illinois. You can also request copies of this annual report, including the exhibits incorporated by reference in this annual report, upon payment of a duplicating fee, by writing information on the operation of the Securities and Exchange Commission's Public Reference Room.

The Securities and Exchange Commission also maintains a website at www.sec.gov that contains reports, proxy statements and other information regarding registrants that file electronically with the Securities and Exchange Commission. Our annual report and some of the other information submitted by us to the Securities and Exchange Commission may be accessed through this web site.

I. Subsidiary Information

Not applicable.

ITEM 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk is the risk of loss related to adverse changes in market prices, including interest rates and foreign exchange rates, of financial instruments. We are exposed to various types of market risks, including changes in interest rates and foreign currency exchange rates, in the normal course of business.

We use financial instruments, including variable rate debt and swaps and foreign exchange spot transactions, to manage risks associated with our interest rate and foreign currency exposures through a controlled program of risk management in accordance with established policies. These policies are reviewed and approved by our board of directors and stockholders' meeting. Our treasury operations are subject to internal audit on a regular basis. We do not hold or issue derivative financial instruments for speculatively purposes.

Since export sales are primarily conducted in U.S. dollars, we had U.S. dollar-denominated accounts receivable of US\$686 million as of December 31, 2018. As of the same date, we also had Japanese Yen-denominated accounts receivable of ¥2,054 million attributable to our Japanese operations and Renminbi-denominated accounts receivable of RMB¥507 million attributable to our China operations. We had U.S. dollar-, Japanese Yen- and Renminbi-denominated accounts payables of US\$115 million, ¥1,276 million and RMB¥219 million, respectively, as of December 31, 2018.

Our primary market risk exposures relate to interest rate movements on borrowings and exchange rate movements on foreign currency-denominated accounts receivable, capital expenditures relating to equipment used in manufacturing processes (including lithography, etching and chemical vapor deposition) and purchased primarily from Europe, Japan and the United States.

The following table provides information as of December 31, 2018 on our market risk sensitive financial instruments.

	As of December 31, 2018	
	Carrying Amount	Fair Amount
	(in NT\$ millions)	
Time Deposits: Non-Trading Purpose	51,460	51,460
Short-term Loans: Non-Trading Purpose	13,104	13,104
Bonds: Non-Trading Purpose	41,378	41,714
Long-term Loans: Non-Trading Purpose	30,826	30,826

Interest Rate Risk

Our major market risk exposure is changing interest rates. Our exposure to market risk for changes in interest rates relates primarily to our long-term debt obligations. We primarily enter into debt obligations to support general corporate purposes including capital expenditures and working capital needs.

The tables below provide information of UMC as of December 31, 2018 about our financial instruments that are sensitive to changes in interest rates, including debt obligations and certain assets. For debt obligations, the table presents principal cash flows and related weighted average interest rates by expected maturity dates. The information is presented in the currencies in which the instruments are denominated.

	Expected Maturity Dates					As of December 31, 2018	
	2019	2020	2021	2022	2023 and thereunder	Total	Fair Value
(in millions, except percentages)							
Time Deposits:							
Fixed Rate (US\$)	868.8					868.8	868.8
Average Interest Rate	2.53%					2.53%	2.53%
Fixed Rate (¥ JPY)							
Average Interest Rate							
Fixed Rate (RMB¥)	125.0					125.0	125.0
Average Interest Rate	1.94%					1.94%	1.94%
Fixed Rate (NT\$)	29,137.4					29,137.4	29,137.4
Average Interest Rate	0.43%					0.43%	0.43%
Short-term Loans:							
Variable Rate (US\$)	167.8					167.8	167.8
Average Interest Rate	3.36%					3.36%	3.36%
Variable Rate (NT\$)	292.9					292.9	292.9
Average Interest Rate	1.70%					1.70%	1.70%
Variable Rate (€)							
Average Interest Rate							
Variable Rate (¥ JPY)	2,065.7					2,065.7	2,065.7
Average Interest Rate	1.04%					1.04%	1.04%
Unsecured Long-term Loans:							
Variable Rate (NT\$)	1,081.7	333.3	333.3			1,748.0	1,748.0
Average Interest Rate	1.96%	1.07%	1.07%			1.62%	1.62%
Fixed Rate (NT\$)							
Average Interest Rate							
Secured Long-term Loans:							
Variable Rate (NT\$)	16.0	15.0	14.0	16.0	36.0	92.0	92.0
Average Interest Rate	1.76%	1.76%	1.76%	1.76%	1.76%	1.08%	1.08%
Variable Rate (RMB¥)							
Average Interest Rate							
Variable Rate (US\$)							
Average Interest Rate							
Bonds:							
Unsecured (NT\$)	2,500					2,500	2,511
Fixed Rate	1.63%					1.63%	1.63%
Unsecured (NT\$)		2,500				2,500	2,524
Fixed Rate		1.50%				1.50%	1.50%
Unsecured (NT\$)			2,000			2,000	1,999
Fixed Rate			1.70%			1.70%	1.70%
Unsecured (NT\$)					3,000	3,000	3,075
Fixed Rate					1.95%	1.95%	1.95%
Unsecured (NT\$)				6,200		6,200	6,245
Fixed Rate				1.15%		1.15%	1.15%
Unsecured (NT\$)					2,100	2,100	2,151
Fixed Rate					1.43%	1.43%	1.43%
Unsecured (NT\$)				2,000		2,000	2,000
Fixed Rate				0.94%		0.94%	0.94%
Unsecured (NT\$)					3,400	3,400	3,423
Fixed Rate					1.13%	1.13%	1.13%

Foreign Currency Risk

Although the majority of our transactions are in NT dollars, some transactions are based in other currencies. The primary foreign currency to which we are exposed is the U.S. dollar. We have in the past, and may in the future, enter into short-term, foreign currency forward contracts to hedge the impact of foreign currency fluctuations on certain underlying assets, liabilities, and firm commitments for operating expenses and capital expenditures denominated in U.S. dollars and other foreign currencies. The purpose of entering into these hedges is to minimize the impact of foreign currency fluctuations on the results of operations. We use the policy of natural hedging to reduce our foreign exchange exposure arising out of changes in the rates of exchange among the U.S. dollar and other foreign currencies. As a general matter, our natural hedging strategy relies on matching revenues and costs for the same currency or offsetting losses in one currency with gains in another.

As of December 31, 2018, we had US\$28 million outstanding in foreign currency forward contracts to sell U.S. dollars against NT dollars, respectively.

	Expected Maturity Dates					As of December 31, 2018	
	2019	2020	2021	2022	2023 and thereunder	Total	Fair Value
(in millions, except exchange rates)							
Foreign Currency Forward Contracts:							
Sell US\$ against NT\$	US\$	28	—	—	—	US\$ 28	NT\$ 4
Contract Amount							
Average Contractual Exchange Rate	US\$1=NT\$30.843	—	—	—	—	US\$1=NT\$30.843	—

We believe that we did not have material market risks as of December 31, 2018.

ITEM 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

A. Debt Securities

Not applicable.

B. Warrants and Rights

Not applicable.

C. Other Securities

Not applicable.

D. American Depositary Shares

Depositary Fees and Charges

Under the terms of the deposit agreement for our ADSs, an ADS holder may have to pay the following service fees to the depositary:

Service	Fees
Issuance of ADSs	Up to US\$0.05 per ADS issued
Cancellation of ADSs	Up to US\$0.05 per ADS canceled
Distribution of cash dividends or other cash distributions	Up to US\$0.05 per ADS held
Distribution of ADSs pursuant to stock dividends, free stock distributions or exercises of rights	Up to US\$0.05 per ADS held
Distribution of securities other than ADSs or rights to purchase additional ADSs	Up to US\$0.05 per ADS held

In addition, an ADS holder shall be responsible for the following charges:

- taxes (including applicable interest and penalties) and other governmental charges;
- such registration fees as may from time to time be in effect for the registration of common shares or other deposited securities on the share register and applicable to transfers of common shares or other deposited securities to or from the name of the custodian, the depositary or any nominees upon the making of deposits and withdrawals, respectively;
- such cable, telex and facsimile transmission and delivery expenses as are expressly provided in the deposit agreement to be at the expense of ADS holders and beneficial owners of ADSs;
- the expenses and charges incurred by the depositary in the conversion of foreign currency;
- such fees and expenses as are incurred by the depositary in connection with compliance with exchange control regulations and other regulatory requirements applicable to common shares, deposited securities, ADSs and ADRs;
- the fees and expenses incurred by the depositary, the custodian or any nominee in connection with the servicing or delivery of deposited securities; and
- Depositary fees payable upon the issuance and cancellation of ADSs are typically paid to the depositary by the brokers (on behalf of their clients) receiving the newly-issued ADSs from the depositary and by the brokers (on behalf of their clients) delivering the ADSs to the depositary for cancellation. The brokers in turn charge these transaction fees to their clients.

Depositary fees payable in connection with distributions of cash or securities to ADS holders and the depositary services fee are charged by the depositary to the holders of record of ADSs as of the applicable ADS record date. The depositary fees payable for cash distributions are generally deducted from the cash being distributed. In the case of distributions other than cash (i.e., stock dividends, rights offerings), the depositary charges the applicable fee to the ADS record date holders concurrent with the distribution. In the case of ADSs registered in the name of the investor (whether certificated or un-certificated in direct registration), the depositary sends invoices to the applicable record date ADS holders. In the case of ADSs held in brokerage and custodian accounts via the central clearing and settlement system, The Depository Trust Company, or DTC, the depositary generally collects its fees through the systems provided by DTC (whose nominee is the registered holder of the ADSs held in DTC) from the brokers and custodians holding ADSs in their DTC accounts. The brokers and custodians who hold their clients' ADSs in DTC accounts in turn charge their clients' accounts the amount of the fees paid to the depositary.

In the event of refusal to pay the depositary fees, the depositary may, under the terms of the deposit agreement, refuse the requested service until payment is received or may set off the amount of the depositary fees from any distribution to be made to the ADS holder.

The fees and charges ADS holders may be required to pay may vary over time and may be changed by us and by the depositary. ADS holders will receive prior notice of such changes.

Depository Payments

In 2018, we received the following payments from JPMorgan Chase & Co., the depository for our ADR program through December 31, 2018.

Service	Fees (US\$)
Reimbursement of listing fees	110,728.80
Reimbursement of U.S. SEC filing fees	89,096.70
Reimbursement of accounting supporting fees for FASB and Public Company Accounting Oversight Board	1,680.00
Reimbursement of annual ordinary stockholders' meeting expenses	0.00
Reimbursement of fees in connection with annual financial and Sarbanes-Oxley Act of 2002 audit	730,601.84
Contribution to our company's investor relations efforts	34,908.56
Others	0.00
Total	<u>967,015.90</u>

PART II.

ITEM 13. DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

None of these events occurred in any of 2016, 2017 and 2018.

ITEM 14. MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS

None.

ITEM 15. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

As of December 31, 2018, an evaluation has been carried out under the supervision and with the participation of our management, including our Co-presidents and our Chief Financial Officer, of the effectiveness of our disclosure controls and procedures, as such term is defined under Rules 13a-15(e) and 15d-15(e) promulgated under the Securities Exchange Act of 1934, as amended. Based on that evaluation, our Co-presidents and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of December 31, 2018.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934, as amended, for our company. A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with International Financial Reporting Standards as issued by International Accounting Standards Board.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

As required by Section 404 of the Sarbanes-Oxley Act of 2002 and related rules as promulgated by the Securities and Exchange Commission, our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018 using the criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), or the COSO criteria. Based on this assessment, our management concluded that our internal control over financial reporting was effective as of December 31, 2018 based on the COSO criteria. Our independent registered public accounting firm, Ernst & Young has issued an attestation report with unqualified opinion on the effectiveness of our internal control over financial reporting as of December 31, 2018, which is included immediately following this report.

Attestation Report of the Independent Registered Public Accounting Firm

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of United Microelectronics Corporation:

Opinion on Internal Control over Financial Reporting

We have audited United Microelectronics Corporation and subsidiaries' internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, United Microelectronics Corporation and subsidiaries (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2017 and 2018, the related consolidated statements of comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "consolidated financial statements") and our report dated April 25, 2019 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young
Taipei, Taiwan
Republic of China
April 25, 2018

ITEM 16.**ITEM 16A. AUDIT COMMITTEE FINANCIAL EXPERT**

Our board of directors has determined that Cheng-Li Huang and Wenyi Chu, two of our independent directors, qualify as audit committee financial experts as defined in Item 16A of Form 20-F and are independent in accordance with the applicable requirements of Rule 10A-3 of the Securities Exchange Act of 1934 requirement.

The U.S. Securities and Exchange Commission has indicated that the designation of Dr. Huang and Dr. Chu as the audit committee financial experts does not: (i) make Dr. Huang or Dr. Chu an “expert” for any purpose, including without limitation for purposes of Section 11 of the Securities Act of 1933, as amended, as a result of this designation; (ii) impose any duties, obligations or liability on Dr. Huang or Dr. Chu that are greater than those imposed on them as a member of the audit committee and our board of directors in the absence of such designation; or (iii) affect the duties, obligations or liability of any other member of the audit committee or our board of directors.

ITEM 16B. CODE OF ETHICS

We amended the Code of Ethics for Directors and Officers in June 2009, and the Employee Code of Conduct in October 2011. The Employee Code of Conduct, which is applicable to all employees, replaced the code of ethics filed with the Securities and Exchange Commission in our 2003 annual report on Form 20-F. We have also created a separate code of ethics applicable to our directors and officers. A copy of each of the Code of Ethics for Directors and Officers and the Employee Code of Conduct are displayed on our website at <http://www.umc.com/english/pdf/Code of Ethics.pdf> and <http://www.umc.com/english/pdf/Code of Conduct.pdf>, respectively. Stockholders may request a hard copy of the Code of Ethics for Directors and Officers and the Employee Code of Conduct free of charge. Please contact the investor relations department of our company at ir@umc.com.

ITEM 16C. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The following table sets forth the aggregate fees by categories specified below in connection with certain professional services rendered by Ernst & Young, our principal external auditors, for the years indicated.

	Years ended December 31,		
	2017	2018	
	NT\$	NT\$	US\$
	(in thousands)		
Audit Fees ⁽¹⁾	57,242	52,794	1,725
Audit-related Fees ⁽²⁾	1,153	1,283	42
Tax Fees ⁽³⁾	10,055	4,304	140
Total	<u>68,450</u>	<u>58,381</u>	<u>1,907</u>

- (1) Audit fees consist of fees associated with the annual audit, review of our quarterly financial statements, statutory audits and internal control review. They also include fees billed for those services that are normally provided by the independent accountants in connection with statutory and regulatory filings.
- (2) Audit-related fees consist of fees billed for assurance and services related to the performance of the audit or review of our financial statements but not described in footnote (1) above. These services include certification of our Singapore Branch to Singapore authorities and application for corporation registration.
- (3) Tax fees include fees billed for professional services rendered by Ernst & Young, primarily in connection with our tax compliance activities.

All audit and non-audit services performed by Ernst & Young were pre-approved by our audit committee. In certain circumstances, the audit committee delegates to one designated member to pre-approve such audit and non-audit services. Pre-approval by a designated member should be reported to the audit committee at its upcoming meeting.

ITEM 16D. EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

None.

ITEM 16E. PURCHASE OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

Since March 2004, we have from time to time announced plans, which were not binding on us, to buy back our common shares up to a certain amount on the Taiwan Stock Exchange. On May 11, 2016, we announced our 17th share buy-back plan since our board of directors resolved to purchase up to 200 million shares on the Taiwan Stock Exchange at a price between NT\$7.90 and NT\$18.70 per share during the period from May 12, 2016 to July 11, 2016. On March 7, 2018, we announced our 18th share buy-back plan after our board of directors resolved to purchase up to 200 million shares on the Taiwan Stock Exchange at a price between NT\$9.85 and NT\$21.30 per share during the period from March 8, 2018 to May 7, 2018. On November 5, 2018, we announced our 19th share buy-back plan since our board of directors resolved to purchase up to 300 million shares on the Taiwan Stock Exchange at a price between NT\$7.55 and NT\$20.80 per share during the period from November 6, 2018 to January 5, 2019. The table below sets forth the repurchases we made in the periods indicated.

Month	Total Number of Common Shares Purchased	Average Price Paid per Common Share (NT\$)	Total Number of Common Shares Purchased as Part of Publicly Announced Plans or Program	Maximum Number of Shares that May Yet be Purchased Under the Plans or Program
March 2018 (till March 8, 2018)	39,607,000	15.19	39,607,000	160,393,000
April 2018	117,923,000	15.58	157,530,000	42,470,000
May 2018 (till May 7, 2018)	42,470,000	16.26	200,000,000	—
November 2018 (from November 6, 2018)	141,000,000	11.01	141,000,000	159,000,000
December 2018	139,000,000	11.36	280,000,000	20,000,000
January 2019 (till January 5, 2019)	20,000,000	10.91	300,000,000	—

ITEM 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

Not applicable.

ITEM 16G. CORPORATE GOVERNANCE

As a R.O.C. company listed on the New York Stock Exchange, or NYSE, we are subject to the U.S. corporate governance rules to the extent that these rules are applicable to foreign private issuers. The following summary details the significant differences between our corporate governance practices and corporate governance standards for U.S. companies (i.e. non-foreign private issuers) under the NYSE listing standards.

The Legal Framework. In general, corporate governance principles for Taiwanese companies are set forth in the Company Act of the Republic of China, or the R.O.C. Company Act, the R.O.C. Securities Exchange Act and, to the extent they are listed on the Taiwan Stock Exchange, under listing rules of the Taiwan Stock Exchange. Corporate governance principles under provisions of R.O.C. law may differ in significant ways to corporate governance standards for U.S. companies listed on the NYSE. Committed to high standards of corporate governance, we have generally brought our corporate governance in line with U.S. regulations, including the formation of an audit committee. However, we have not adopted certain recommended NYSE corporate governance standards where such standards are contrary to R.O.C. laws or regulations or generally prevailing business practices in Taiwan.

Independent Board Members. Under the NYSE listing standards applicable to U.S. companies, independent directors must comprise a majority of the board of directors. We currently have four independent directors out of a total of eight directors on our board of directors. Our standards for determining director independence substantially comply with the NYSE listing standards, which include detailed tests for determining director independence. In addition, even though our independent directors meet in committee meetings of which they are committee members, we will not hold executive sessions of non-management directors. Such requirement is contrary to the R.O.C. Company Act.

Board Committees. Under the NYSE listing standards, companies are required to have a nominating/corporate governance committee, composed entirely of independent directors. In addition to identifying individuals qualified to become board members, the nominating/corporate committee must develop and recommend to the board a set of corporate governance principles. We recently established a nominating committee in December 2017, which consists of three of our independent directors. The nominating committee is expected to assist our board to constitute a nomination policy and succession plans of the directors and the executives. We currently do not have a corporate governance committee, as such committee is not required under R.O.C. requirements. Our board of directors is responsible for regularly reviewing our corporate governance standards and practices.

Under the NYSE listing standards, companies are required to have a compensation committee, composed entirely of independent directors. Under the R.O.C. Company Act, however, companies incorporated in the R.O.C. are not required to have a compensation committee with the same standards as the NYSE listing standards, but publicly listed companies in the R.O.C. must have a remuneration committee in accordance with the applicable laws and rules in the R.O.C. Since 2011, we have established a remuneration committee composed of all the independent directors and convened meetings accordance with the applicable laws and rules in the R.O.C. The remuneration committee is responsible for determining the form and amount of compensation for each of our directors and executive officers under our articles of incorporation and the remuneration committee charter. In addition to the compensation approved at the annual general meeting, in the event we have net income in any fiscal year, we will distribute 0.1% of our earnings after payment of all income taxes, deduction of any past losses and allocation of 10% of our net income for legal reserves, as remuneration to our directors pursuant to our articles of incorporation.

Equity Compensation Plans. The NYSE listing standards also require that a company's stockholders must approve equity compensation plans. Under the corresponding requirements in the R.O.C. Company Act and the R.O.C. Securities Exchange Act, stockholders' approval is required for the distribution of employee bonuses in the form of stock, while the board of directors has authority, subject to the approval of the R.O.C. Securities and Futures Bureau, to approve employee stock option plans and to grant options to employees pursuant to such plans and also has authority to approve share buy-back programs for the purpose of selling common shares so purchased to employees and the sale of such common shares to employees pursuant to such programs. We intend to follow only the R.O.C. requirements.

ITEM 16H. MINE SAFETY DISCLOSURE

Not applicable.

PART III.

FINANCIAL STATEMENTS

Not applicable.

ITEM 18. FINANCIAL STATEMENTS

The following is a list of the audited consolidated financial statements and report of independent registered public accounting firm included in this annual report beginning on page F-1.

<u>Consolidated Financial Statements of United Microelectronics Corporation and Subsidiaries</u>	Page F-1
<u>Report of Independent Registered Public Accounting Firm</u>	F-2
<u>Consolidated Balance Sheets as of December 31, 2017 and 2018</u>	F-3
<u>Consolidated Statements of Comprehensive Income for the years ended December 31, 2016, 2017 and 2018</u>	F-4
<u>Consolidated Statements of Changes in Equity for the years ended December 31, 2016, 2017 and 2018</u>	F-5
<u>Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2017 and 2018</u>	F-8
<u>Notes to the Consolidated Financial Statements</u>	F-10

ITEM 7. EXHIBITS

Exhibit Number	Description of Exhibits
1.1	<u>Articles of Incorporation of the Company as last amended on June 15, 2011⁽¹⁾</u>
2.1	<u>Amended and Restated Deposit Agreement by and among the Company, JPMorgan Chase Bank, N.A., as depositary, and the Holders and Beneficial Owners of American Depositary Shares evidenced by American Depositary Receipts issued thereunder dated as of October 21, 2009⁽²⁾</u>
2.2	<u>Form of Amendment No. 1 to the Amended and Restated Deposit Agreement among the Company, JPMorgan Chase Bank, N.A., as depositary, and the Holders and Beneficial Owners of American Depositary Shares evidenced by American Depositary Receipts issued thereunder⁽³⁾</u>
4.1	<u>Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, Ko-Kuan Section, No. 20-22, Hsinchu, Taiwan, R.O.C., the site of Fab 6A (in Chinese with English summary translation)⁽⁴⁾</u>
4.2	Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, third section of first phase, Hsinchu, Taiwan, R.O.C., the site of Fab 8A and United Tower (in Chinese with English summary translation) ^{(5)(P)}
4.3	Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, third section of first phase, Hsinchu, Taiwan, R.O.C., the site of Fab 8C (in Chinese with English summary translation) ^{(6)(P)}
4.4	Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, third section of first phase, Hsinchu, Taiwan, R.O.C., the site of Fab 8D (in Chinese with English summary translation) ^{(7)(P)}
4.5	Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, third section of second phase, Hsinchu, Taiwan, R.O.C., the site of Fab 8E (in Chinese with English summary translation) ^{(8)(P)}

Exhibit Number	Description of Exhibits
4.6	Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, Gin-Shan section, Hsinchu, Taiwan, R.O.C., the site of Fab 8F (in Chinese with English summary translation) ^{(9)(P)}
4.7	Lease Agreement with Southern Taiwan Science Park Administration in relation to government-owned land located at Tainan Science Park, Tainan, Taiwan, R.O.C., the site of Fab 12A (in Chinese with English summary translation) ^{(10)(P)}
4.8	<u>Merger Agreement, entered into as of February 26, 2004, between United Microelectronics Corporation and SiS Microelectronics Corporation (English Translation)⁽¹¹⁾</u>
4.9	<u>Lease Agreement with Hsinchu Science Park Administration in relation to government-owned land located at Hsinchu Science Park, Ko-Kuan section, Hsinchu, Taiwan, R.O.C., the site of Fab 8S (in Chinese with English summary translation)⁽¹²⁾</u>
4.10	<u>Lease Agreement with JTC Corporation in relation to land located at Pasir Ris Wafer Fab Park, Singapore, the site of Fab 12i (summary)⁽¹³⁾</u>
4.11	<u>Merger Agreement, entered into as of April 29, 2009, among United Microelectronics Corporation, Infoshine Technology Limited and Best Elite International Limited⁽¹⁴⁾</u>
*8.1	<u>List of Significant Subsidiaries of United Microelectronics Corporation</u>
11.1	<u>Code of Ethics for Directors and Officers⁽¹⁵⁾</u>
11.2	<u>Employee Code of Conduct⁽¹⁶⁾</u>
*12.1	<u>Certification of our Co-president pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
*12.2	<u>Certification of our Co-president pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
*12.3	<u>Certification of our Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
*13.1	<u>Certification of our Co-president pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
*13.2	<u>Certification of our Co-president pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
*13.3	<u>Certification of our Chief Financial Officer pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
*15.1	<u>Consent of Independent Registered Public Accounting Firm</u>
*101.INS	XBRL Instance Document
*101.SCH	XBRL Taxonomy Extension Schema Document
*101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
*101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
*101.LAB	XBRL Taxonomy Extension Label Linkbase Document
*101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.

- (1) Incorporated by reference to Exhibit 1.1 to Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2013 (File No. 001-15128) filed with the Commission on April 18, 2014.
- (2) Incorporated by reference to Exhibit (a) to the Registrant's Registration Statement on Form F-6 (File No. 333- 162437) filed with the Commission on October 13, 2009.
- (3) Incorporated by reference to Exhibit (a)(2) to the Registrant's Registration Statement on Form F-6 (File No. 333- 172990) filed with the Commission on April 12, 2017.
- (P) Paper exhibits

- (4) Incorporated by reference to Exhibit 4.1 to Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2006 (File No. 001-15128) filed with the Commission on May 9, 2007.
- (5) Incorporated by reference to Exhibit 10.7 to the Registrant's Registration Statement on Form F-1 (File No. 333-12444) filed with the Commission on August 28, 2000, as amended.
- (6) Incorporated by reference to Exhibit 10.8 to the Registrant's Registration Statement on Form F-1 (File No. 333-12444) filed with the Commission on August 28, 2000, as amended.
- (7) Incorporated by reference to Exhibit 10.9 to the Registrant's Registration Statement on Form F-1 (File No. 333-12444) filed with the Commission on August 28, 2000, as amended.
- (8) Incorporated by reference to Exhibit 10.10 to the Registrant's Registration Statement on Form F-1 (File No. 333-12444) filed with the Commission on August 28, 2000, as amended.
- (9) Incorporated by reference to Exhibit 10.11 to the Registrant's Registration Statement on F-1 (File No. 333-12444) filed with the Commission on August 28, 2000, as amended.
- (10) Incorporated by reference to Exhibit 10.12 to the Registrant's Registration Statement on F-1 (File No. 333-12444) filed with the Commission on August 28, 2000, as amended.
- (11) Incorporated by reference to Exhibit 4.8 to the Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2003 (File No. 1-15128) filed with the Commission on June 17, 2004.
- (12) Incorporated by reference to Exhibit 4.9 to Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2006 (File No. 001-15128) filed with the Commission on May 9, 2007.
- (13) Incorporated by reference to Exhibit 4.10 to Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2006 (File No. 001-15128) filed with the Commission on May 9, 2007.
- (14) Incorporated by reference to Exhibit 99.1 to the Form 6-K furnished to the Commission on May 8, 2009.
- (15) Incorporated by reference to Exhibit 99.1 to the Form 6-K furnished to the Commission on March 25, 2005.
- (16) Incorporated by reference to Exhibit 99.2 to the Form 6-K furnished to the Commission on May 26, 2006.

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

UNITED MICROELECTRONICS CORPORATION

By: /s/ CHITUNG LIU

Name: Chitung Liu

Title: Director, Chief Financial Officer and Vice President

Date: April 25, 2019

United Microelectronics Corporation and Subsidiaries

Consolidated Financial Statements for years ended December 31, 2016, 2017 and 2018

Together with Report of Independent Registered Public Accounting Firm

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of United Microelectronics Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of United Microelectronics Corporation and subsidiaries (the Company) as of December 31, 2017 and 2018, the related consolidated statements of comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company’s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated April 25, 2019 expressed an unqualified opinion thereon.

Adoption of New Accounting Standards

As discussed in Note 3 to the consolidated financial statements, the Company changed its method for accounting for revenue from contracts with customers using a modified retrospective approach and its method for accounting for the recognition and measurement of financial instruments in the year ended December 31, 2018.

Basis for Opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young

We have served as the Company’s auditor since 2000.

Taipei, Taiwan
Republic of China

April 25, 2019

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
As of December 31, 2017 and 2018
(Expressed in Thousands, Except for Par Value)

	Notes	As of December 31,		
		2017	2018	US\$
		NT\$	NT\$	US\$
Assets				
Current assets				
Cash and cash equivalents	4, 6(1), 6(27)	81,674,572	83,661,739	2,733,151
Financial assets at fair value through profit or loss, current	4, 5, 6(2), 11(7)	716,918	528,450	17,264
Contract assets, current	4, 6(19)	—	92,210	3,012
Notes receivable	4	6,283	118	4
Accounts receivable, net	4, 6(3), 6(27)	20,876,417	23,735,989	775,432
Accounts receivable-related parties, net	4, 7	91,065	138,912	4,538
Other receivables	4	1,175,307	708,432	23,144
Current tax assets	4	625,343	20,856	681
Inventories, net	4, 5, 6(4), 6(27)	18,257,500	18,203,119	594,679
Other current assets		15,854,553	14,103,607	460,752
Total current assets		139,277,958	141,193,432	4,612,657
Non-current assets				
Financial assets at fair value through profit or loss, noncurrent	4, 5, 6(2), 11(7)	191,005	11,555,847	377,519
Financial assets at fair value through other comprehensive income, noncurrent	4, 5, 6(5), 11(7)	—	11,585,477	378,487
Available-for-sale financial assets, noncurrent	4, 5, 6(6), 7, 11(7)	20,636,332	—	—
Financial assets measured at cost, noncurrent	4, 6(7)	2,218,472	—	—
Investments accounted for under the equity method	4, 6(8), 7	7,847,979	7,948,413	259,667
Property, plant and equipment	4, 5, 6(9), 6(27), 8	205,741,681	172,846,595	5,646,736
Intangible assets	4, 6(10), 7	3,787,509	2,991,804	97,740
Deferred tax assets	4, 5, 6(24)	6,116,129	6,795,796	222,012
Prepayment for equipment		286,090	661,402	21,607
Refundable deposits	8	1,903,041	2,757,399	90,082
Other noncurrent assets	8	3,126,024	4,261,064	139,205
Total non-current assets		251,854,262	221,403,797	7,233,055
Total assets		391,132,220	362,597,229	11,845,712
Liabilities and Equity				
Current liabilities				
Short-term loans	6(11), 6(26), 6(27)	25,445,540	13,103,808	428,089
Contract liabilities, current	4, 6(19)	—	932,371	30,460
Notes and accounts payable		6,535,570	6,801,745	222,207
Other payables	7	12,962,286	12,549,873	409,993
Payables on equipment		4,671,802	4,008,142	130,942
Current tax liabilities	4	4,851,694	2,059,172	67,271
Current portion of long-term liabilities	4, 6(12), 6(13), 6(26), 6(27), 8, 11(7)	27,363,822	5,121,396	167,311
Other current liabilities	6(15), 6(16), 6(26), 7	6,984,482	5,440,345	177,731
Total current liabilities		88,815,196	50,016,852	1,634,004
Non-current liabilities				
Bonds payable	4, 6(12), 6(26), 11(7)	23,675,861	38,878,947	1,270,139
Long-term loans	6(13), 6(26), 6(27), 8, 11(7)	29,643,284	28,204,054	921,400
Deferred tax liabilities	4, 5, 6(24)	2,327,223	1,979,509	64,669
Net defined benefit liabilities, noncurrent	4, 5, 6(14)	4,138,519	4,167,174	136,138
Guarantee deposits	6(26)	469,491	612,903	20,023
Other noncurrent liabilities	4, 6(15), 6(26), 9(6)	32,441,648	34,340,307	1,121,865
Total non-current liabilities		92,696,026	108,182,894	3,534,234
Total liabilities		181,511,222	158,199,746	5,168,238
Commitments and contingencies				
Equity attributable to the parent company				
Capital	4, 6(17)			
Common stock - NT\$10 par value		126,243,187	124,243,187	4,058,908
Authorized: 26,000,000 thousand shares				
Issued: 12,624,319 thousand shares as of December 31, 2017				
Issued: 12,424,319 thousand shares as of December 31, 2018				
Additional paid-in capital	4, 6(12), 6(17)			
Premiums		36,862,383	36,278,383	1,185,181
Treasury stock transactions		2,612,966	2,749,448	89,822
Transactions with noncontrolling interests		561,948	572,325	18,698
Share-based payment		—	178,401	5,828
Stock options - conversion right		1,572,121	1,515,297	49,503
Other		—	8,181	267
Retained earnings	6(17)			
Legal reserve		9,902,407	10,865,280	354,959
Unappropriated earnings		43,155,781	55,416,447	1,810,403
Other components of equity	4			
Exchange differences on translation of foreign operations		(5,689,210)	(5,681,389)	(185,606)
Unrealized gains or losses on financial assets measured at fair value through other comprehensive income		—	(8,379,834)	(273,761)
Unrealized gains or losses on available-for-sale financial assets		6,347,167	—	—
Gains or losses on hedging instruments		—	(2,058)	(67)
Treasury stock	4, 6(17), 6(18)	(12,904,560)	(13,832,953)	(451,910)
Total equity attributable to the parent company		208,664,190	203,930,715	6,662,225
Non-controlling interests	6(17), 6(27)	956,808	466,768	15,249
Total equity		209,620,998	204,397,483	6,677,474
Total liabilities and equity		391,132,220	362,597,229	11,845,712

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
For the years ended December 31, 2016, 2017 and 2018
(Expressed in Thousands, Except for Earnings per Share)

	Notes	For the years ended December 31,			
		2016	2017	2018	
		NT\$	NT\$	NT\$	US\$
Operating revenues	4, 6(19), 7, 12	147,870,124	149,284,706	151,252,571	4,941,280
Operating costs	4, 6(4), 6(14), 6(18), 6(20), 7, 12	(117,490,694)	(122,226,948)	(128,412,544)	(4,195,118)
Gross profit		<u>30,379,430</u>	<u>27,057,758</u>	<u>22,840,027</u>	<u>746,162</u>
Operating expenses	4, 6(3), 6(14), 6(18), 6(19), 6(20), 7, 12				
Sales and marketing expenses		(4,589,563)	(4,233,830)	(3,901,912)	(127,472)
General and administrative expenses		(5,800,810)	(4,239,713)	(4,940,906)	(161,415)
Research and development expenses		(13,532,356)	(13,669,589)	(13,025,139)	(425,519)
Expected credit losses		—	—	(409,237)	(13,369)
Subtotal		<u>(23,922,729)</u>	<u>(22,143,132)</u>	<u>(22,277,194)</u>	<u>(727,775)</u>
Net other operating income and expenses	4, 6(9), 6(15), 6(21), 12	(263,125)	1,653,695	5,116,884	167,164
Operating income		<u>6,193,576</u>	<u>6,568,321</u>	<u>5,679,717</u>	<u>185,551</u>
Non-operating income and expenses					
Other income	4	899,983	875,587	1,391,376	45,455
Other gains and losses	4, 6(22), 6(27), 7, 12	859,400	994,092	(1,128,290)	(36,860)
Finance costs	6(9), 6(22)	(1,414,303)	(2,495,162)	(2,851,225)	(93,147)
Share of profit or loss of associates and joint ventures	4, 6(8), 12	(315,666)	157,837	(616,665)	(20,146)
Bargain purchase gain in acquisition of additional shares of equity investees		—	5,130	—	—
Exchange gain, net	4, 11	—	1,565,905	—	—
Exchange loss, net	4, 11	(1,501,904)	—	(356,993)	(11,663)
Subtotal		<u>(1,472,490)</u>	<u>1,103,389</u>	<u>(3,561,797)</u>	<u>(116,361)</u>
Income from continuing operations before income tax		<u>4,721,086</u>	<u>7,671,710</u>	<u>2,117,920</u>	<u>69,190</u>
Income tax benefit (expense)	4, 5, 6(24), 12	<u>(552,524)</u>	<u>(992,481)</u>	<u>1,129,877</u>	<u>36,912</u>
Net income		<u>4,168,562</u>	<u>6,679,229</u>	<u>3,247,797</u>	<u>106,102</u>
Other comprehensive income (loss)	6(23)				
Items that will not be reclassified subsequently to profit or loss					
Remeasurements of defined benefit pension plans	4, 5, 6(14)	(75,893)	(184,186)	(55,060)	(1,799)
Unrealized gains or losses on financial assets at fair value through other comprehensive income		—	—	1,454,018	47,502
Gains or losses on hedging instruments which will not be reclassified subsequently to profit or loss	4	—	—	(2,572)	(84)
Share of other comprehensive income (loss) of associates and joint ventures which will not be reclassified subsequently to profit or loss		2,459	1,221	(103,319)	(3,375)
Income tax related to items that will not be reclassified subsequently	4, 5, 6(24)	12,899	31,311	(358,296)	(11,705)
Subtotal		<u>(60,535)</u>	<u>(151,654)</u>	<u>934,771</u>	<u>30,539</u>
Items that may be reclassified subsequently to profit or loss					
Exchange differences on translation of foreign operations		(1,815,947)	(5,975,203)	(47,009)	(1,536)
Unrealized gains or losses on available-for-sale financial assets		(1,969,636)	581,439	—	—
Share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss		(331,615)	706,977	(23,966)	(783)
Income tax related to items that may be reclassified subsequently	4, 5, 6(24)	153,662	23,908	(28,186)	(921)
Subtotal		<u>(3,963,536)</u>	<u>(4,662,879)</u>	<u>(99,161)</u>	<u>(3,240)</u>
Total other comprehensive income (loss), net of tax		<u>(4,024,071)</u>	<u>(4,814,533)</u>	<u>835,610</u>	<u>27,299</u>
Total comprehensive income		<u>144,491</u>	<u>1,864,696</u>	<u>4,083,407</u>	<u>133,401</u>
Net income attributable to:					
Stockholders of the parent		8,621,147	9,676,698	7,677,735	250,824
Non-controlling interests		(4,452,585)	(2,997,469)	(4,429,938)	(144,722)
		<u>4,168,562</u>	<u>6,679,229</u>	<u>3,247,797</u>	<u>106,102</u>
Total comprehensive income attributable to:					
Stockholders of the parent		4,629,394	4,973,766	8,617,239	281,517
Non-controlling interests		(4,484,903)	(3,109,070)	(4,533,832)	(148,116)
		<u>144,491</u>	<u>1,864,696</u>	<u>4,083,407</u>	<u>133,401</u>
Earnings per share (NTD)	4, 6(25)				
Earnings per share-basic		<u>0.71</u>	<u>0.81</u>	<u>0.65</u>	<u>0.02</u>
Earnings per share-diluted		<u>0.67</u>	<u>0.75</u>	<u>0.60</u>	<u>0.02</u>

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
For the year ended December 31, 2016
(Expressed in Thousands)

	Equity Attributable to the Parent Company									
	Capital		Retained Earnings		Other Components of Equity					
	Common Stock	Additional Paid-in Capital	Legal Reserve	Unappropriated Earnings	Exchange Differences on	Unrealized Gains or Losses on Available-for-Sale Financial Assets	Treasury Stock	Total	Non-Controlling Interests	Total Equity
					Translation of Foreign Operations					
	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$
Balance as of January 1, 2016	127,581,329	42,175,633	7,725,978	47,620,502	1,989,302	7,151,151	(11,418,313)	222,825,582	2,027,065	224,852,647
Appropriation and distribution of 2015 retained earnings										
Legal reserve	—	—	1,344,863	(1,344,863)	—	—	—	—	—	—
Cash dividends	—	—	—	(6,906,973)	—	—	—	(6,906,973)	—	(6,906,973)
Net income for the year ended December 31, 2016	—	—	—	8,621,147	—	—	—	8,621,147	(4,452,585)	4,168,562
Other comprehensive loss, net of tax for the year ended December 31, 2016	—	—	—	(60,535)	(1,907,749)	(2,023,469)	—	(3,991,753)	(32,318)	(4,024,071)
Total comprehensive income (loss)	—	—	—	8,560,612	(1,907,749)	(2,023,469)	—	4,629,394	(4,484,903)	144,491
Treasury stock acquired	—	—	—	—	—	—	(2,395,793)	(2,395,793)	—	(2,395,793)
Treasury stock cancelled	(1,338,142)	(164,220)	—	—	—	—	1,502,362	—	—	—
Share of changes in net assets of associates and joint ventures accounted for using equity method	—	1,050	—	—	—	—	—	1,050	—	1,050
Changes in subsidiaries' ownership	—	1,567	—	(572,454)	—	—	—	(570,887)	567,073	(3,814)
Adjustments due to reciprocal stockholdings held by subsidiaries and associates	—	113,833	—	—	—	—	(581,640)	(467,807)	—	(467,807)
Others	—	(501,757)	—	(3,828,164)	—	—	—	(4,329,921)	4,052,494	(277,427)
Balance as of December 31, 2016	126,243,187	41,626,106	9,070,841	43,528,660	81,553	5,127,682	(12,893,384)	212,784,645	2,161,729	214,946,374

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
For the year ended December 31, 2017
(Expressed in Thousands)

	Equity Attributable to the Parent Company									
	Capital		Retained Earnings		Other Components of Equity			Total	Non-Controlling Interests	Total Equity
	Common Stock	Additional Paid-in Capital	Legal Reserve	Unappropriated Earnings	Exchange Differences on Translation of Foreign Operations	Unrealized Gains or Losses on Available-for-Sale Financial Assets	Treasury Stock			
	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$
Balance as of January 1, 2017	126,243,187	41,626,106	9,070,841	43,528,660	81,553	5,127,682	(12,893,384)	212,784,645	2,161,729	214,946,374
Appropriation and distribution of 2016 retained earnings										
Legal reserve	—	—	831,566	(831,566)	—	—	—	—	—	—
Cash dividends	—	—	—	(6,112,159)	—	—	—	(6,112,159)	—	(6,112,159)
Net income for the year ended December 31, 2017	—	—	—	9,676,698	—	—	—	9,676,698	(2,997,469)	6,679,229
Other comprehensive income (loss), net of tax for the year ended December 31, 2017	—	—	—	(151,654)	(5,770,763)	1,219,485	—	(4,702,932)	(111,601)	(4,814,533)
Total comprehensive income (loss)	—	—	—	9,525,044	(5,770,763)	1,219,485	—	4,973,766	(3,109,070)	1,864,696
Share of changes in net assets of associates and joint ventures accounted for using equity method	—	(3,978)	—	—	—	—	—	(3,978)	—	(3,978)
Changes in subsidiaries' ownership	—	(134,050)	—	(909,241)	—	—	—	(1,043,291)	(999,151)	(2,042,442)
Adjustments due to reciprocal stockholdings held by subsidiaries and associates	—	121,340	—	—	—	—	(11,176)	110,164	—	110,164
Others	—	—	—	(2,044,957)	—	—	—	(2,044,957)	2,903,300	858,343
Balance as of December 31, 2017	<u>126,243,187</u>	<u>41,609,418</u>	<u>9,902,407</u>	<u>43,155,781</u>	<u>(5,689,210)</u>	<u>6,347,167</u>	<u>(12,904,560)</u>	<u>208,664,190</u>	<u>956,808</u>	<u>209,620,998</u>

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
For the year ended December 31, 2018
(Expressed in Thousands)

	Equity Attributable to the Parent Company											Non-Controlling Interests	Total Equity
	Capital		Retained Earnings		Other Components of Equity								
	Common Stock	Additional Paid-in Capital	Legal Reserve	Unappropriated Earnings	Exchange Differences on Translation of Foreign Operations	Unrealized Gains or Losses on Financial Assets Measured at Fair Value through Other Comprehensive Income	Unrealized Gains or Losses on Available-for-Sale Financial Assets	Gains or Losses on Hedging Instruments	Treasury Stock	Total			
											NT\$		
Balance as of January 1, 2018	126,243,187	41,609,418	9,902,407	43,155,781	(5,689,210)	—	6,347,167	—	(12,904,560)	208,664,190	956,808	209,620,998	
Impact of retroactive applications	—	—	—	17,065,856	3,088	(9,328,431)	(6,347,167)	—	—	1,393,346	1,597	1,394,943	
Adjusted balance as of January 1, 2018	126,243,187	41,609,418	9,902,407	60,221,637	(5,686,122)	(9,328,431)	—	—	(12,904,560)	210,057,536	958,405	211,015,941	
Appropriation and distribution of 2017 retained earnings													
Legal reserve	—	—	962,873	(962,873)	—	—	—	—	—	—	—	—	
Cash dividends	—	—	—	(8,557,023)	—	—	—	—	—	(8,557,023)	—	(8,557,023)	
Net income for the year ended December 31, 2018	—	—	—	7,677,735	—	—	—	—	—	7,677,735	(4,429,938)	3,247,797	
Other comprehensive income (loss), net of tax for the year ended December 31, 2018	—	—	—	(22,341)	4,733	959,170	—	(2,058)	—	939,504	(103,894)	835,610	
Total comprehensive income (loss)	—	—	—	7,655,394	4,733	959,170	—	(2,058)	—	8,617,239	(4,533,832)	4,083,407	
Share-based payment transaction	—	696,226	—	—	—	—	—	—	2,203,443	2,899,669	—	2,899,669	
Treasury stock acquired	—	—	—	—	—	—	—	—	—	(6,261,018)	—	(6,261,018)	
Treasury stock cancelled	(2,000,000)	(1,129,182)	—	—	—	—	—	—	3,129,182	—	—	—	
Share of changes in net assets of associates and joint ventures accounted for using equity method	—	10,338	—	10,573	—	(10,573)	—	—	—	10,338	—	10,338	
Disposal of subsidiaries	—	—	—	—	—	—	—	—	—	—	(7,074)	(7,074)	
Changes in subsidiaries' ownership	—	39	—	(475,311)	—	—	—	—	—	(475,272)	(278,613)	(753,885)	
Adjustments due to reciprocal stockholdings held by subsidiaries and associates	—	163,839	—	—	—	—	—	—	—	163,839	—	163,839	
Others	—	(48,643)	—	(2,475,950)	—	—	—	—	—	(2,524,593)	4,327,882	1,803,289	
Balance as of December 31, 2018	124,243,187	41,302,035	10,865,280	55,416,447	(5,681,389)	(8,379,834)	—	(2,058)	(13,832,953)	203,930,715	466,768	204,397,483	

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
For the years ended December 31, 2016, 2017 and 2018
(Expressed in Thousands)

	For the years ended December 31,			
	2016	2017	2018	
	NT\$	NT\$	NT\$	US\$
Cash flows from operating activities:				
Net income before tax	4,721,086	7,671,710	2,117,920	69,190
Adjustments to reconcile net income before tax to net cash provided by operating activities:				
Depreciation	49,691,035	50,965,120	49,948,589	1,631,773
Amortization	2,292,566	2,133,726	2,100,130	68,609
Expected credit losses	—	—	409,237	13,369
Bad debt expense (reversal)	125	(1,752)	—	—
Net (gain) loss of financial assets and liabilities at fair value through profit or loss	(150,770)	(598,270)	1,167,735	38,149
Interest expense	1,249,583	2,406,872	2,768,672	90,450
Interest income	(293,790)	(353,159)	(789,001)	(25,776)
Dividend income	(606,193)	(522,428)	(602,375)	(19,679)
Share-based payment	—	—	695,669	22,727
Share of loss (profit) of associates and joint ventures	315,666	(157,837)	616,665	20,146
Gain on disposal of property, plant and equipment	(73,014)	(82,397)	(136,743)	(4,467)
Gain on disposal of other assets	—	(6,601)	—	—
(Gain) loss on disposal of investments	(2,097,818)	(1,269,369)	19,286	630
Impairment loss on financial assets	785,345	950,335	—	—
Impairment loss on non-financial assets	1,292,229	—	46,225	1,510
Exchange loss (gain) on financial assets and liabilities	1,308,669	(2,432,098)	1,217,590	39,778
Bargain purchase gain in acquisition of additional shares of equity investees	—	(5,130)	—	—
Amortization of deferred government grants	(118,757)	(1,469,616)	(3,885,722)	(126,943)
Income and expense adjustments	53,594,876	49,557,396	53,575,957	1,750,276
Changes in operating assets and liabilities:				
Financial assets and liabilities at fair value through profit or loss	(100)	520,335	789,666	25,798
Contract assets	—	—	(357,515)	(11,680)
Notes receivable and accounts receivable	(3,690,072)	1,587,562	(1,382,668)	(45,170)
Other receivables	(366,675)	(261,834)	618,317	20,200
Inventories	517,760	(1,565,132)	(46,497)	(1,519)
Other current assets	(8,640,111)	(4,397,764)	743,519	24,290
Contract fulfillment costs	—	—	(448,933)	(14,666)
Contract liabilities	—	—	(3,020,517)	(98,677)
Notes and accounts payable	933,164	(185,907)	257,044	8,397
Other payables	370,635	727,300	(332,290)	(10,856)
Other current liabilities	1,397,687	1,803,309	215,062	7,026
Net defined benefit liabilities	2,200	(14,562)	(26,405)	(863)
Other noncurrent liabilities	(149,637)	(209,250)	—	—
Cash generated from operations	48,690,813	55,233,163	52,702,660	1,721,746
Interest received	303,631	329,194	666,774	21,783
Dividend received	794,484	584,612	782,157	25,553
Interest paid	(1,016,329)	(1,905,718)	(2,221,301)	(72,568)
Income tax paid	(2,322,102)	(1,766,856)	(995,314)	(32,516)
Net cash provided by operating activities	46,450,497	52,474,395	50,934,976	1,663,998
Cash flows from investing activities:				
Acquisition of financial assets at fair value through profit or loss	(246,624)	(138,022)	(593,563)	(19,391)
Proceeds from disposal of financial assets at fair value through profit or loss	167,580	18,789	1,061	35
Acquisition of available-for-sale financial assets	(322,177)	(998,216)	—	—
Proceeds from disposal of available-for-sale financial assets	3,626,315	2,159,636	—	—
Acquisition of financial assets measured at cost	(81,517)	(14,419)	—	—
Proceeds from disposal of financial assets measured at cost	575,860	361	—	—
Acquisition of investments accounted for under the equity method	(840,000)	(204,280)	(840,000)	(27,442)
Increase in prepayment for investments	—	(17,200)	—	—
Proceeds from capital reduction and liquidation of investments	221,646	2,101,791	61,800	2,019
Disposal of subsidiaries	—	—	(9,813)	(321)
Derecognition of hedging financial assets and liabilities	—	—	(2,572)	(84)
Acquisition of property, plant and equipment	(91,560,639)	(44,236,276)	(19,590,075)	(639,989)
Proceeds from disposal of property, plant and equipment	77,607	119,613	200,991	6,566
Increase in refundable deposits	(826,845)	(109,627)	(1,674,984)	(54,720)
Decrease in refundable deposits	1,138,869	424,706	691,807	22,601
Acquisition of intangible assets	(1,554,251)	(1,283,938)	(838,675)	(27,399)
Government grants related to assets acquisition	9,566,327	6,755,920	7,129,770	232,923
Increase in other noncurrent assets	(572,209)	(30,294)	(36,440)	(1,190)
Decrease in other noncurrent assets	544,186	35,864	1,090	35
Net cash used in investing activities	(80,085,872)	(35,415,592)	(15,499,603)	(506,357)

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
For the years ended December 31, 2016, 2017 and 2018
(Expressed in Thousands)

	For the years ended December 31,			
	2016	2017	2018	
	NT\$	NT\$	NT\$	US\$
Cash flows from financing activities:				
Increase in short-term loans	48,085,068	48,804,321	22,021,005	719,406
Decrease in short-term loans	(32,955,646)	(42,925,604)	(34,309,253)	(1,120,851)
Proceeds from bonds issued	—	13,700,000	—	—
Bonds issuance costs	—	(15,785)	—	—
Redemption of bonds	—	(7,500,000)	(7,500,000)	(245,018)
Proceeds from long-term loans	24,628,607	12,000,708	758,500	24,779
Repayments of long-term loans	(7,624,030)	(7,602,596)	(2,638,697)	(86,204)
Increase in guarantee deposits	9,290	194,555	213,432	6,973
Decrease in guarantee deposits	(19,524)	(84,192)	(125,301)	(4,094)
Increase in other financial liabilities	15,979,088	—	—	—
Cash dividends	(6,906,726)	(6,103,195)	(8,557,684)	(279,572)
Treasury stock acquired	(2,395,793)	—	(6,148,273)	(200,858)
Treasury stock sold to employees	—	—	2,204,000	72,003
Acquisition of non-controlling interests	(5,028)	(1,308,614)	—	—
Change in non-controlling interests	183	1,994	597,385	19,516
Net cash provided by (used in) financing activities	<u>38,795,489</u>	<u>9,161,592</u>	<u>(33,484,886)</u>	<u>(1,093,920)</u>
Effect of exchange rate changes on cash and cash equivalents	(871,566)	(2,124,804)	36,680	1,198
Net increase in cash and cash equivalents	4,288,548	24,095,591	1,987,167	64,919
Cash and cash equivalents at beginning of year	<u>53,290,433</u>	<u>57,578,981</u>	<u>81,674,572</u>	<u>2,668,232</u>
Cash and cash equivalents at end of year	<u><u>57,578,981</u></u>	<u><u>81,674,572</u></u>	<u><u>83,661,739</u></u>	<u><u>2,733,151</u></u>

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

UNITED MICROELECTRONICS CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Expressed in Thousands of New Taiwan Dollars unless Otherwise Specified)

1. HISTORY AND ORGANIZATION

United Microelectronics Corporation (UMC) was incorporated in Republic of China (R.O.C.) in May 1980 and commenced operations in April 1982. UMC is a full service semiconductor wafer foundry, and provides a variety of services to satisfy customer needs. UMC's ordinary shares were publicly listed on the Taiwan Stock Exchange (TWSE) in July 1985 and its American Depositary Shares (ADSs) were listed on the New York Stock Exchange (NYSE) in September 2000.

The address of its registered office and principal place of business is No. 3, Li-Hsin Road II, Hsinchu Science Park, Hsinchu City, Taiwan. The principal operating activities of UMC and its subsidiaries (collectively as "the Company") are described in Notes 4(3) and 12.

2. DATE AND PROCEDURES OF AUTHORIZATION OF FINANCIAL STATEMENTS FOR ISSUE

The consolidated financial statements of the Company were approved and authorized for issue by the audit committee of the Board of Directors on April 24, 2019.

3. NEW ACCOUNTING PRONOUNCEMENT UNDER INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRSs)

A. The Company applied International Financial Reporting Standards, International Accounting Standards, and Interpretations issued, revised or amended which have been issued by the International Accounting Standards Board (IASB) and become effective for annual periods beginning on or after January 1, 2018. Apart from the impact of the standards and interpretations which is described below, all other standards and interpretations have no material impact on the Company's financial position and performance.

(1) IFRS 9 "Financial Instruments" (IFRS 9)

IFRS 9 replaced IAS 39 "Financial Instruments: Recognition and Measurement" (IAS 39) for annual periods beginning on or after January 1, 2018, which resulted in an impact on all three aspects of the accounting for financial instruments: classification and measurement; impairment; and hedge accounting.

- (2) IFRS 15 “Revenue from Contracts with Customers” with its Amendment “Clarifications to IFRS 15 Revenue from Contracts with Customers” (IFRS 15)

The core principle of IFRS 15 is that revenue is recognized to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. IFRS 15 establishes a five-step model that will apply to revenue earned from a contract with a customer (with limited exceptions), regardless of the type of revenue transaction or the industry.

- (3) The Company elected to adopt these standards using the modified retrospective method recognizing the cumulative effect of initially applying IFRS 9 and IFRS 15 at January 1, 2018, and not to restate the consolidated financial statements for the years ended December 31, 2016 and 2017. The Company’s consolidated financial statements for the years ended December 31, 2016 and 2017 were prepared in accordance with IAS 39, IAS 18 and related interpretations issued, revised or amended.

The impact on assets, liabilities and equity at the date of initial application of IFRS 9 and IFRS 15 are as below:

IFRS 9

- a. Financial assets measured at cost

The Company elected to designate certain of these financial assets as financial assets at fair value through other comprehensive income (FVOCI) and the others as financial assets at fair value through profit or loss (FVTPL) at the date of initial application. In accordance with the requirement of IFRS 9, these financial assets must be measured at fair value.

- b. Available-for-sale financial assets

In accordance with the requirement of IFRS 9, the Company elected to designate equity instruments that are not held for trading as financial assets at FVOCI and classified the remaining financial assets as financial assets at FVTPL.

- c. Impairment of financial assets

Under IFRS 9, impairment assessment is not required for equity instruments. Therefore, as the Company elected to classify certain equity investments as financial assets at FVOCI, the Company reclassified the related accumulated impairment loss from retained earnings to other component of equity at the date of initial application. The expected credit losses for accounts receivable or contract assets that result from transactions within the scope of IFRS 15 are evaluated by applying the simplified approach. The aforementioned impairment evaluation requirement differs from the current incurred loss model and had no material impact on the Company.

IFRS 15

Prior to adopting IFRS 15, the Company recognized revenue upon the delivery of the wafers to carriers approved by the customers, at which point in time, the title and risk of loss for the wafers were transferred to the customers. Consideration received from customers prior to the Company having transferred risks and rewards were accounted for as advance receipts as a component of other current liabilities. In accordance with the requirements of IFRS 15, the Company recognizes revenue as the Company satisfies its performance obligations to customers upon transfer of control of promised goods and services. For certain contracts that the Company recognizes revenue as it satisfies its performance obligations over time, contract assets are recognized if the Company does not have unconditional rights to the consideration. Consideration received from customers prior to the Company having satisfied its performance obligations are accounted for as contract liabilities and the associated costs incurred to fulfill the contracts are recognized on the consolidated balance sheet as contract fulfillment costs (classified under other current assets) or inventories. In accordance with the requirement of IFRS 15, allowance for sales returns and discounts are presented as refund liabilities (classified under other current liabilities), which was presented as a contra-account to accounts receivable prior to adopting IFRS 15.

Items	Carrying Amounts as of December 31, 2017	Adjustments Arising from Initial Application		Adjusted Carrying Amounts as of January 1, 2018	Descriptions
		IFRS 9	IFRS 15		
Contract assets, current	\$ —	\$ —	\$ 129,042	\$ 129,042	a.
Accounts receivable, net	20,876,417	—	983,438	21,859,855	a. b.
Accounts receivable-related parties, net	91,065	—	2,733	93,798	b.
Inventories, net	18,257,500	—	(102,800)	18,154,700	a.
Other current assets	15,854,553	—	120,799	15,975,352	a.
Financial assets at fair value through profit or loss, noncurrent	191,005	12,449,226	—	12,640,231	c.
Financial assets at fair value through other comprehensive income, noncurrent	—	10,131,459	—	10,131,459	d.
Available-for-sale financial assets, noncurrent	20,636,332	(20,636,332)	—	—	c.d.
Financial assets measured at cost, noncurrent	2,218,472	(2,218,472)	—	—	c.d.
Investments accounted for under the equity method	7,847,979	112,171	—	7,960,150	e. f.
Deferred tax assets	6,116,129	888,781	(1,489)	7,003,421	a. c. d. f.
Total effect on assets		\$ 726,833	\$ 1,131,723		
Contract liabilities, current	\$ —	\$ —	\$ 3,951,414	\$ 3,951,414	a.
Current tax liabilities	4,851,694	—	1,611	4,853,305	a.
Other current liabilities	6,984,482	—	(2,861,466)	4,123,016	a. b.
Deferred tax liabilities	2,327,223	(627,901)	(45)	1,699,277	a. c. f.
Total effect on liabilities		\$ (627,901)	\$ 1,091,514		
Retained earnings	\$53,058,188	\$ 17,026,484	\$ 39,372	70,124,044	a. c. d. e. f.
Other components of equity	657,957	(15,671,750)	(760)	(15,014,553)	a. b. c. d. e. f.
Non-controlling interests	956,808	—	1,597	958,405	a.
Total effect on equity		\$ 1,354,734	\$ 40,209		

- a. The changes in revenue recognition noted above resulted in an increase in current contract assets amounted to NT\$129 million, a decrease in net accounts receivable amounted to NT\$11 million, a decrease in net inventories amounted to NT\$103 million, an increase in other current assets amounted to NT\$121 million, a decrease in deferred tax assets amounted to NT\$1 million, an increase in current contract liabilities amounted to NT\$3,951 million, an increase in current tax liabilities amounted to NT\$2 million, a decrease in other current liabilities amounted to NT\$3,859 million, a decrease in deferred tax liabilities amounted to NT\$37 thousand, an increase in retained earnings amounted to NT\$39 million, a decrease in other components of equity amounted to NT\$0.3 million and an increase in non-controlling interests amounted to NT\$2 million.

- b. After adopting IFRS 15, allowance for sales returns and discounts are presented as refund liabilities (classified under other current liabilities), which was presented as a contra-account to accounts receivable prior to adopting IFRS 15. The aforementioned change in the presentation of the Company's allowance for sales returns and discounts led to an increase in net accounts receivable amounted to NT\$994 million, an increase in net accounts receivable-related parties amounted to NT\$3 million, an increase in other current liabilities amounted to NT\$997 million and a decrease in other components of equity amounted to NT\$0.5 million.
- c. In accordance with IFRS 9, the Company reclassified certain noncurrent available-for-sale financial assets and certain noncurrent financial assets measured at cost as noncurrent financial assets at FVTPL, amounting to NT\$10,738 million and NT\$1,955 million, respectively. In addition, the Company remeasured the fair value of financial assets and resulted in a decrease of NT\$244 million, an increase in deferred tax assets amounted to NT\$37 million, an increase in deferred tax liabilities amounted to NT\$23 million, a decrease in retained earnings amounted to NT\$234 million and an increase in other component of equity amounted to NT\$4 million. At the date of initial application, the Company reclassified other component of equity to retained earnings, resulting in a decrease in other component of equity and an increase in retained earnings amounting to NT\$3,754 million. After adjustment, the carrying amounts of noncurrent financial assets at FVTPL resulted in an increase of NT\$12,449 million as of January 1, 2018.
- d. In accordance with IFRS 9, the Company elected to designate its investments in equity instruments previously classified as available-for-sale amounted to NT\$9,898 million and noncurrent financial assets measured at cost amounted to NT\$263 million reclassified as noncurrent financial assets at FVOCI, because these investments are not held for trading. In addition, the Company remeasured the fair value of financial assets and resulted in a decrease of NT\$30 million, an increase in deferred tax assets amounted to NT\$5 million, and a decrease in other components of equity amounted to NT\$25 million. At the date of initial application, the Company reclassified retained earnings to other component of equity, resulting in an increase in retained earnings and a decrease in other component of equity amounting to NT\$12,899 million. After adjustment, the carrying amounts of noncurrent financial assets at FVOCI resulted in an increase of NT\$10,131 million as of January 1, 2018.

- e. With the adoption of IFRS 9 by associates accounted for using the equity method, the corresponding adjustments made by the Company resulting in a decrease in investments accounted for using equity method amounted to NT\$21 million, an increase in retained earnings amounted to NT\$642 million and a decrease in other components of equity amounted to NT\$663 million.
- f. The effect of additional income tax on unappropriated earnings due to the adoption of IFRS 15 and IFRS 9 resulted in an increase in investments accounted for using equity method amounted to NT\$133 million, an increase in deferred tax assets amounted to NT\$846 million, a decrease in deferred tax liabilities amounted to NT\$651 million, a decrease in retained earnings amounted to NT\$35 million and an increase in other components of equity amounted to NT\$1,665 million.

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

Items	As of December 31, 2018		
	Amounts in accordance with IFRS 15	Effect	Amounts in accordance with IAS 18
Contract assets, current	\$ 92,210	\$ (92,210)	\$ —
Accounts receivable, net	23,735,989	(1,206,340)	22,529,649
Accounts receivable-related parties, net	138,912	(1,358)	137,554
Inventories, net	18,203,119	91,332	18,294,451
Other current assets	14,103,607	(163,344)	13,940,263
Deferred tax assets	6,795,796	(69)	6,795,727
Total effect on assets		<u><u>\$(1,371,989)</u></u>	

Items	As of December 31, 2018		
	Amounts in accordance with IFRS 15	Effect	Amounts in accordance with IAS 18
Contract liabilities, current	\$ 932,371	\$ (932,371)	\$ —
Other current liabilities	5,440,345	(445,994)	4,994,351
Deferred tax liabilities	1,979,509	5,294	1,984,803
Total effect on liabilities		<u>\$(1,373,071)</u>	
Additional paid-in capital	\$ 41,302,035	\$ 188	\$ 41,302,223
Retained earnings	66,281,727	(2,490)	66,279,237
Other components of equity	(14,063,281)	4,014	(14,059,267)
Non-controlling interests	466,768	(630)	466,138
Total effect on equity		<u>\$ 1,082</u>	

Items	For the year ended December 31, 2018		
	Amounts in accordance with IFRS 15	Effect	Amounts in accordance with IAS 18
Operating revenue	\$ 151,252,571	\$ 99,791	\$ 151,352,362
Operating costs	(128,412,544)	45,628	(128,366,916)
Operating expenses	(22,277,194)	(99,113)	(22,376,307)
Income tax benefit (expense)	1,129,877	(8,457)	1,121,420
Total effect on income and expenses		<u>\$ 37,849</u>	

- B. The Company has not adopted the following new, revised or amended IFRSs that have been issued by the IASB but not yet effective:

No.	The projects of Standards or Interpretations	Effective for annual periods beginning on or after
IFRS 10 and IAS 28	Sale or Contribution of Assets between an Investor and its Associate or Joint Venture - Amendments to IFRS 10 and IAS 28	Subject to IASB's announcement
IFRS 16	Leases	January 1, 2019
IFRIC 23	Uncertainty over Income Tax Treatments	January 1, 2019
IFRS 17	Insurance Contracts	January 1, 2021
IAS 28	Long-term Interests in Associates and Joint Ventures - Amendments to IAS 28	January 1, 2019
IFRS 9	Prepayment Features with Negative Compensation - Amendments to IFRS 9	January 1, 2019
	<i>Improvements to International Financial Reporting Standards (2015 - 2017 cycle)</i>	
IFRS 3	Business Combinations - Amendments to IFRS 3	January 1, 2019
IFRS 11	Joint Arrangements - Amendments to IFRS 11	January 1, 2019
IAS 12	Income Taxes - Amendments to IAS 12	January 1, 2019
IAS 23	Borrowing Costs - Amendments to IAS 23	January 1, 2019
IAS 19	Plan Amendment, Curtailment or Settlement - Amendments to IAS 19	January 1, 2019
IFRS 3	Definition of a Business - Amendments to IFRS 3	January 1, 2020
IAS 1 and IAS 8	Definition of Material - Amendments to IAS 1 and IAS 8	January 1, 2020

- C. The potential effects of adopting the standards or interpretations issued by IASB on the Company's financial statements in future periods are summarized as below:

(1) IFRS 10 "Consolidated Financial Statements" (IFRS 10) and IAS 28 "Investments in Associates and Joint Ventures" (IAS 28) - Sale or Contribution of Assets between an Investor and its Associate or Joint Venture (Amendment)

The amendments address the inconsistency between the requirements in IFRS 10 and IAS 28, in dealing with the loss of control of a subsidiary that is contributed to an associate or a joint venture. IAS 28 restricts gains and losses arising from contributions of non-monetary assets to an associate or a joint venture to the extent of the interest attributable to the other equity holders in the associate or joint venture. IFRS 10 requires full profit or loss recognition on the loss of control of a subsidiary. IAS 28 was amended so that the gain or loss resulting from the sale or contribution of assets that constitute a business as defined in IFRS 3 "Business Combinations" (IFRS 3) between an investor and its associate or joint venture is recognized in full. IFRS 10 was also amended so that the gain or loss resulting from the sale or contribution of a subsidiary that does not constitute a business as defined in IFRS 3 between an investor and its associate or joint venture is recognized only to the extent of the unrelated investors' interests in the associate or joint venture. The effective date of this amendment has been deferred indefinitely, but early adoption is allowed.

(2) IFRS 16 “Leases” (IFRS 16)

The new standard requires lessees to account for all leases under one single accounting model (except for short-term or low-value asset lease exemptions), which is for lessees to recognize right-of-use assets and lease liabilities on the consolidated balance sheet and the depreciation expense and interest expense associated with those leases in the consolidated statements of comprehensive income. Lessors’ classification remains unchanged as operating or finance leases, but additional disclosure information is required. The standard is effective for annual periods beginning on or after January 1, 2019.

(3) IFRIC 23 “Uncertainty Over Income Tax Treatments”

The Interpretation clarifies application of recognition and measurement requirements in IAS 12 “Income Taxes” when there is uncertainty over income tax treatments. The Interpretation is effective for annual periods beginning on or after January 1, 2019.

(4) IAS 28 “Investments in Associates and Joint Ventures” - Long-term Interests in Associates and Joint Ventures (Amendment)

The amendment clarifies that an entity applies IFRS 9 to long-term interests in an associate or joint venture that form part of the net investment in the associate or joint venture before it applies IAS 28, and in applying IFRS 9, does not take account of any adjustments that arise from applying IAS 28. The amendment is effective for annual reporting periods beginning on or after January 1, 2019.

(5) IFRS 9 “Financial Instruments” - Prepayment Features with Negative Compensation (Amendment)

The amendment allows financial assets with prepayment features that permit or require a party to a contract either to pay or receive reasonable compensation for the early termination of the contract, to be measured at amortised cost or at fair value through other comprehensive income. The amendment is effective for annual reporting periods beginning on or after January 1, 2019.

(6) IAS 12 “Income Taxes” (Amendment)

The amendments clarify that an entity shall recognize the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognized those past transactions or events. The amendments are effective for annual periods beginning on or after January 1, 2019.

(7) IAS 19 “Employee Benefits” - Plan Amendment, Curtailment or Settlement (Amendment)

The amendments clarify that when a change in a defined benefit plan is made (such as amendment, curtailment or settlement, etc.), the entity should use the updated assumptions to remeasure its net defined benefit liability or asset. The amendments are effective for annual periods beginning on or after January 1, 2019.

(8) IFRS 3 “Business Combinations” - Definition of a Business (Amendment)

The amendments clarify the definition of a business in IFRS 3. The amendments are intended to assist entities to determine whether a transaction should be accounted for as a business combination or as an asset acquisition.

IFRS 3 continues to adopt a market participant’s perspective to determine whether an acquired set of activities and assets is a business. The amendments clarify the minimum requirements for a business, add guidance to help entities assess whether an acquired process is substantive, narrow the definitions of a business and of outputs, etc. The amendments are effective for annual periods beginning on or after January 1, 2020.

(9) IAS 1 “Presentation of Financial Statements” and IAS 8 “Accounting Policies, Changes in Accounting Estimates and Errors” - Definition of Material (Amendment)

The main amendment is to clarify a new definition of material. It states that “information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.” The amendments clarify that materiality will depend on the nature or magnitude of information. An entity will need to assess whether the information, either individually or in combination with other information, is material in the context of the financial statements. A misstatement of information is material if it could reasonably be expected to influence decisions made by the primary users. The amendments are effective for annual periods beginning on or after January 1, 2020.

The Company is currently evaluating the potential impact of the aforementioned standards and interpretations listed (8) ~ (9) to the Company’s financial position and performance, and the related impact will be disclosed when the evaluation is completed. The rest of the standards and interpretations listed are not expected to have material impact on the Company’s financial position and performance, except for the following:

IFRS 16

The Company elects not to reassess whether a contract is, or contains, a lease at the date of initial application (January 1, 2019) in accordance with the transition provision in IFRS 16. The Company is permitted to apply IFRS 16 to contracts that were previously identified as leases applying IAS 17 “Leases” and IFRIC 4 “Determining whether an Arrangement contains a Lease”. The Company elects not to restate comparative information and applies the standard retrospectively only to contracts that are not completed at the date of initial application in accordance with the transition provision in IFRS 16. Instead, the Company will recognize the cumulative effect of initially applying IFRS 16 on January 1, 2019.

- a. For leases that were classified as operating leases applying IAS 17, the Company expects to measure and recognize those leases as lease liability at the present value of the remaining lease payments, discounted using the lessee’s incremental borrowing rate on January 1, 2019. On a lease-by-lease basis, the right-of-use asset is measured and recognized at an amount equal to the lease liability (adjusted by the amount of any prepaid lease payments). The Company assesses the cumulative effect at the date of initial application is primarily consisted of a decrease in other current assets amounting to NT\$15 million; an increase in right-of-use assets amounting to NT\$8,578 million; a decrease in other noncurrent assets amounting to NT\$2,621 million; a decrease in other payables amounting to NT\$40 million; an increase in lease liabilities amounting to NT\$6,006 million; a decrease in additional paid-in capital-other amounting to NT\$10 million; and a decrease in other components of equity amounting to NT\$14 million.
- b. The additional disclosures of lessee and lessor required by IFRS 16 will be disclosed in the relevant notes.

4. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(1) Statement of Compliance

The Company’s consolidated financial statements were prepared in accordance with IFRSs, including International Financial Reporting Standards, International Accounting Standards, IFRIC Interpretations and SIC Interpretations, as issued by IASB.

(2) Basis of Preparation

The consolidated financial statements have been prepared on a historical cost basis, except for financial instruments measured at fair value.

(3) General Description of Reporting Entity

a. Principles of consolidation

Subsidiaries are fully consolidated from the date of acquisition (the date on which the Company obtains control), and continue to be consolidated until the date that such control ceases. The Company controls an entity when the Company is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of the subsidiaries are prepared for the same reporting period as the parent company, using consistent accounting policies. All intra-group balances, transactions, unrealized gains and losses and dividends resulting from intra-group transactions are eliminated in full.

A change in the ownership interest of a subsidiary, without a change of control, is accounted for as an equity transaction. Total comprehensive income of subsidiaries is attributed to the stockholders of the parent and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

If the Company loses control over a subsidiary, the Company derecognizes the assets and liabilities of the subsidiary, as well as any non-controlling interests previously recorded by the Company. 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 interests. Any gain or loss previously recognized in the other comprehensive income would be reclassified to profit or loss or transferred directly to retained earnings if required by other IFRSs. 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.

b. The consolidated entities as of December 31, 2017 and 2018 were as follows:

Investor	Subsidiary	Business nature	Percentage of ownership (%) as of December 31,	
			2017	2018
UMC	UMC GROUP (USA)	IC Sales	100.00	100.00
UMC	UNITED MICROELECTRONICS (EUROPE) B.V.	Marketing support activities	100.00	100.00
UMC	UMC CAPITAL CORP.	Investment holding	100.00	100.00
UMC	GREEN EARTH LIMITED (GE)	Investment holding	100.00	100.00
UMC	TLC CAPITAL CO., LTD. (TLC)	Venture capital	100.00	100.00
UMC	UMC NEW BUSINESS INVESTMENT CORP. (NBI)	Investment holding	100.00	—
UMC	UMC INVESTMENT (SAMOA) LIMITED	Investment holding	100.00	100.00
UMC	FORTUNE VENTURE CAPITAL CORP. (FORTUNE)	Consulting and planning for venture capital	100.00	100.00
UMC	UMC GROUP JAPAN	IC Sales	100.00	100.00
UMC	UMC KOREA CO., LTD.	Marketing support activities	100.00	100.00
UMC	OMNI GLOBAL LIMITED (OMNI)	Investment holding	100.00	100.00
UMC	SINO PARAGON LIMITED	Investment holding	100.00	100.00
UMC	BEST ELITE INTERNATIONAL LIMITED (BE)	Investment holding	96.66	100.00
UMC, FORTUNE and TLC	NEXPOWER TECHNOLOGY CORP. (NEXPOWER)	Sales and manufacturing of solar power batteries	87.06	93.36
UMC and FORTUNE	WAVETEK MICROELECTRONICS CORPORATION (WAVETEK)	Sales and manufacturing of integrated circuits	78.47	78.47
UMC CAPITAL CORP.	UMC CAPITAL (USA)	Investment holding	100.00	100.00
TLC	SOARING CAPITAL CORP.	Investment holding	100.00	100.00
SOARING CAPITAL CORP.	UNITRUTH ADVISOR (SHANGHAI) CO., LTD.	Investment holding and advisory	100.00	100.00
GE	UNITED MICROCHIP CORPORATION	Investment holding	100.00	100.00
UMC INVESTMENT (SAMOA) LIMITED	UMC (BEIJING) LIMITED	Marketing support activities	100.00	—
FORTUNE	TERA ENERGY DEVELOPMENT CO., LTD. (TERA ENERGY)	Energy technical services	—	100.00
NBI	TERA ENERGY	Energy technical services	100.00	—

Investor	Subsidiary	Business nature	Percentage of ownership (%) as of December 31,	
			2017	2018
NBI	UNISTARS CORP.	High brightness LED packages	83.69	—
TERA ENERGY	EVERRICH ENERGY INVESTMENT (HK) LIMITED (EVERRICH-HK)	Investment holding	100.00	100.00
EVERRICH-HK	EVERRICH (SHANDONG) ENERGY CO., LTD.	Solar engineering integrated design services	100.00	100.00
OMNI	UNITED MICROTECHNOLOGY CORPORATION (NEW YORK)	Research and development	100.00	100.00
OMNI	UNITED MICROTECHNOLOGY CORPORATION (CALIFORNIA)	Research and development	100.00	100.00
OMNI	ECP VITA PTE. LTD.	Insurance	100.00	100.00
OMNI	UMC TECHNOLOGY JAPAN CO., LTD.	Semiconductor manufacturing technology development and consulting services	100.00	100.00
WAVETEK	WAVETEK MICROELECTRONICS INVESTMENT (SAMOA) LIMITED (WAVETEK-SAMOA)	Investment holding	100.00	100.00
WAVETEK-SAMOA	WAVETEK MICROELECTRONICS CORPORATION (USA)	Sales and marketing service	100.00	100.00
NEXPOWER	SOCIALNEX ITALIA 1 S.R.L.	Photovoltaic power plant	100.00	100.00
BE	INFOSHINE TECHNOLOGY LIMITED (INFOSHINE)	Investment holding	100.00	100.00
INFOSHINE	OAKWOOD ASSOCIATES LIMITED (OAKWOOD)	Investment holding	100.00	100.00
OAKWOOD	HEJIAN TECHNOLOGY (SUZHOU) CO., LTD. (HJ)	Sales and manufacturing of integrated circuits	100.00	98.14
HJ	UNITEDDS SEMICONDUCTOR (SHANDONG) CO., LTD.	Integrated circuits design services	100.00	100.00
UNITED MICROCHIP CORPORATION and HJ	UNITED SEMICONDUCTOR (XIAMEN) CO., LTD. (USCXM)	Sales and manufacturing of integrated circuits	51.02	65.22

(4) Business Combinations and Goodwill

Business combinations are accounted for using the acquisition method. The consideration transferred, the identifiable assets acquired and liabilities assumed are measured at the acquisition date fair value. For the components of non-controlling interests in the acquiree that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation, the acquirer measures at either fair value or at the non-controlling interest's proportionate share of the acquiree's identifiable net assets. Acquisition-related costs are expensed as incurred and are classified under administrative expenses.

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

If the business combination is achieved in stages, the acquisition date fair value of the acquirer's previously held equity interest in the acquiree is remeasured at fair value as at the acquisition date through profit or loss.

Any contingent consideration to be transferred by the acquirer will be recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration, which is deemed to be an asset or liability, will be recognized in accordance with IFRS 9 (before January 1, 2018: IAS 39), either in profit or loss or other comprehensive income. If the contingent consideration is classified as equity, it should not be remeasured until it is finally settled within equity.

Goodwill is initially measured at cost, being the excess of the aggregate of the consideration transferred, the acquisition date fair value of the acquirer's previously held equity interest in the acquiree and the amount recognized for non-controlling interest over the net identifiable assets acquired and liabilities assumed. If the fair value of the net assets acquired is in excess of the aggregate consideration transferred and non-controlling interests, the difference is recognized as a gain on bargain purchase.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each cash-generating unit (CGU) that is expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units. Each unit or groups of units to which the goodwill is so allocated represents the lowest level within the Company at which the goodwill is monitored for internal management purposes and cannot be larger than an operating segment before aggregation.

Where goodwill forms part of a CGU and part of the operation within that unit is disposed, the goodwill associated with the operation disposed is included in the carrying amount of the operation. Goodwill disposed in this circumstance is measured based on the relative values of the operation disposed and the portion of the CGU retained.

(5) Foreign Currency Transactions

The Company's consolidated financial statements are presented in New Taiwan Dollars (NTD), which is also the parent company's functional currency. Each entity in the Company determines its own functional currency and items included in the financial statements of each entity are measured using that functional currency.

Transactions in foreign currencies are initially recorded by the Company's entities at their respective functional currency rates prevailing at the transaction date. Monetary assets and liabilities denominated in foreign currencies are translated into functional currency at the closing rates of exchange at the reporting date. Non-monetary items measured at fair value in foreign currencies are translated using the exchange rates at the date when the fair value is determined. Non-monetary items that are measured at historical cost in foreign currencies are translated using the exchange rates as at the dates of the initial transactions.

All exchange differences arising on the settlement of monetary items or on translating monetary items are taken to profit or loss in the period in which they arise except for the following:

- a. Exchange differences arising from foreign currency borrowings for an acquisition of a qualifying asset to the extent that they are regarded as an adjustment to interest costs are included in the borrowing costs that are eligible for capitalization.
- b. Foreign currency derivatives within the scope of IFRS 9 (before January 1, 2018: IAS 39) are accounted for based on the accounting policy for financial instruments.
- c. Exchange differences arising on a monetary item that is part of a reporting entity's net investment in a foreign operation are recognized initially in other comprehensive income and reclassified from equity to profit or loss upon disposal of such investment.

When a gain or loss on a non-monetary item is recognized in other comprehensive income, any exchange component of that gain or loss is recognized in other comprehensive income. When a gain or loss on a non-monetary item is recognized in profit or loss, any exchange component of that gain or loss is recognized in profit or loss.

(6) Translation of Foreign Currency Financial Statements

The assets and liabilities of foreign operations are translated into NTD at the closing rate of exchange prevailing at the reporting date and their income and expenses are translated at an average exchange rate for the period. The exchange differences arising on the translation are recognized in other comprehensive income. On disposal of a foreign operation, the cumulative amount of the exchange differences relating to that foreign operation, recognized in other comprehensive income and accumulated in the separate component of equity, is reclassified from equity to profit or loss when the gain or loss on disposal is recognized.

On partial disposal of a subsidiary that includes a foreign operation that does not result in a loss of control, the proportionate share of the cumulative amount of the exchange differences recognized in other comprehensive income is re-attributed to the non-controlling interests in that foreign operation. On partial disposal of an associate or a joint venture that includes a foreign operation that does not result in a loss of significant influence or joint control, only the proportionate share of the cumulative amount of the exchange differences recognized in other comprehensive income is reclassified to profit or loss.

Any goodwill and any fair value adjustments to the carrying amounts of assets and liabilities arising from the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and expressed in its functional currency.

(7) Convenience Translation into U.S. Dollars

Translations of amounts from NTD into U.S. dollars (USD) for the reader's convenience were calculated at the rate of USD1.00 to NTD30.61 on December 31, 2018 released by Board of Governors of the Federal Reserve System. No representation is made that the NTD amounts could have been, or could be, converted into USD at this rate.

(8) Current and Non-Current Distinction

An asset is classified as current when:

- a. the Company expects to realize the asset, or intends to sell or consume it, in its normal operating cycle;
- b. the Company holds the asset primarily for the purpose of trading;
- c. the Company expects to realize the asset within twelve months after the reporting period; or
- d. the asset is cash or a cash equivalent unless the asset is restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period.

All other assets are classified as non-current.

A liability is classified as current when:

- a. the Company expects to settle the liability in normal operating cycle;
- b. the Company holds the liability primarily for the purpose of trading;
- c. the liability is due to be settled within twelve months after the reporting period; or
- d. the Company does not have an unconditional right to defer settlement of the liability for at least twelve months after the reporting date. Terms of a liability that could, at the option of the counterparty, result in its settlement by the issue of equity instruments do not affect its classification.

All other liabilities are classified as non-current.

(9) Cash Equivalents

Cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash and with maturity dates that do not present significant risks of changes in value resulting from changes in interest rates, including time deposits with original maturities of three months or less and repurchase agreements collateralized by government bonds and corporate bonds.

(10) Financial Instruments

Financial assets and financial liabilities are recognized when the Company becomes a party to the contractual provisions of the instrument. Purchase or sale of financial assets and liabilities are recognized using trade date accounting. All financial assets are recognized initially at fair value plus, in the case of investments not at fair value through profit or loss, directly attributable costs. Financial assets at fair value through profit or loss are initially recognized at fair value, and transaction costs are expensed in the statement of comprehensive income.

Financial Assets

a. Classification and subsequent measurement

2016 and 2017

The Company determines the classification of its financial assets at initial recognition. In accordance with IAS 39, financial assets of the Company are classified as financial assets at fair value through profit or loss, available-for-sale financial assets, held-to-maturity financial assets and notes, accounts and other receivables.

i. Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss are comprised of financial assets held for trading and financial assets designated upon initial recognition at fair value through profit or loss.

Financial assets acquired for the purpose of selling or repurchasing in the near term, and derivative financial instruments that are not designated as hedging instruments in hedge accounting are classified as financial assets at fair value through profit or loss. Financial assets at fair value through profit or loss are measured at fair value with changes in fair value recognized in profit or loss.

ii. Available-for-sale financial assets

Available-for-sale investments are those non-derivative financial assets that are designated as available-for-sale or are not classified as financial assets at fair value through profit or loss, held-to-maturity financial assets, or loans and receivables.

Available-for-sale financial investments are subsequently measured at fair value. Other than impairment losses which are recognized in profit or loss, subsequent measurement of available-for-sale equity instrument financial assets are recognized in other comprehensive income until the investment is derecognized, at which time the cumulative gain or loss is recognized in profit or loss. If equity instrument investments do not have quoted prices in an active market and their fair value cannot be reliably measured, then they are classified as financial assets measured at cost on the balance sheet.

iii. Held-to-maturity financial assets

Non-derivative financial assets with fixed or determinable payments and fixed maturities are classified as held-to-maturity when the Company has the positive intention and ability to hold them to maturity.

After initial measurement, held-to-maturity financial assets are measured at amortized cost using the effective interest rate (EIR) method, less impairment. Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or transaction costs. The EIR method amortization and impairment, if any, is recognized in profit or loss.

iv. Notes, accounts and other receivables

Notes and accounts receivable are creditors' rights as a result of sales of goods or services. Other receivables are any receivable not classified as notes and accounts receivable. Notes, accounts and other receivables are initially measured and recognized at their fair values and subsequently measured at amortized cost using the EIR method, less impairment losses. If the effect of discounting is immaterial, the short term notes, accounts and other receivables are measured at their nominal amount.

2018

The Company determines the classification of its financial assets at initial recognition. In accordance with IFRS 9, financial assets of the Company are classified as financial assets at fair value through profit or loss, financial assets at fair value through other comprehensive income, and financial assets measured at amortized cost.

i. Financial assets at fair value through profit or loss

Financial assets that are not measured at amortized cost or at fair value through other comprehensive income are recognized initially at fair value and subsequently measured at fair value with changes in fair value recognized in profit or loss.

ii. Financial assets at fair value through other comprehensive income

At initial recognition, the Company may make an irrevocable election to present in other comprehensive income subsequent changes in the fair value of an investment in an equity instrument that is not held for trading. When there is a disposal of such equity instrument, accumulated amounts presented in other comprehensive income are not subsequently transferred to profit or loss but are transferred directly to the retained earnings.

The debt instruments are measured at fair value through other comprehensive income if both of the following conditions are met:

- (i) the financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and
- (ii) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Subsequent changes in the fair value of such financial assets at fair value through other comprehensive income are recognized in other comprehensive income. Before derecognition, impairment gains or losses, interest revenue and foreign exchange gains and losses are recognized in profit or loss. When the financial assets are derecognized the cumulative gain or loss previously recognized in other comprehensive income is reclassified from other comprehensive income to profit or loss as a reclassification adjustment.

iii. Financial assets measured at amortized cost

The financial assets are measured at amortized cost (including cash and cash equivalent, notes, accounts and other receivables and other financial assets) if both of the following conditions are met.

- (i) the financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows; and
- (ii) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Subsequent to initial recognition for financial assets measured at amortized cost, interest income, measured by the EIR method amortization process, and impairment losses are recognized during circulation period. Gains and losses are recognized in profit or loss when the financial assets are derecognized.

b. Derecognition of financial assets

A financial asset is derecognized when:

- i. the contractual rights to receive cash flows from the asset have expired;
- ii. the Company has transferred assets and substantially all the risks and rewards of the asset have been transferred; or
- iii. the Company has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

2016 and 2017

On derecognition of a financial asset in its entirety, the difference between the carrying amount and the consideration received or to be received including any cumulative gain or loss that had been recognized in other comprehensive income is recognized in profit or loss.

If the transferred asset is part of a larger financial asset and the part transferred qualifies for derecognition in its entirety, the Company allocates the previous carrying amount of the larger financial asset between the part that continues to be recognized and the part that is derecognized, based on the relative fair values of those parts on the date of the transfer. Any cumulative gain or loss that had been recognized in other comprehensive income is allocated between the part that continues to be recognized and the part that is derecognized, based on the relative fair values of those parts. The difference between the carrying amount allocated to the part derecognized and the sum of the consideration received for the part derecognized and any cumulative gain or loss allocated that had been recognized in other comprehensive income, is recognized in profit or loss.

2018

On derecognition of a financial asset in its entirety, the difference between the carrying amount and the consideration received or to be received including any cumulative gain or loss that had been recognized in other comprehensive income is recognized in profit or loss (for debt instrument) or directly in retained earnings (for equity instruments).

If the transferred asset is part of a larger financial asset and the part transferred qualifies for derecognition in its entirety, the Company allocates the previous carrying amount of the larger financial asset between the part that continues to be recognized and the part that is derecognized, based on the relative fair values of those parts on the date of the transfer. Any cumulative gain or loss that had been recognized in other comprehensive income is allocated between the part that continues to be recognized and the part that is derecognized, based on the relative fair values of those parts. The difference between the carrying amount allocated to the part derecognized and the sum of the consideration received for the part derecognized and any cumulative gain or loss allocated that had been recognized in other comprehensive income, is recognized in profit or loss or directly in retained earnings.

c. Impairment policy

2016 and 2017

The carrying amount of a financial asset is reduced as a result of impairment, except for accounts receivable for which the carrying amount is reduced through use of an allowance account. When an account receivable is deemed to be uncollectible, it is written off from the allowance account.

i. Notes, accounts and other receivables

The Company first assesses at each reporting date whether objective evidence of impairment exists for notes, accounts and other receivables that are individually significant. If there is objective evidence that an impairment loss has occurred, the amount of impairment loss is assessed individually. For notes, accounts and other receivables other than those mentioned above, the Company groups those assets with similar credit risk characteristics and collectively assesses them for impairment. 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 was recognized, the previously recognized impairment loss is reversed and recognized through profit or loss. The reversal shall not result in a carrying amount of notes, accounts and other receivables that exceeds what the amortized cost would have been had the impairment not been recognized at the date the impairment is reversed.

ii. Other financial assets

The Company assesses, at each reporting date, whether there is objective evidence that a financial asset or a group of financial assets is impaired. A financial asset or a group of financial assets is deemed to be impaired if, and only if, there is objective evidence of impairment as a result of one or more loss events that has occurred since the initial recognition of the asset (an incurred “loss event”) and that loss event has an impact on the estimated future cash flows of the individual financial asset or a group of financial assets.

For the financial assets carried at amortized cost, the amount of the impairment loss is measured as the difference between the carrying amount and the present value of estimated future cash flows, discounted at the original effective interest rate. For equity investments classified as available-for-sale, objective evidence of an impairment would include a significant or prolonged decline in the fair value of the investment below its cost. When there is objective evidence of an impairment for available-for-sale equity securities, the full amount of the losses previously recognized in other comprehensive income is reclassified to profit or loss. Impairment losses recognized on equity investments cannot be reversed through profit or loss. Any subsequent increases in their fair value after impairment are recognized in other comprehensive income.

2018

The Company measures, at each reporting date, an allowance for expected credit losses (ECLs) for debt instrument investments measured at fair value through other comprehensive income and financial assets measured at amortized cost by assessing reasonable and supportable information including forward-looking information. Where the credit risk on a financial asset has not increased significantly since initial recognition, the loss allowance is measured at an amount equal to 12-month ECLs. Where the credit risk on a financial asset has increased significantly since initial recognition, the loss allowance is measured at an amount equal to the lifetime ECLs.

For notes, accounts receivable and contract assets, the Company applies a simplified approach in calculating ECLs. Therefore, the Company does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. ECLs are measured based on the Company’s historical credit loss experience and customers’ current financial condition, adjusted for forward-looking factors, such as customers’ economic environment.

Financial Liabilities

a. Classification and subsequent measurement

2016 and 2017

The Company classifies the instrument issued as a financial liability or an equity instrument in accordance with the substance of the contractual arrangement and the definitions of a financial liability and an equity instrument.

i. Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as at fair value through profit or loss. Gains or losses on the subsequent measurement including interest paid are recognized in profit or loss.

ii. Financial liabilities carried at amortized cost

Financial liabilities measured at amortized cost include interest bearing loans and borrowings that are subsequently measured using the EIR method after initial recognition. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR method amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or transaction costs.

2018

The Company classifies the instrument issued as a financial liability or an equity instrument in accordance with the substance of the contractual arrangement and the definitions of a financial liability and an equity instrument.

i. Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as at fair value through profit or loss. Excluding changes in own credit risk, gains or losses on the subsequent measurement including interest paid are recognized in profit or loss.

ii. Financial liabilities measured at amortized cost

Financial liabilities measured at amortized cost include interest bearing loans and borrowings that are subsequently measured using the EIR method after initial recognition. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR method amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or transaction costs.

b. Derecognition of financial liabilities

A financial liability is derecognized when the obligation under the liability is discharged, cancelled or expires.

When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified (whether or not attributable to the financial difficulty of the debtor), such an exchange or modification is treated as a derecognition of the original liability and the recognition of a new liability, and the difference in the respective carrying amounts and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognized in profit or loss.

(11) Cash flow hedges

The Company manages exposures arising from foreign currency exchange risk. With the adoption of IFRS 9 on January 1, 2018, the Company designates a hedging relationship between the hedging instrument and the hedged item with the existence of an economic relationship and determines the hedge ratio to meet the hedge effectiveness. The Company designates certain hedging instruments to partially hedge the foreign currency exchange rate risks associated with certain highly probable forecast transactions. The separate component of equity associated with the hedged item is adjusted to the lower of the following (in absolute amounts):

- (i) the cumulative gain or loss on the hedging instrument from inception of the hedge; and

- (ii) the cumulative change in fair value (present value) of the expected future cash flows on the hedged item from inception of the hedge.

The portion of the gain or loss on the hedging instrument that is determined to be an effective hedge is recognized in other comprehensive income, whereas the ineffective portion of the change in the fair value of the hedging instrument is recognized directly in profit or loss. If a hedge of a forecast transaction subsequently results in the recognition of a non-financial asset or a non-financial liability, the associated gains or losses that were recognized in other comprehensive income are included in the initial cost of the asset or liability.

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.

(12) Inventories

Inventories are accounted for on a perpetual basis. Raw materials are stated at actual purchase costs, while the work in process and finished goods are stated at standard costs and subsequently adjusted to weighted-average costs at the end of each month. The cost of work in progress and finished goods comprises raw materials, direct labor, other direct costs and related production overheads. Allocation of fixed production overheads to the costs of conversion is based on the normal capacity of the production facilities. Cost associated with underutilized capacity is expensed as incurred. Inventories are valued at the lower of cost and net realizable value item by item. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.

(13) Investments Accounted For Under the Equity Method

The Company's investments in associates and joint ventures are accounted for using the equity method other than those that meet the criteria to be classified as non-current assets held for sale.

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 an entity, but is not control or joint control over those policies.

A joint venture is a type of joint arrangement whereby the Company that has joint control of the arrangement has rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement where no single party controls the arrangement on its own, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

Any difference between the acquisition cost and the Company's share of the net fair value of the identifiable assets and liabilities of associates and joint ventures is accounted for as follows:

- a. Any excess of the acquisition cost over the Company's share of the net fair value of the identifiable assets and liabilities of an associate or a joint venture at the date of acquisition is recognized as goodwill and is included in the carrying amount of the investment. Amortization of goodwill is not permitted.
- b. Any excess of the Company's share of the net fair value of the identifiable assets and liabilities of an associate or a joint venture over the acquisition cost, after reassessing the fair value, is recognized as a gain in profit or loss on the acquisition date.

Under the equity method, the investments in associates and joint ventures are carried on the balance sheet at cost plus post acquisition changes in the Company's share of profit or loss and other comprehensive income of associates and joint ventures. The Company's share of changes in associates' and joint ventures' profit or loss and other comprehensive income are recognized directly in profit or loss and other comprehensive income, respectively. Distributions received from an associate or a joint venture reduce the carrying amount of the investment. Any unrealized gains and losses resulting from transactions between the Company and the associate or the joint venture are eliminated to the extent of the Company's interest in the associate or the joint venture.

Financial statements of associates and joint ventures are prepared for the same reporting period as the Company. Where necessary, adjustments are made to bring the accounting policies in line with those of the Company.

Upon an associate's issuance of new shares, if the Company takes up more shares than its original proportionate holding while maintaining its significant influence over that associate, such increase would be accounted for as an acquisition of an additional equity interest in the associate. Upon an associate's issuance of new shares, if the Company does not take up proportionate shares and reduces its stockholding percentage while maintaining its significant influence over that associate, the Company will treat the transaction as deemed disposal and reclassify to profit or loss the proportion of the gain or loss previously recognized in other comprehensive income relating to that reduction in ownership interest where appropriate.

The Company ceases to use the equity method upon loss of significant influence over an associate. Any difference between the carrying amount of the investment in an associate upon loss of significant influence and the fair value of the retained investment plus proceeds from disposal will be recognized in profit or loss. If an investment in an associate becomes an investment in a joint venture or an investment in a joint venture becomes an investment in an associate, the Company continues to apply the equity method and does not remeasure the retained interest.

The Company determines at each reporting date whether there is any objective evidence that the investments in associates and joint ventures are impaired. An impairment loss, being the difference between the recoverable amount of the associate or joint venture and its carrying amount, is recognized in profit or loss in the statement of comprehensive income and forms part of the carrying amount of the investments.

(14) Property, Plant and Equipment

Property, plant and equipment are stated at cost, net of accumulated depreciation and accumulated impairment losses, if any, and any borrowing costs incurred for long-term construction projects are capitalized if the recognition criteria are met. Significant renewals, improvements and major inspections meeting the recognition criteria are treated as capital expenditures, and the carrying amounts of those replaced parts are derecognized. Maintenance and repairs are recognized in expenses as incurred. Any gain or loss arising from derecognition of the assets is recognized in other operating income and expenses.

Depreciation is calculated on a straight-line basis over the estimated useful lives. A significant part of an item of property, plant and equipment which has a different useful life from the remainder of the item is depreciated separately.

The depreciation methods, useful lives and residual values for the assets are reviewed at each fiscal year end, and the changes from the previous estimation are recorded as changes in accounting estimates.

Except for land, which is not depreciated, the estimated useful lives of the assets are as follows:

Buildings	20~56 years
Machinery and equipment	5~11 years
Transportation equipment	5~7 years
Furniture and fixtures	1~9 years
Leasehold improvement	The shorter of lease terms or useful lives

(15) Intangible Assets

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is its fair value as at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses, if any. Internally generated intangible assets which fail to meet the recognition criteria are not capitalized and the expenditures are reflected in profit or loss in the period incurred.

The useful lives of intangible assets are assessed as either finite or indefinite.

Intangible assets with finite useful lives are amortized over the useful lives and assessed for impairment whenever there is an indication that the intangible assets may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at the end of each fiscal year. Changes in the expected useful life or the expected pattern of consumption of future economic benefits embodied in the asset is accounted for by changing the amortization period or method, as appropriate, and is treated as changes in accounting estimates.

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

Gains or losses arising from derecognition of an intangible asset are recognized in other operating income and expenses.

Accounting policies of the Company's intangible assets are summarized as follows:

- a. Goodwill arising from business combinations is not amortized, and is tested for impairment annually or more frequently if events or changes in circumstances suggest that the carrying amount may not be recoverable. If an event occurs or circumstances change which indicates that the goodwill is impaired, an impairment loss is recognized. Goodwill impairment losses cannot be reversed once recognized.
- b. Software is amortized over the contract term or estimated useful life (3~6 years) on a straight-line basis.
- c. Patent and technology license fee: Upon signing of contract and obtaining the right to intellectual property, any portion attributable to non-cancellable and mutually agreed future fixed license fees for patent and technology is discounted and recognized as an intangible asset and related liability. The cost of the intangible asset is not revalued once determined on initial recognition, and is amortized over the useful life (5~10 years) on a straight-line basis. Interest expenses from the related liability are recognized and calculated based on the EIR method. Based on the timing of payments, the liability is classified as current and non-current.
- d. Others are mainly the intellectual property license fees, amortized over the shorter of the contract term or estimated useful life (3 years) of the related technology on a straight-line basis.

(16) Impairment of Non-Financial Assets

The Company assesses at each reporting date whether there is an indication that an asset in the scope of IAS 36 "Impairment of Assets" (IAS 36) may be impaired. If any indication exists, the Company completes impairment testing for the CGU to which the individual assets belong. Where the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. The recoverable amount of an individual asset or a CGU is the higher of its fair value less costs of disposal and its value in use. If circumstances indicate that previously recognized impairment losses may no longer exist or may have decreased at each reporting date, the Company re-assesses the asset's or CGU's recoverable amount. A previously recognized impairment loss is reversed only if there has been an increase in the estimated service potential of an asset which in turn increases the recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation or amortization, had no impairment loss been recognized for the asset in prior years.

A CGU, or group of CGUs, to which goodwill has been allocated is tested for impairment annually at the same time every year, irrespective of whether there is any indication of impairment. Where the carrying amount of a CGU (including the carrying amount of goodwill) exceeds its recoverable amount, the CGU is considered impaired. If an impairment loss is to be recognized, it is first allocated to reduce the carrying amount of any goodwill allocated to the CGU (group of units), then to the other assets of the unit (group of units) pro rata on the basis of the carrying amount of each asset in the unit (group of units). Impairment losses relating to goodwill cannot be reversed in future periods.

The recognition or reversal of impairment losses is classified as other operating income and expenses.

(17) Bonds

Convertible bonds

UMC evaluates the terms of the convertible bonds issued to determine whether it contains both a liability and an equity component. Furthermore, UMC assesses if the economic characteristics and risks of the put and call options embedded in the convertible bonds are closely related to the economic characteristics and risk of the host contract before separating the equity element.

For the liability component excluding the derivatives, its fair value is determined based on the effective interest rate applied at that time by the market to instruments of comparable credit status. The liability component is classified as a financial liability measured at amortized cost using the EIR method before the instrument is converted or settled. For the embedded derivative that is not closely related to the host contract, it is classified as a liability component and subsequently measured at fair value through profit or loss unless it qualifies as an equity component. The equity component is recognized initially at the difference between the fair value of the compound financial instrument as a whole and the fair value of the liability component. Its carrying amount is not remeasured in the subsequent accounting periods. If the convertible bond issued does not have an equity component, it is accounted for as a hybrid instrument in accordance with the requirements under IFRS 9 (prior to January 1, 2018: IAS 39).

If the convertible bondholders exercise their conversion right before maturity, UMC shall adjust the carrying amount of the liability component. The adjusted carrying amount of the liability component at conversion and the carrying amount of equity component are credited to common stock and additional paid-in capital - premiums. No gain or loss is recognized upon bond conversion.

In addition, the liability component of convertible bonds is classified as a current liability if within 12 months the bondholders may exercise the put right. After the put right expires, the liability component of the convertible bonds should be reclassified as a non-current liability if it meets the definition of a non-current liability in all other respects.

(18) Post-Employment Benefits

Under defined contribution pension plans, the contribution payable to the plan in exchange for the service rendered by an employee during a period shall be recognized as an expense. The contribution payable, after deducting any amount already paid, is recognized as a liability.

Under defined benefit pension plans, the net defined benefit liability (asset) shall be recognized as the amount of the present value of the defined benefit obligation, deducting the fair value of any plan assets and adjusting for any effect of the asset ceiling. Service cost and net interest on the net defined benefit liability (asset) are recognized as expenses in the period of service. Remeasurement of the net defined benefit liability (asset), which comprises actuarial gains and losses, the return on plan assets and any change in the effect of the asset ceiling, excluding any amounts included in net 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 shall not be reclassified to profit or loss in a subsequent period.

(19) Government Grants

In accordance with IAS 20 "Accounting for Government Grants and Disclosure of Government Assistance", the Company recognizes the government grants when there is reasonable assurance that such grants will be received and the conditions attaching to them will be complied with.

An asset related government grant is recorded as deferred income and recognized in profit or loss on a straight-line basis over the useful lives of the assets. An expense related government grant is recognized in profit or loss on a systematic basis over the periods in which the Company recognizes as expenses the related costs for which the grant is intended to compensate. A government grant that compensates for expenses or losses already incurred or for the purpose of giving immediate financial support to the Company with no future related costs is recognized in profit or loss when it becomes receivable.

(20) Treasury Stock

UMC's own equity instruments repurchased (treasury shares) are recognized at repurchase cost and deducted from equity. Any difference between the carrying amount and the consideration is recognized in equity.

(21) Share-Based Payment Transactions

The cost of equity-settled transactions between the Company and its employees is measured at the fair value using an appropriate pricing model by reference to the market price of the equity instruments on the grant date.

The cost of equity-settled transactions is recognized, together with a corresponding increase in equity, over the periods in which the performance and/or service conditions are being fulfilled. The cumulative expense recognized for equity-settled transactions at each reporting date reflects the extent to which the vesting period has passed and the Company's best estimate of the quantity of equity instruments that will ultimately vest. The charge to profit or loss for a period represents the movement in cumulative expense recognized between the beginning and the end of that period.

No expense will be recognized for awards that do not ultimately vest, except for equity-settled transactions for which vesting is conditional upon a market or non-vesting condition. These are treated as vested irrespective of whether the market or non-vesting condition is satisfied, provided that all other performance and/or service conditions are satisfied.

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

Where an equity-settled award is cancelled, it is treated as if it fully vests on the date of cancellation, and any expense not yet recognized for the award is recognized immediately. This includes any award where non-vesting conditions within the control of either the entity or the employee are not met. However, if a new award substitutes for the cancelled award and is designated as a replacement award on the date that it is granted, the cancelled and new awards are treated as if they were a modification of the original award.

(22) Revenue Recognition

2016 and 2017

Revenue is recognized to the extent that it is probable that the economic benefits will flow to the Company and the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable. The specific criteria described below must also be met before revenue is recognized.

Sales revenue

The Company manufactures semiconductors for creditworthy customers based on their design specifications, pursuant to manufacturing agreements and/or purchase orders at contractual prices. The Company ships wafers mainly under the trade term, Free Carrier (FCA), through which the title and risk of loss for the wafers are transferred to the customers upon delivery to carriers approved by the customers. Sales revenue is recognized at this point, having also fulfilled all of the following criteria pursuant to IAS 18, paragraph 14:

- a. the significant risks and rewards of ownership of the goods have been transferred to the customer;
- b. neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold have been retained;
- c. the amount of revenue can be measured reliably;
- d. it is probable that the economic benefits associated with the transaction will flow to the entity; and
- e. the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Sales revenue is measured at the fair value of the consideration received or receivable, net of sales returns and discounts, which are estimated based on customer complaints, historical experience and other known factors. Sales returns and discounts are recorded in the same period in which sales are made.

2018

Revenue from Contracts with Customers

The Company recognizes revenue from contracts with customers by applying the following steps of IFRS 15:

- a. identify the contract with a customer;
- b. identify the performance obligations in the contract;
- c. determine the transaction price;
- d. allocate the transaction price to the performance obligations in the contract; and
- e. recognize revenue when (or as) the entity satisfies its performance obligations.

Revenues on the Company's contracts with customers for the sales of wafers and joint technology development are recognized as the Company satisfies its performance obligations to customers upon transfer of control of promised goods and services. The Company recognizes revenue at transaction price that are determined using contractual prices reduced by sales returns and allowances which the Company estimates based on historical experience having determined that a significant reversal in the amount of cumulative revenue recognized are not probable to occur. The Company recognizes refund liabilities for estimated sales return and allowances based on the customer complaints, historical experience, and other known factors.

The Company recognizes accounts receivable when the Company transfers control of the goods or services to customers and has a right to an amount of consideration that is unconditional. Such accounts receivable are short term and do not contain a significant financing component. For certain contracts that do not provide the Company unconditional rights to the consideration, and the transfer of control of the goods or services has been satisfied, the Company recognizes contract assets and revenues.

Consideration received from customers prior to the Company having satisfied its performance obligations are accounted for as contract liabilities which are transferred to revenue after the performance obligations are satisfied. The Company recognizes costs to fulfill a contract when the costs relate directly to the contract, generate or enhance resources to be used to satisfy performance obligations in the future, and are expected to be recovered. The costs and revenues are recognized when the Company satisfies its performance obligations to customers upon transfer of control of promised goods and services.

Interest income

2016 and 2017

For financial assets measured at amortized cost (including held-to-maturity financial assets) and financial assets at fair value through profit or loss, interest income is recorded using the EIR method and recognized in profit or loss.

2018

For financial assets measured at amortized cost and financial assets at fair value through other comprehensive income, interest income is recorded using the EIR method and recognized in profit or loss.

Dividends

Revenue is recognized when the Company's right to receive the dividends is established, which is generally when stockholders approve the dividend.

(23) Income Tax

Income tax expense (benefit) is the aggregate amount of current income tax and deferred income tax included in the determination of profit or loss for the period.

Current income tax

Current income tax assets and liabilities for the current period and prior periods are measured using the tax rates and tax laws that have been enacted or substantively enacted by the end of the reporting period. Current income tax relating to items recognized directly in other comprehensive income or equity is recognized in other comprehensive income or equity rather than profit or loss.

Undistributed earnings, calculated based on Business Entity Accounting Act are subject to a tax in accordance with the Income Tax Law of the R.O.C. Accordingly, the undistributed tax impact is provided in the period the income is earned, assuming that no earnings are distributed. Any reduction in the liability will be recognized when the income is distributed upon the stockholders' approval in the subsequent year. Tax on undistributed earnings may be offset by the Company's available tax credits carried forward, where applicable. As such, the incremental tax accrued on undistributed earnings may be offset by a corresponding reduction in deferred income tax assets, where applicable.

Deferred income tax

Deferred income tax is determined using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts in financial statements at the reporting date.

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

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

Deferred tax assets are recognized for all deductible temporary differences, the carryforward of unused tax losses and unused tax credits, to the extent that it is probable that future taxable profit will be available against which the deductible temporary differences and the carryforward of unused tax losses and unused tax credits can be utilized, except:

- a. Where the deferred tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss;
- b. In respect of deductible temporary differences associated with investments in subsidiaries, associates and joint ventures, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realized or the liability is settled, based on tax rates and tax laws that have been enacted or substantively enacted at the reporting date. The measurement of deferred tax assets and liabilities reflects the tax consequences that would follow 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. Deferred tax relating to items recognized outside profit or loss is not recognized in profit or loss but rather in other comprehensive income or directly in equity. Deferred tax assets are reassessed and recognized at each reporting date. Unrecognized deferred tax assets are reassessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax assets to be recovered.

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

Tax benefits acquired as part of a business combination, but not satisfying the criteria for separate recognition at the acquisition date, might be realized and recognized subsequently as follows:

- a. Acquired deferred tax benefits recognized within the measurement period that result from new information about facts and circumstances that existed at the acquisition date shall be applied to reduce the carrying amount of any goodwill related to that acquisition. If the carrying amount of that goodwill is nil, any remaining deferred tax benefits shall be recognized in profit or loss;
- b. All other acquired deferred tax benefits realized shall be recognized in profit or loss, other comprehensive income or equity.

(24) Earnings per Share

Earnings per share is computed according to IAS 33 "Earnings per Share". Basic earnings per share is computed by dividing net income by the weighted-average number of ordinary shares outstanding during the current reporting period. Diluted earnings per share is computed by taking basic earnings per share into consideration plus additional ordinary shares that would have been outstanding if the dilutive share equivalents had been issued. Net income is also adjusted for interest and other income or expenses derived from any underlying dilutive share equivalents. The weighted-average of outstanding shares is adjusted retroactively for stock dividends and employee stock compensation issues.

5. SIGNIFICANT ACCOUNTING JUDGMENTS, ESTIMATES AND ASSUMPTIONS

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

The key assumptions concerning the future and other key sources of estimating uncertainty at the reporting date that would have a significant risk for a material adjustment to the carrying amounts of assets or liabilities within the next fiscal year are discussed below.

The Company bases its assumptions and estimates on information available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond the control of the Company. Such changes are reflected in the assumptions when they occur.

(1) The Fair Value of Level 3 Financial Instruments

Where the fair values of the Level 3 financial assets and financial liabilities recorded on the balance sheet cannot be derived from active markets, they are determined by the application of an appropriate valuation method including the income approach and market approach. The valuation of these financial assets and financial liabilities involves significant judgment in the preparation of cash flow forecasts, a selection of comparable companies or equity transaction prices, as well as the application of assumptions such as discount rates, discounts for lack of marketability, and valuation multiples, etc. Changes in assumptions about these factors could affect the reported fair value of the financial assets and financial liabilities. Please refer to Note 11 for more details.

(2) Inventories

Inventories are valued at the lower of cost and net realizable value item by item. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale. Please refer to Note 6 (4). Costs of completion include direct labor and overhead, including depreciation and maintenance of production equipment, indirect labor costs, indirect material costs, supplies, utilities and royalties that is expected to be incurred at normal production level. The Company estimates normal production level taking into account loss of capacity resulting from planned maintenance, based on historical experience and current production capacity.

(3) Post-Employment Benefits

Defined benefit costs and the present value of the defined benefit obligation for a pension plan are determined using the projected unit credit method. An actuarial valuation involves making various assumptions, which include the determination of the discount rate, future salary increase rate, mortality rate, etc., and may differ from actual developments in the future. In determining the appropriate discount rate, management considers the interest rates of the government bonds extrapolated from maturity corresponding to the expected duration of the defined benefit obligation. As for the rate of future salary increase, management takes account of past experiences, comparisons within the industry and the geographical region, inflation and the discount rate. Due to the complexity of the actuarial valuation and its long-term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. The assumptions used are disclosed in Note 6(14).

(4) Impairment of Property, Plant and Equipment

At each reporting date or whenever events indicate that the asset's value has declined or significant changes in the market with an adverse effect have taken place, the Company assesses whether there is an indication that an asset in the scope of IAS 36 may be impaired. If any indication exists, the Company completes impairment testing for the CGU to which the individual assets belong. Where the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. The recoverable amount of an individual asset or CGU is the higher of fair value less costs of disposal and its value in use. The fair value less costs of disposal is based on best information available to reflect the amount that an entity could obtain from the disposal of the asset in an orderly transaction between market participants, after deducting the costs of disposal. The value in use is measured at the net present value of the future cash flows the entity expects to derive from the asset or CGU. Cash flow projection involves subjective judgments and estimates which include the estimated useful lives of property, plant and equipment, capacity that generates future cash flows, capacity of physical output, potential fluctuations of economic cycle in the industry and the Company's operating situation.

(5) Income Tax

Uncertainties exist with respect to the interpretation of complex tax regulations, changes in tax laws, and the amount and timing of future taxable income. The Company establishes provisions, based on reasonable estimates, for possible consequences of audits by the tax authorities of the respective countries in which it operates. The amount of such provisions is based on various factors, such as experience of previous tax audits and different interpretations of tax regulations made by the taxable entity and the responsible tax authority. Such differences of interpretation may arise on a wide variety of issues depending on the conditions prevailing in the respective domicile of the Company.

Deferred tax assets are recognized for all carryforward of unused tax losses, tax credits and deductible temporary differences to the extent that it is probable that future taxable profit will be available or there are sufficient taxable temporary differences against which the unused tax losses, unused tax credits or deductible temporary differences can be utilized. The amount of deferred tax assets determined to be recognized is based upon the likely timing and the level of future taxable profits and taxable temporary differences. Please refer to Note 6 (24) for more details on unrecognized deferred tax assets.

6. CONTENTS OF SIGNIFICANT ACCOUNTS

(1) Cash and Cash Equivalents

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Cash on hand	\$ 4,360	\$ 6,091
Checking and savings accounts	21,699,357	25,021,265
Time deposits	50,711,803	49,139,549
Repurchase agreements collateralized by government and corporate bonds	9,259,052	9,494,834
Total	<u>\$81,674,572</u>	<u>\$83,661,739</u>

(2) Financial Assets at Fair Value through Profit or Loss

	As of December 31,	
	2017 (Note)	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Financial assets mandatorily measured at fair value through profit or loss		
Common stocks		\$ 6,814,915
Preferred stocks		2,998,228
Funds		2,030,688
Convertible Bonds		236,905
Forward contracts		3,561
Total		<u>\$12,084,297</u>
Designated financial assets at fair value through profit or loss		
Convertible bonds	\$ 213,180	
Financial assets held for trading		
Common stocks	434,630	
Preferred stocks	228,508	
Option	31,605	
Subtotal	694,743	
Total	<u>\$ 907,923</u>	
Current	\$ 716,918	\$ 528,450
Noncurrent	191,005	11,555,847
Total	<u>\$ 907,923</u>	<u>\$12,084,297</u>

On June 29, 2018, the Board of Directors of UMC resolved to exercise the call option of a joint venture agreement between FUJITSU SEMICONDUCTOR LIMITED (FSL) and UMC. The transaction was approved by the Taiwan authorities on September 26, 2018. Upon obtaining other relevant authority's approval of the investment application, the Company anticipates to invest NT\$15.3 billion for acquiring remaining shares of MIE FUJITSU SEMICONDUCTOR LIMITED (MIFS), representing ownership interest of 84.1% and making MIFS a wholly-owned subsidiary of the Company. The change of the fair value for the call option is recorded in profit or loss.

Note: The Company adopted IFRS 9 on January 1, 2018. The Company elected not to restate prior periods in accordance with the transition provision in IFRS 9. Please refer to Note 6(6) and Note 6(7) for available-for-sale financial assets, non-current and financial assets measured at cost, non-current, respectively, as of December 31, 2017.

(3) Accounts Receivable, Net

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Accounts receivable	\$21,910,146	\$23,784,141
Less: allowance for sales returns and discounts	(994,151)	—
Less: loss allowance	(39,578)	(48,152)
Net	<u>\$20,876,417</u>	<u>\$23,735,989</u>

Aging analysis of accounts receivable, net:

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Neither past due nor impaired	<u>\$15,496,207</u>	<u>\$18,271,304</u>
Past due but not impaired:		
≤ 30 days	4,268,772	3,407,690
31 to 60 days	444,401	739,054
61 to 90 days	138,178	545,366
91 to 120 days	124,332	365,007
≥ 121 days	404,527	407,568
Subtotal	<u>5,380,210</u>	<u>5,464,685</u>
Total	<u>\$20,876,417</u>	<u>\$23,735,989</u>

Movement of loss allowance for accounts receivable:

	For the years ended December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Beginning balance	\$ 86,595	\$ 39,578
Net charge for the period	(47,017)	8,574
Ending balance	<u>\$ 39,578</u>	<u>\$ 48,152</u>

The collection periods for third party domestic sales and third party overseas sales were month-end 30~60 days and net 30~120 days, respectively.

After adopting IFRS 9, an impairment analysis is performed at each reporting date to measure ECLs of accounts receivable. For receivable past due within 60 days, including not past due, the Company estimates a provision rate to calculate ECLs. A provision rate is determined based on the Company's historical credit loss experience and customers' current financial condition, adjusted for forward-looking factors, such as customers' economic environment. For the receivable past due over 60 days, the Company applies the aforementioned provision rate and also individually assesses whether to recognize additional expected credit losses by considering customer's operating situation and debt-paying ability.

The impairment losses assessed individually as of December 31, 2017 primarily resulted from the financial difficulties of the counterparties, and the amounts recognized were the difference between the carrying amount of the accounts receivable and the present value of expected collectable amounts. The Company has no collateral with respect to those accounts receivable.

(4) Inventories, Net

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Raw materials	\$ 2,354,410	\$ 3,766,056
Supplies and spare parts	3,007,669	3,133,737
Work in process	11,492,450	10,034,488
Finished goods	1,402,971	1,268,838
Total	<u>\$18,257,500</u>	<u>\$18,203,119</u>

- a. For the years ended December 31, 2016, 2017 and 2018, the Company recognized NT\$114,527 million, NT\$118,252 million and NT\$123,795 million, respectively, in operating costs, of which NT\$2,130 million, NT\$2,256 million and NT\$1,698 million in 2016, 2017 and 2018, respectively, were related to write-down of inventories.
- b. On February 6, 2016, an earthquake with a magnitude of 6.4 Richter struck southern Taiwan and caused financial related losses to UMC. UMC insured for losses endured due to the earthquake. As of December 31, 2016, UMC recognized losses including loss from scrapped inventory of NT\$1,143 million and production line recovery expenses of NT\$669 million. Furthermore, UMC received compensation from insurance claims of NT\$2,646 million. The case was closed as of December 31, 2016.
- c. None of the aforementioned inventories were pledged.

(5) Financial Assets at Fair Value through Other Comprehensive Income, Non-Current

	As of December 31,	
	2017(Note)	2018
		NT\$
		(In Thousands)
Equity instruments		
Common stocks		\$11,401,451
Preferred stocks		184,026
Total		<u>\$11,585,477</u>

The fair value of each investment in equity instrument to be measured at fair value through other comprehensive income is as follows:

Type of securities	Name of securities	As of December 31,	
		2017(Note)	2018
			NT\$
			(In Thousands)
Common stock	SILICON INTEGRATED SYSTEMS CORP.		1,032,930
Common stock	UNIMICRON HOLDING LIMITED		561,261
Common stock	MIE FUJITSU SEMICONDUCTOR LIMITED		2,220,103
Common stock	UNIMICRON TECHNOLOGY CORP.		4,373,833
Common stock	ITE TECH. INC.		424,383
Common stock	NOVATEK MICROELECTRONICS CORP.		2,335,131
Common stock	SHIN-ETSU HANDOTAI TAIWAN CO., LTD.		453,810
Preferred stock	MTIC HOLDINGS PTE. LTD.		184,026

These investments in equity instruments are held for medium to long-term purposes and therefore are accounted for as fair value through other comprehensive income. Dividends from equity instruments designated as fair value through other comprehensive income were NT\$268 million for the year ended December 31, 2018. All the amounts are related to investments held at the end of the reporting period.

Note: The Company adopted IFRS 9 on January 1, 2018. The Company elected not to restate prior periods in accordance with the transition provision in IFRS 9. Please refer to Note 6(6) and Note 6(7) for available-for-sale financial assets, non-current and financial assets measured at cost, non-current, respectively, as of December 31, 2017.

(6) Available-For-Sale Financial Assets, Non-Current

	As of December 31, 2017
	NT\$
	(In Thousands)
Common stocks	\$17,653,513
Preferred stocks	1,865,410
Funds	1,117,409
Total	<u>\$20,636,332</u>

(7) Financial Assets Measured at Cost, Non-Current

	As of December 31, 2017
	NT\$
	(In Thousands)
Common stocks	\$ 473,134
Preferred stocks	1,657,388
Funds	87,950
Total	<u>\$ 2,218,472</u>

Since these financial assets mostly consisted of non-publicly traded stocks and private venture funds, for which the fair values could not be reliably measured due to lack of sufficient financial information available, the Company measured these financial assets at cost.

(8) Investments Accounted For Under the Equity Method

a. Details of investments accounted for under the equity method are as follows:

Investee companies	As of December 31,			
	2017		2018	
	Amount NT\$ (In Thousands)	Percentage of ownership or voting rights	Amount NT\$ (In Thousands)	Percentage of ownership or voting rights
<u>Listed companies</u>				
CLIENTRON CORP.	\$ 264,545	22.39	\$ 249,663	22.39
FARADAY TECHNOLOGY CORP. (FARADAY) (Note A)	1,659,807	13.78	1,483,111	13.78
<u>Unlisted companies</u>				
WINAICO SOLAR PROJEKT 1 GMBH (Note B)	—	50.00	—	50.00
MTIC HOLDINGS PTE. LTD.	50,743	45.44	3,026	45.44
YUNG LI INVESTMENTS, INC.	42,144	45.16	2,213	45.16
WINAICO IMMOBILIEN GMBH (Note B)	—	44.78	—	44.78
UNITECH CAPITAL INC.	732,267	42.00	568,005	42.00
TRIKNIGHT CAPITAL CORPORATION	889,876	40.00	1,520,575	40.00
HSUN CHIEH INVESTMENT CO., LTD.	1,600,524	36.49	1,608,551	36.49
YANN YUAN INVESTMENT CO., LTD.	2,027,204	30.87	2,032,013	30.87
HSUN CHIEN CAPITAL CORP.	176,911	30.00	161,319	30.00
VSENSE CO., LTD.	78,294	28.63	31,544	26.89
UNITED LED CORPORATION HONG KONG LIMITED	216,707	25.14	167,953	25.14
TRANSLINK CAPITAL PARTNERS I, L.P. (Note C)	108,925	10.38	120,440	10.38
SHANDONG HUAHONG ENERGY INVEST CO., INC. (SHANDONG HUAHONG) (Note B)	—	50.00	—	—
CTC CAPITAL PARTNERS I, L.P.	32	31.40	—	—
Total	<u>\$ 7,847,979</u>		<u>\$ 7,948,413</u>	

Note A: Beginning from June 2015, the Company accounts for its investment in FARADAY as an associate given the fact that the Company obtained the ability to exercise significant influence over FARADAY through representation on its Board of Directors.

Note B: SHANDONG HUAHONG, WINAICO SOLAR PROJEKT 1 GMBH and WINAICO IMMOBILIEN GMBH are joint ventures to the Company.

Note C: The Company follows international accounting practices in equity accounting for limited partnerships and uses the equity method to account for these investees.

The carrying amount of investments accounted for using the equity method for which there are published price quotations amounted to NT\$1,924 million and NT\$1,733 million, as of December 31, 2017 and 2018, respectively. The fair value of these investments were NT\$2,142 million and NT\$1,621 million, as of December 31, 2017 and 2018, respectively.

None of the aforementioned associates and joint ventures were pledged.

b. Financial information of associates and joint ventures:

There is no individually significant associate or joint venture for the Company. For individually immaterial associates and joint ventures, the following tables summarize the amount recognized by the Company at its share of those associates and joint ventures separately. When an associate or a joint venture is a foreign operation, and the functional currency of the foreign entity is different from the Company, an exchange difference arising from translation of the foreign entity will be recognized in other comprehensive income (loss). Such exchange differences recognized in other comprehensive income (loss) in the financial statements for the years ended December 31, 2016, 2017 and 2018 were NT\$(83) million, NT\$45 million and NT\$(16) million, respectively, which were not included in the following table.

- (i) The aggregate amount of the Company's share of all its individually immaterial associates that are accounted for using the equity method was as follows:

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Profit (Loss) from continuing operations	\$ (270,060)	\$ 77,589	\$ (616,665)
Post-tax profit from discontinued operations	—	80,248	—
Other comprehensive income (loss)	(187,891)	526,773	(82,871)
Total comprehensive income (loss)	<u>\$ (457,951)</u>	<u>\$ 684,610</u>	<u>\$ (699,536)</u>

- (ii) The aggregate amount of the Company's share of all its individually immaterial joint ventures that are accounted for using the equity method was as follows:

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Loss from continuing operations	\$ (45,606)	\$ —	\$ —
Other comprehensive income (loss)	—	—	—
Total comprehensive loss	<u>\$ (45,606)</u>	<u>\$ —</u>	<u>\$ —</u>

(9) Property, Plant and Equipment

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Land	\$ 1,314,402	\$ 1,314,402
Buildings	21,112,807	19,841,058
Machinery and equipment	160,497,062	139,213,317
Transportation equipment	18,751	20,921
Furniture and fixtures	2,038,816	1,908,214
Leasehold improvement	4,353	3,869
Construction in progress and equipment awaiting inspection	20,755,490	10,544,814
Net	<u>\$205,741,681</u>	<u>\$172,846,595</u>

Cost:

	Land	Buildings	Machinery and equipment	Transportation equipment	Furniture and fixtures	Leasehold improvement	Construction in progress and equipment awaiting inspection	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
As of January 1, 2017	\$ 1,314,402	\$37,042,323	\$85,442,975	\$ 78,314	\$ 6,826,957	\$ 69,245	\$ 45,048,631	\$85,822,847
Additions	—	—	—	—	—	—	31,140,639	31,140,639
Disposals	—	—	(3,200,814)	(5,774)	(40,115)	(14,785)	—	(3,261,488)
Transfers and reclassifications	—	1,479,439	55,836,583	4,268	924,252	1,534	(54,921,519)	3,324,557
Exchange effect	—	(448,102)	(11,809,825)	(1,026)	(35,296)	(3,437)	(506,312)	(12,803,998)
As of December 31, 2017	<u>\$ 1,314,402</u>	<u>\$38,073,660</u>	<u>\$826,268,919</u>	<u>\$ 75,782</u>	<u>\$ 7,675,798</u>	<u>\$ 52,557</u>	<u>\$ 20,761,439</u>	<u>\$894,222,557</u>

	Land	Buildings	Machinery and equipment	Transportation equipment	Furniture and fixtures	Leasehold improvement	Construction in progress and equipment awaiting inspection	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
As of January 1, 2018	\$ 1,314,402	\$38,073,660	\$826,268,919	\$ 75,782	\$ 7,675,798	\$ 52,557	\$ 20,761,439	\$894,222,557
Additions	—	—	—	—	—	—	17,579,689	17,579,689
Disposals	—	(64,878)	(2,330,437)	(18,363)	(40,199)	—	—	(2,453,877)
Disposal of subsidiaries	—	—	(224,895)	—	(6,515)	(2,226)	—	(233,636)
Transfers and reclassifications	—	375,854	27,447,023	8,884	433,665	2,049	(27,693,591)	573,884
Exchange effect	—	(78,334)	2,527,895	52	(5,848)	1,069	(96,774)	2,348,060
As of December 31, 2018	<u>\$ 1,314,402</u>	<u>\$38,306,302</u>	<u>\$853,688,505</u>	<u>\$ 66,355</u>	<u>\$ 8,056,901</u>	<u>\$ 53,449</u>	<u>\$ 10,550,763</u>	<u>\$912,036,677</u>

Accumulated Depreciation and Impairment:

	Land	Buildings	Machinery and equipment	Transportation equipment	Furniture and fixtures	Leasehold improvement	Construction in progress and equipment awaiting inspection	Total
	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
As of January 1, 2017	\$ —	\$15,612,462	\$629,903,740	\$ 56,356	\$ 5,198,998	\$ 61,938	\$ 5,949	\$650,839,443
Depreciation	—	1,492,606	48,961,521	5,639	502,971	2,383	—	50,965,120
Disposals	—	—	(3,172,320)	(5,774)	(39,914)	(12,742)	—	(3,230,750)
Transfers and reclassifications	—	—	(7,563)	1,587	5,976	—	—	—
Exchange effect	—	(144,215)	(9,913,521)	(777)	(31,049)	(3,375)	—	(10,092,937)
As of December 31, 2017	\$ —	\$16,960,853	\$665,771,857	\$ 57,031	\$ 5,636,982	\$ 48,204	\$ 5,949	\$688,480,876

	Land NT\$ (In Thousands)	Buildings NT\$ (In Thousands)	Machinery and equipment NT\$ (In Thousands)	Transportation equipment NT\$ (In Thousands)	Furniture and fixtures NT\$ (In Thousands)	Leasehold improvement NT\$ (In Thousands)	Construction in progress and equipment awaiting inspection NT\$ (In Thousands)	Total NT\$ (In Thousands)
As of January 1, 2018	\$ —	\$16,960,853	\$665,771,857	\$ 57,031	\$ 5,636,982	\$ 48,204	\$ 5,949	\$688,480,876
Depreciation	—	1,535,409	47,871,174	6,080	533,628	2,298	—	49,948,589
Disposals	—	(57,812)	(2,286,359)	(17,963)	(25,467)	—	—	(2,387,601)
Disposal of subsidiaries	—	—	(180,843)	—	(5,264)	(2,014)	—	(188,121)
Transfers and reclassifications	—	297	(3,164)	—	2,867	—	—	—
Exchange effect	—	26,497	3,302,523	286	5,941	1,092	—	3,336,339
As of December 31, 2018	\$ —	\$18,465,244	\$714,475,188	\$ 45,434	\$ 6,148,687	\$ 49,580	\$ 5,949	\$739,190,082

The thin-film solar cell and module industry has undergone challenging business conditions and experienced pricing declines indirectly due to oversupply of inventory in the silicon solar cell industry and the reductions in government supported incentives. The Company considered that the thin-film solar cell and module business had an indication of possible impairment and performed an impairment test for the CGU composed of property, plant and equipment used in the manufacturing of thin-film solar cells and modules.

In 2016, the Company determined the recoverable amount of the CGU to be NT\$1,169 million based on the fair value less costs of disposal. Its fair value measurement was classified as Level 3 of the fair value hierarchy. External independent appraisers are involved in fair value measurement using a cost method. After considering the relevant objective evidence, the key assumptions used included replacement costs, residual value and remaining useful life of the existing assets. The impairment test revealed that the recoverable amount was less than the carrying amount. The Company recorded in the net other operating income and expenses an impairment loss of NT\$455 million for the year ended December 31, 2016, all of which came from new business segment.

In 2017 and 2018, the Company determined that the recoverable amount based on the fair value less costs of disposal was higher than the carrying amount of the CGU and therefore there was no impairment recognized.

Please refer to Note 8 for property, plant and equipment pledged as collateral.

The amounts of total interest expense before capitalization of borrowing costs were NT\$1,407 million, NT\$2,407 million and NT\$2,769 million for the years ended December 31, 2016, 2017 and 2018, respectively. Details of capitalized borrowing costs are as follows:

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Total interest capitalized	\$ 157,210	\$ —	\$ —
Interest rates applied	1.52%~2.01%	—	—

(10) Intangible Assets

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Goodwill	\$ 15,188	\$ 15,012
Software	410,712	524,155
Patents and technology license fees	2,102,561	1,668,218
Others	1,259,048	784,419
Net	<u>\$ 3,787,509</u>	<u>\$ 2,991,804</u>

Cost:

	Goodwill	Software	Patents and technology license fees	Others	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
As of January 1, 2017	\$ 15,188	\$ 903,993	\$ 4,534,340	\$ 3,429,640	\$ 8,883,161
Additions	—	3,566	38,928	1,145,110	1,187,604
Disposals	—	(95,505)	—	(1,009,051)	(1,104,556)
Reclassifications	—	278,650	—	—	278,650
Exchange effect	—	(9,978)	114,483	6	104,511
As of December 31, 2017	<u>\$ 15,188</u>	<u>\$ 1,080,726</u>	<u>\$ 4,687,751</u>	<u>\$ 3,565,705</u>	<u>\$ 9,349,370</u>

	Goodwill	Software	Patents and technology license fees	Others	Total
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
As of January 1, 2018	\$ 15,188	\$ 1,080,726	\$ 4,687,751	\$ 3,565,705	\$ 9,349,370
Additions	—	—	214,278	612,253	826,531
Disposals	—	(422,591)	(179,418)	(987,841)	(1,589,850)
Disposal of subsidiaries	(176)	—	—	—	(176)
Reclassifications	—	474,127	—	—	474,127
Exchange effect	—	(6,458)	(210,982)	(1)	(217,441)
As of December 31, 2018	<u>\$ 15,012</u>	<u>\$ 1,125,804</u>	<u>\$ 4,511,629</u>	<u>\$ 3,190,116</u>	<u>\$ 8,842,561</u>

Accumulated Amortization and Impairment:

	Goodwill	Software	Patents and technology license fees	Others	Total
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
As of January 1, 2017	\$ —	\$ 433,537	\$ 2,143,372	\$ 2,217,949	\$ 4,794,858
Amortization	—	337,376	483,940	1,097,754	1,919,070
Disposals	—	(95,505)	—	(1,009,051)	(1,104,556)
Exchange effect	—	(5,394)	(42,122)	5	(47,511)
As of December 31, 2017	<u>\$ —</u>	<u>\$ 670,014</u>	<u>\$ 2,585,190</u>	<u>\$ 2,306,657</u>	<u>\$ 5,561,861</u>

	Goodwill	Software	Patents and technology license fees	Others	Total
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
As of January 1, 2018	\$ —	\$ 670,014	\$ 2,585,190	\$ 2,306,657	\$ 5,561,861
Amortization	—	357,624	468,296	1,086,882	1,912,802
Disposals	—	(422,591)	(179,418)	(987,841)	(1,589,850)
Exchange effect	—	(3,398)	(30,657)	(1)	(34,056)
As of December 31, 2018	\$ —	\$ 601,649	\$ 2,843,411	\$ 2,405,697	\$ 5,850,757

The amortization amounts of intangible assets are as follows:

	For the years ended December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Operating costs	\$ 799,215	\$ 758,050
Operating expenses	\$ 1,119,855	\$ 1,154,752

(11) Short-Term Loans

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Unsecured bank loans	\$19,159,298	\$ 7,780,552
Unsecured other loans	6,286,242	5,323,256
Total	\$25,445,540	\$13,103,808

	For the years ended December 31,		
	2016	2017	2018
Interest rates applied	0.51%~4.60%	0.00%~4.35%	0.00%~4.55%

The Company's unused short-term lines of credit amounted to NT\$62,057 million and NT\$77,658 million as of December 31, 2017 and 2018, respectively.

(12) Bonds Payable

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Unsecured domestic bonds payable	\$ 31,200,000	\$23,700,000
Unsecured convertible bonds payable	18,196,332	18,196,332
Less: Discounts on bonds payable	(878,701)	(518,150)
Total	48,517,631	41,378,182
Less: Current portion	(24,841,770)	(2,499,235)
Net	<u>\$ 23,675,861</u>	<u>\$38,878,947</u>

A. UMC issued domestic unsecured corporate bonds. The terms and conditions of the bonds were as follows:

Term	Issuance date	Issued amount	Coupon rate	Repayment
Seven-year	In early June 2012	NT\$2,500 million	1.63%	Interest will be paid annually and the principal will be repayable in June 2019 upon maturity.
Five-year	In mid-March 2013	NT\$7,500 million	1.35%	Interest will be paid annually and the principal has been fully repaid in March 2018.
Seven-year	In mid-March 2013	NT\$2,500 million	1.50%	Interest will be paid annually and the principal will be repayable in March 2020 upon maturity.
Seven-year	In mid-June 2014	NT\$2,000 million	1.70%	Interest will be paid annually and the principal will be repayable in June 2021 upon maturity.
Ten-year	In mid-June 2014	NT\$3,000 million	1.95%	Interest will be paid annually and the principal will be repayable in June 2024 upon maturity.
Five-year	In late March 2017	NT\$6,200 million	1.15%	Interest will be paid annually and the principal will be repayable in March 2022 upon maturity.
Seven-year	In late March 2017	NT\$2,100 million	1.43%	Interest will be paid annually and the principal will be repayable in March 2024 upon maturity.
Five-year	In early October 2017	NT\$2,000 million	0.94%	Interest will be paid annually and the principal will be repayable in October 2022 upon maturity.
Seven-year	In early October 2017	NT\$3,400 million	1.13%	Interest will be paid annually and the principal will be repayable in October 2024 upon maturity.

- B. On May 18, 2015, UMC issued SGX-ST listed currency linked zero coupon convertible bonds. The terms and conditions of the bonds were as follows:
- a. Issue Amount: US\$600 million
 - b. Period: May 18, 2015 ~ May 18, 2020 (Maturity date)
 - c. Redemption:
 - i. UMC may redeem the bonds, in whole or in part, after 3 years of the issuance and prior to the maturity date, at the principal amount of the bonds with an interest calculated at the rate of -0.25% per annum (the Early Redemption Amount) if the closing price of the ordinary shares of UMC on the TWSE, for a period of 20 out of 30 consecutive trading days, the last of which occurs not more than 5 days prior to the date upon which notice of such redemption is published, is at least 125% of the conversion price. The Early Redemption Price will be converted into NTD based on the Fixed Exchange Rate (NTD 30.708=USD 1.00), and this fixed NTD amount will be converted using the prevailing rate at the time of redemption for payment in USD.
 - ii. UMC may redeem the bonds, in whole, but not in part, at the Early Redemption Amount if at least 90% in principal amount of the bonds has already been converted, redeemed or repurchased and cancelled.
 - iii. UMC may redeem all, but not part, of the bonds, at the Early Redemption Amount at any time, in the event of certain changes in the R.O.C.'s tax rules which would require UMC to gross up for payments of principal, or to gross up for payments of interest or premium.
 - iv. All or any portion of the bonds will be redeemable at Early Redemption Amount at the option of bondholders on May 18, 2018 at 99.25% of the principal amount.
 - v. Bondholders have the right to require UMC to redeem all of the bonds at the Early Redemption Amount if UMC's ordinary shares cease to be listed on the Taiwan Stock Exchange.
 - vi. In the event that a change of control as defined in the indenture of the bonds occurs to UMC, the bondholders shall have the right to require UMC to redeem the bonds, in whole but not in part, at the Early Redemption Amount.

- d. Terms of Conversion:
- i. Underlying Securities: Ordinary shares of UMC
 - ii. Conversion Period: The bonds are convertible at any time on or after June 28, 2015 and prior to May 8, 2020, into UMC ordinary shares; provided, however, that if the exercise date falls within 5 business days from the beginning of, and during, any closed period, the right of the converting holder of the bonds to vote with respect to the shares it receives will be subject to certain restrictions.
 - iii. Conversion Price and Adjustment: The conversion price was originally NT\$17.50 per share. The conversion price will be subject to adjustments upon the occurrence of certain events set out in the indenture. The conversion price was NT\$14.8157 per share on December 31, 2018.
- e. Redemption on the Maturity Date: On the maturity date, UMC will redeem the bonds at 98.76% of the principal amount unless, prior to such date:
- i. UMC shall have redeemed the bonds at the option of UMC, or the bonds shall have been redeemed at option of the bondholder;
 - ii. The bondholders shall have exercised the conversion right before maturity; or
 - iii. The bonds shall have been redeemed or repurchased by UMC and cancelled.

In accordance with IAS 32, the value of the conversion right of the convertible bonds was determined at issuance and recognized in additional paid-in capital—stock options amounting to NT\$1,894 million, after reduction of issuance costs amounting to NT\$9 million. The effective interest rate on the liability component of the convertible bonds was determined to be 2.03%.

(13) Long-Term Loans

a. Details of long-term loans as of December 31, 2017 and 2018 are as follows:

Lenders	As of December 31,		Redemption
	2017 NT\$ (In Thousands)	2018 NT\$ (In Thousands)	
Secured Long-Term Loan from Mega International Commercial Bank (1)	\$ 4,000	\$ —	Effective November 21, 2013 to November 21, 2018. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Mega International Commercial Bank (2)	8,200	6,013	Effective July 3, 2017 to July 5, 2021. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (1)	16,853	—	Effective July 10, 2013 to July 10, 2018. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (2)	10,276	—	Effective February 13, 2015 to February 13, 2020. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (3)	13,382	—	Effective April 28, 2015 to April 28, 2020. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (4)	4,724	3,006	Effective August 10, 2015 to August 10, 2020. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (5)	95,135	83,243	Effective October 19, 2015 to October 19, 2025. Interest-only payment for the first year. Principal is repaid in 37 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (6)	1,476	—	Effective October 28, 2015 to April 28, 2020. Interest-only payment for the first half year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Secured Long-Term Loan from Taiwan Cooperative Bank (7)	4,165	—	Effective November 20, 2015 to November 20, 2020. Interest-only payment for the first year. Principal is repaid in 17 quarterly payments with monthly interest payments.
Unsecured Long-Term Loan from Bank of Taiwan	300,000	1,000,000	Repayable quarterly from March 23, 2019 to December 23, 2021 with monthly interest payments.

Lenders	As of December 31,		Redemption
	2017 NT\$ (In Thousands)	2018 NT\$ (In Thousands)	
Unsecured Syndicated Loans from Bank of Taiwan and 7 others	1,246,500	747,900	Repayable semi-annually from February 6, 2017 to February 6, 2020 with monthly interest payments.
Unsecured Long-Term Loan from Mega International Commercial Bank	474,356	—	Repayable quarterly from October 4, 2015 to October 4, 2018 with monthly interest payments.
Secured Syndicated Loans from China Development Bank and 6 others	29,989,811	28,987,895	Effective October 20, 2016 to October 20, 2024. Interest-only payment for the first and the second year. Principal is repaid in 13 semi-annual payments with semi-annual interest payments.
Subtotal	32,168,878	30,828,057	
Less: Administrative expenses from syndicated loans	(3,542)	(1,842)	
Less: Current portion	(2,522,052)	(2,622,161)	
Total	<u>\$29,643,284</u>	<u>\$28,204,054</u>	

	For the years ended December 31,		
	2016	2017	2018
Interest rates applied	<u>0.98%~4.66%</u>	<u>0.99%~4.66%</u>	<u>0.99%~5.56%</u>

- b. Please refer to Note 8 for property, plant and equipment pledged as collateral for long-term loans.
- c. In 2014, UMC resolved to provide endorsement for NEXPOWER's syndicated loan from banks including Bank of Taiwan. The maximum balance for the years ended December 31, 2017 and 2018 were NT\$1,700 million and NT\$2,448 million. As of December 31, 2017 and 2018, the actual amount provided were NT\$1,247 million and NT\$748 million, respectively.
- d. In 2016, HJ resolved to provide endorsement for USCXM's syndicated loan from banks including China Development Bank. The maximum balance for the years ended December 31, 2017 and 2018 were NT\$8,744 million and NT\$9,021 million. As of December 31, 2017 and 2018, the actual amount provided were NT\$6,063 million and NT\$4,219 million, respectively.

- e. In 2017, UMC resolved to provide endorsement for USCXM's syndicated loan from banks including China Development Bank. The maximum balance for the years ended December 31, 2017 and 2018 were US\$310 million and US\$503 million, respectively. As of December 31, 2017 and 2018, the actual amount provided was NT\$9,093 million and \$14,766 million, respectively.

(14) Post-Employment Benefits

a. Defined contribution plan

The employee pension plan under the Labor Pension Act of the R.O.C. (the Act) is a defined contribution plan. Pursuant to the plan, UMC and its domestic subsidiaries make monthly contributions of 6% based on each individual employee's salary or wage to employees' pension accounts. Pension benefits for employees of the Singapore branch and subsidiaries overseas are provided in accordance with the local regulations. Total pension expenses of NT\$1,220 million, NT\$1,256 million and NT\$1,339 million are contributed by the Company for the years ended December 31, 2016, 2017 and 2018, respectively.

b. Defined benefit plan

The employee pension plan mandated by the Labor Standards Act of the R.O.C. is a defined benefit plan. The pension benefits are disbursed based on the units of service years and average monthly salary prior to retirement according to the Labor Standards Act. Two units per year are awarded for the first 15 years of services while one unit per year is awarded after the completion of the 15th year and the total units will not exceed 45 units. The Company contributes an amount equivalent to 2% of the employees' total salaries and wages on a monthly basis to the pension fund deposited with the Bank of Taiwan under the name of a pension fund supervisory committee. The pension fund is managed by the government's designated authorities and therefore is not included in the Company's consolidated financial statements. For the years ended December 31, 2016, 2017 and 2018, total pension expenses of NT\$94 million, NT\$80 million and NT\$69 million, respectively, were recognized by the Company.

i. Movements in present value of defined benefit obligation during the year:

	For the years ended December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Defined benefit obligation at beginning of year	\$ (5,482,265)	\$ (5,671,058)
Items recognized as profit or loss:		
Service cost	(24,130)	(24,477)
Interest cost	(76,761)	(61,247)
Subtotal	(100,891)	(85,724)
Remeasurements recognized in other comprehensive income (loss):		
Arising from changes in financial assumptions	(183,433)	(91,350)
Experience adjustments	13,233	(5,907)
Subtotal	(170,200)	(97,257)
Benefits paid	81,204	233,530
Other	1,094	—
Defined benefit obligation at end of year	<u>\$ (5,671,058)</u>	<u>\$ (5,620,509)</u>

ii. Movements in fair value of plan assets during the year:

	For the years ended December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Beginning balance of fair value of plan assets	\$ 1,513,371	\$ 1,532,539
Items recognized as profit or loss:		
Interest income on plan assets	21,187	16,552
Contribution by employer	93,466	95,577
Payment of benefit obligation	(81,204)	(233,530)
Remeasurements recognized in other comprehensive income (loss):		
Return on plan assets, excluding amounts included in interest income	(13,986)	42,197
Other	(295)	—
Fair value of plan assets at end of year	<u>\$ 1,532,539</u>	<u>\$ 1,453,335</u>

The actual returns on plan assets of the Company for the years ended December 31, 2017 and 2018 were NT\$7 million and NT\$59 million, respectively.

iii. The defined benefit plan recognized on the consolidated balance sheets are as follows:

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Present value of the defined benefit obligation	<u>\$(5,671,058)</u>	<u>\$(5,620,509)</u>
Fair value of plan assets	<u>1,532,539</u>	<u>1,453,335</u>
Funded status	<u>(4,138,519)</u>	<u>(4,167,174)</u>
Net defined benefit liabilities, noncurrent recognized on the consolidated balance sheets	<u><u>\$(4,138,519)</u></u>	<u><u>\$(4,167,174)</u></u>

iv. The major categories of plan assets as a percentage of the fair value of the total plan assets are as follows:

	As of December 31,	
	2017	2018
Cash	25%	17%
Equity instruments	43%	51%
Debt instruments	26%	24%
Others	6%	8%

Employee pension fund is deposited under a trust administered by the Bank of Taiwan. The overall expected rate of return on assets is determined based on historical trend and actuaries' expectations on the assets' returns in the market over the obligation period. Furthermore, the utilization of the fund is determined by the labor pension fund supervisory committee, which also guarantees the minimum earnings to be no less than the earnings attainable from interest rates offered by local banks for two-year time deposits.

v. The principal underlying actuarial assumptions are as follows:

	As of December 31,	
	2017	2018
Discount rate	1.08%	0.91%
Rate of future salary increase	3.50%	3.50%

vi. Expected future benefit payments are as follows:

Year	As of December 31, 2018
	NT\$ (In Thousands)
2019	\$ 193,387
2020	211,679
2021	251,844
2022	304,317
2023	338,681
2024 and thereafter	4,846,688
Total	<u>\$ 6,146,596</u>

The Company expects to make pension fund contribution of NT\$96 million in 2019. The weighted-average durations of the defined benefit obligation are 11 years and 10 years as of December 31, 2017 and 2018, respectively.

vii. Sensitivity analysis:

	As of December 31, 2017			
	Discount rate		Rate of future salary increase	
	0.5% increase	0.5% decrease	0.5% increase	0.5% decrease
	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Decrease (increase) in defined benefit obligation	\$ 283,095	\$ (303,570)	\$ (266,069)	\$ 251,815

	As of December 31, 2018			
	Discount rate		Rate of future salary increase	
	0.5% increase	0.5% decrease	0.5% increase	0.5% decrease
	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Decrease (increase) in defined benefit obligation	\$ 262,909	\$ (281,037)	\$ (244,120)	\$ 231,751

The sensitivity analyses above have been determined based on a method that extrapolates the impact on the net defined benefit obligation as a result of reasonable changes in key assumptions occurring at the end of the reporting period.

(15) Deferred Government Grants

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Beginning balance	\$ 9,297,371	\$14,595,546
Arising during the period	6,755,920	7,129,770
Recorded in profit or loss:		
Other operating income	(1,469,616)	(3,885,722)
Exchange effect	11,871	(358,690)
Ending balance	\$14,595,546	\$17,480,904
Current	\$ 2,821,467	\$ 3,832,124
Noncurrent	11,774,079	13,648,780
Total	\$14,595,546	\$17,480,904

The significant government grants related to equipment acquisitions received by the Company are amortized as income over the useful lives of related equipment, and recorded in the net other operating income and expenses.

(16) Refund Liabilities

	As of
	December 31,
	2018
	NT\$
	(In Thousands)
Refund liabilities	\$ 1,213,476

Under IFRS 15, the Company's allowance for sales returns and discounts are presented as refund liabilities as a component of other current liabilities, different from its prior presentation as a contra-accounts to accounts receivable.

(17) Equity

a. Capital stock:

- i. UMC had 26,000 million common shares authorized to be issued as of December 31, 2017 and 2018, of which 12,624 million shares, and 12,424 million shares were issued as of December 31, 2017 and 2018, respectively, each at a par value of NT\$10.
- ii. UMC had 144 million and 143 million ADSs, which were traded on the NYSE as of December 31, 2017 and 2018, respectively. The total number of common shares of UMC represented by all issued ADSs were 721 million shares and 717 million shares as of December 31, 2017 and 2018, respectively. One ADS represents five common shares.
- iii. On August 27, 2018, UMC cancelled 200 million shares of treasury stock, which were repurchased during the period from March 12 to May 4, 2018, for the purpose of maintaining UMC's credit and stockholders' rights and interests.

b. Treasury stock:

- i. UMC carried out treasury stock program and repurchased its shares from the centralized securities exchange market. The purpose for repurchase, and changes in treasury stock during the years ended December 31, 2017 and 2018 are as follows:

For the year ended December 31, 2017

(In thousands of shares)

<u>Purpose</u>	<u>As of</u> <u>January 1, 2017</u>	<u>Increase</u>	<u>Decrease</u>	<u>As of</u> <u>December 31, 2017</u>
For transfer to employees	400,000	—	—	400,000

For the year ended December 31, 2018

(In thousands of shares)

Purpose	As of January 1, 2018	Increase	Decrease	As of December 31, 2018
For transfer to employees	400,000	—	200,000	200,000
To maintain UMC's credit and stockholders' rights and interests	—	480,000	200,000	280,000
	<u>400,000</u>	<u>480,000</u>	<u>400,000</u>	<u>480,000</u>

- ii. According to the Securities and Exchange Law of the R.O.C., the total shares of treasury stock shall not exceed 10% of UMC's issued stock, and the total purchase amount shall not exceed the sum of the retained earnings, additional paid-in capital-premiums and realized additional paid-in capital. As of December 31, 2017 and 2018, the treasury stock held by UMC did not exceed the threshold.
- iii. In compliance with Securities and Exchange Law of the R.O.C., treasury stock held by the parent company should not be pledged, nor should it be entitled to voting rights or receiving dividends. Stock held by subsidiaries and associates is treated as treasury stock. According to the Company Act of R.O.C., these subsidiaries have the same rights as other stockholders except for subscription to new stock issuance and voting rights.
- iv. As of December 31, 2017 and 2018, UMC's subsidiary, FORTUNE VENTURE CAPITAL CORP. (FORTUNE), held 16 million shares of UMC's stock, while UMC's associate, HSUN CHIEH INVESTMENT CO., LTD. (HSUN CHIEH), held 441 million shares of UMC's stock and UMC's associate, YANN YUAN INVESTMENT CO., LTD. (YANN YUAN), held 172 million shares of UMC's stock. All of them held UMC's stock as available-for-sale financial assets in 2017. In 2018, HSUN CHIEH measured UMC's stock as financial assets at fair value through profit or loss while FORTUNE and YANN YUAN measured UMC's stock as financial assets at fair value through other comprehensive income. The closing prices of UMC's stock on December 31, 2017 and 2018 were NT\$14.20 and NT\$11.25, respectively.

c. Retained earnings and dividend policies:

According to UMC's amended Articles of Incorporation, current year's earnings, if any, shall be distributed in the following order:

- i. Payment of taxes.
- ii. Making up loss for preceding years.
- iii. Setting aside 10% for legal reserve, except for when accumulated legal reserve has reached UMC's paid-in capital.
- iv. Appropriating or reversing special reserve by government officials or other regulations.
- v. The remaining, plus the previous year's unappropriated earnings, shall be distributed according to the distribution plan proposed by the Board of Directors according to the dividend policy and submitted to the stockholders' meeting for approval.

Because UMC conducts business in a capital intensive industry and continues to operate in its growth phase, the dividend policy of UMC shall be determined pursuant to factors such as the investment environment, its funding requirements, domestic and overseas competitive landscape and its capital expenditure forecast, as well as stockholders' interest, balancing dividends and UMC's long-term financial planning. The Board of Directors shall propose the distribution plan and submit it to the stockholders' meeting every year. The distribution of stockholders' dividend shall be allocated as cash dividend in the range of 20% to 100%, and stock dividend in the range of 0% to 80%.

According to the regulations of Taiwan Financial Supervisory Commission (FSC), UMC is required to appropriate a special reserve in the amount equal to the sum of debit elements under equity, such as unrealized loss on financial instruments and debit balance of exchange differences on translation of foreign operations, at every year-end. Such special reserve is prohibited from distribution. However, if any of the debit elements is reversed, the special reserve in the amount equal to the reversal may be released for earnings distribution or offsetting accumulated deficits.

The distribution of earnings for 2017 was approved by the stockholders' meeting held on June 20, 2018, while the distribution of earnings for 2018 was approved by the Board of Directors' meeting on March 6, 2019. The details of distribution are as follows:

	Appropriation of earnings (in thousand NT dollars)		Cash dividend per share (NT dollars)	
	2017	2018	2017	2018
Legal reserve	\$ 962,873	\$ 707,299		
Special reserve	—	14,513,940		
Cash dividends	8,557,023	6,916,105	\$ 0.70	\$ 0.58

The aforementioned 2017 distribution approved by stockholders' meeting was consistent with the resolutions of meeting of Board of Directors held on March 7, 2018.

The cash dividend per share for 2017 was adjusted to NT\$0.71164307 per share according to the resolution of the Board of Directors' meeting on June 12, 2018. The adjustment was made for the decrease in outstanding common shares due to the share repurchase program.

The appropriation of the 2018 unappropriated retained earnings has not yet been approved by the stockholder's meeting as of the reporting date. Information relevant to the Board of Directors' meeting recommendations and stockholders' meeting approval can be obtained from the "Market Observation Post System" on the website of the TWSE.

Please refer to Note 6(20) for information on the employees' compensation and directors' compensation.

d. Non-controlling interests:

	For the years ended December 31,		
	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Beginning balance	\$ 2,027,065	\$ 2,161,729	\$ 956,808
Impact of retroactive applications	—	—	1,597
Adjusted balance at January 1	2,027,065	2,161,729	958,405
Attributable to non-controlling interests:			
Net loss	(4,452,585)	(2,997,469)	(4,429,938)
Other comprehensive income (loss)	(32,318)	(111,601)	(103,894)
Changes in subsidiaries' ownership	567,073	(999,151)	(278,613)
Disposal of subsidiaries	—	—	(7,074)
Derecognition of the non-controlling interests	4,052,494	2,903,300	4,327,882
Ending balance	<u>\$ 2,161,729</u>	<u>\$ 956,808</u>	<u>\$ 466,768</u>

(18) Share-Based Payment

In order to attract, retain talents and reward the employees for their productivity and loyalty, the Company carried out a compensation plan to offer 200 million shares of treasury stock to employees in August 2018. The compensation cost for the share-based payment was measured at fair value, having recognized in expense the difference between the closing quoted market price of the shares at the grant date and the cash received from employees. The closing quoted market price of the Company's shares on the grant date was NT\$16.95 per share. For the stocks vested on the date of grant, the Company recognized the entire compensation cost on the grant date, whereas for the stocks with requisite service conditions to vest at the end of one or two-years from the date of grant, the Company recognizes the compensation cost on a straight-line basis over the period in which the services conditions are fulfilled, together with a corresponding increase in equity. As such, for the year ended December 31, 2018, total compensation cost of NT\$696 million was recognized by the Company.

(19) Operating Revenues

a. Disaggregation of revenue

2016 and 2017

i. Operating Revenues

	For the years ended December 31,	
	2016	2017
	NT\$ (In Thousands)	NT\$ (In Thousands)
Net sales		
Sale of goods	\$142,816,919	\$142,957,544
Other operating revenues		
Royalty	11,757	6,817
Mask tooling	3,676,365	3,334,844
Others	1,365,083	2,985,501
Operating revenues	<u>\$147,870,124</u>	<u>\$149,284,706</u>

ii. By geography

	For the years ended December 31,	
	2016	2017
	NT\$ (In Thousands)	NT\$ (In Thousands)
Taiwan	\$ 46,493,583	\$ 48,952,219
Singapore	26,753,960	30,798,270
China (includes Hong Kong)	13,732,391	18,971,866
Japan	4,501,057	4,694,277
USA	13,713,202	18,208,227
Europe	29,253,755	14,329,730
Others	13,422,176	13,330,117
Total	<u>\$147,870,124</u>	<u>\$149,284,706</u>

2018

i. By product

	For the year ended December 31, 2018
	NT\$ (In Thousands)
Wafer	\$ 142,550,304
Others	8,702,267
Total	<u>\$ 151,252,571</u>

ii. By operating segments

	For the year ended December 31, 2018				
	Wafer Fabrication NT\$ (In Thousands)	New Business NT\$ (In Thousands)	Subtotal NT\$ (In Thousands)	Adjustment and Elimination NT\$ (In Thousands)	Consolidated NT\$ (In Thousands)
Revenue from contracts with customers	<u>\$151,023,932</u>	<u>\$ 247,929</u>	<u>\$151,271,861</u>	<u>\$ (19,290)</u>	<u>\$151,252,571</u>
The timing of revenue recognition:					
At a point in time	\$146,247,350	\$ 247,929	\$146,495,279	\$ (19,290)	\$146,475,989
Over time	4,776,582	—	4,776,582	—	4,776,582
Total	<u>\$151,023,932</u>	<u>\$ 247,929</u>	<u>\$151,271,861</u>	<u>\$ (19,290)</u>	<u>\$151,252,571</u>

iii. By geography

	For the year ended December 31, 2018							
	Taiwan NT\$ (In Thousands)	Singapore NT\$ (In Thousands)	China (includes Hong Kong) NT\$ (In Thousands)	Japan NT\$ (In Thousands)	USA NT\$ (In Thousands)	Europe NT\$ (In Thousands)	Others NT\$ (In Thousands)	Total NT\$ (In Thousands)
Revenue from contracts with customers	<u>\$55,092,681</u>	<u>\$24,820,196</u>	<u>\$18,504,881</u>	<u>\$ 5,896,313</u>	<u>\$23,555,105</u>	<u>\$12,527,894</u>	<u>\$10,855,501</u>	<u>\$151,252,571</u>
The timing of revenue recognition:								
At a point in time	\$54,963,771	\$24,791,908	\$14,889,672	\$ 5,889,277	\$23,536,756	\$11,551,052	\$10,853,553	\$146,475,989
Over time	128,910	28,288	3,615,209	7,036	18,349	976,842	1,948	4,776,582
Total	<u>\$55,092,681</u>	<u>\$24,820,196</u>	<u>\$18,504,881</u>	<u>\$ 5,896,313</u>	<u>\$23,555,105</u>	<u>\$12,527,894</u>	<u>\$10,855,501</u>	<u>\$151,252,571</u>

Note A: The Company adopted IFRS 15 on January 1, 2018. The Company elected not to restate prior periods in accordance with the transition provision in IFRS 15.

Note B: The geographic breakdown of the Company's operating revenues was based on the location of the Company's customers.

b. Contract balances

i. Contract assets, current

	As of		Differences
	January 1, 2018	December 31, 2018	
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Sales of goods and services	\$ 129,042	\$ 486,184	\$ 357,142
Less: Loss allowance	—	(393,974)	(393,974)
Net	<u>\$ 129,042</u>	<u>\$ 92,210</u>	<u>\$ (36,832)</u>

The significant increase in gross amount of contract assets in 2018 is the result of the increase in joint technology development services during the year.

The loss allowance was assessed by the company primarily at an amount equal to lifetime expected credit losses for the year ended December 31, 2018. The loss allowance is mainly resulted from the indictment filed by the United States Department of Justice (DOJ) against UMC, which is related to the joint technology development agreement. Please refer to Note 9(8).

ii. Contract liabilities, current

	As of		Differences
	January 1, 2018	December 31, 2018	
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Sales of goods and services	<u>\$ 3,951,414</u>	<u>\$ 932,371</u>	<u>\$ (3,019,043)</u>

Contract liabilities are prepayments from customers for wafer sales and joint technology development services. The outstanding balances of this account decreased in 2018 due to the Company continuing to provide services and recognizing revenue during the year.

The Company recognized NT\$3,815 million in revenues from the current contract liabilities balance at the beginning of the period as performance obligations were satisfied during the year.

- c. The Company's transaction price allocated to unsatisfied performance obligations amounted to NT\$3,148 million as of December 31, 2018. The Company will recognize revenue as the Company satisfies its performance obligations over time that aligns with progress toward completion of a contract in the future. As of the report date, the progress cannot be reliably estimated primarily due to the suspension as disclosed in Note 9(8). The estimate of the transaction price does not include any estimated amounts of variable consideration that are constrained.

- d. Asset recognized from the cost to fulfill a contract with customer

As of December 31, 2018, the Company recognized the cost to fulfill engineering and service contracts that are eligible for capitalization as assets which amounted to NT\$567 million and accounted for as other current assets. Subsequently, the Company will expense to operating costs from the cost to fulfill a contract when the related obligations are satisfied.

(20) Operating Costs and Expenses

The Company's employee benefit, depreciation and amortization expenses are summarized as follows:

	For the years ended December 31,								
	2016			2017			2018		
	Operating costs	Operating expenses	Total	Operating costs	Operating expenses	Total	Operating costs	Operating expenses	Total
	NT\$			NT\$			NT\$		
	(In Thousands)			(In Thousands)			(In Thousands)		
Employee benefit expenses									
Salaries	\$14,839,388	\$6,781,877	\$21,621,265	\$16,676,560	\$7,045,487	\$23,722,047	\$17,694,175	\$7,780,063	\$25,474,238
Labor and health insurance	802,913	351,873	1,154,786	878,576	376,523	1,255,099	882,671	376,556	1,259,227
Pension	965,494	347,871	1,313,365	1,008,121	327,454	1,335,575	1,065,176	342,565	1,407,741
Other employee benefit expenses	231,270	90,402	321,672	259,701	118,422	378,123	289,395	111,734	401,129
Depreciation	46,805,589	2,790,138	49,595,727	47,820,812	3,003,855	50,824,667	47,086,993	2,689,314	49,776,307
Amortization	790,206	1,502,360	2,292,566	911,563	1,222,163	2,133,726	880,967	1,219,163	2,100,130

According to UMC's Articles of Incorporation, the employees' compensation and directors' compensation shall be distributed in the following order:

UMC shall allocate no less than 5% of profit as employees' compensation and no more than 0.1% of profit as directors' compensation for each profitable fiscal year after offsetting any cumulative losses. The aforementioned employees' compensation will be distributed in shares or cash. The employees of UMC's subsidiaries who fulfill specific requirements stipulated by the Board of Directors may be granted such compensation. Directors may only receive compensation in cash. UMC may, by a resolution adopted by a majority vote at a meeting of the Board of Directors attended by two-thirds of the total number of directors, distribute the aforementioned employees' compensation and directors' compensation and report to the stockholders' meeting for such distribution.

The Company estimates the amounts of the employees' compensation and directors' compensation and recognizes them in the profit or loss during the periods when earned for the years ended December 31, 2016, 2017 and 2018. The Board of Directors estimated the amount by taking into consideration the Articles of Incorporation, government regulations and industry averages. If the Board of Directors resolves to distribute employee compensation through stock, the number of stock distributed is calculated based on total employee compensation divided by the closing price of the day before the Board of Directors meeting. If the Board of Directors subsequently modifies the estimates significantly, the Company will recognize the change as an adjustment in the profit or loss in the subsequent period.

The distributions of employees' compensation and directors' compensation for 2016 and 2017 were reported to the stockholders' meeting on June 8, 2017 and June 12, 2018, respectively, while the distributions of employees' compensation and directors' compensation for 2018 were approved through the Board of Directors' meeting on March 6, 2019. The details of distribution are as follows:

	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Employees' compensation—Cash	\$ 930,551	\$ 1,032,324	\$ 1,400,835
Directors' compensation	9,714	11,452	7,624

The aforementioned 2016 and 2017 employees' compensation and directors' compensation reported during the stockholders' meeting were consistent with the resolutions of meeting of Board of Directors held on February 22, 2017 and March 7, 2018, respectively.

Information relevant to the aforementioned employees' compensation and directors' compensation can be obtained from the "Market Observation Post System" on the website of the TWSE.

(21) Net Other Operating Income and Expenses

	For the years ended December 31,		
	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Gain on disposal of property, plant and equipment	\$ 73,014	\$ 82,397	\$ 136,743
Impairment loss of property, plant and equipment	(455,076)	—	—
Government grants	243,150	1,710,176	5,220,746
Others	(124,213)	(138,878)	(240,605)
Total	<u>\$ (263,125)</u>	<u>\$ 1,653,695</u>	<u>\$ 5,116,884</u>

(22) Non-Operating Income and Expenses

a. Other gains and losses

	For the years ended December 31,		
	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Gain (loss) on valuation of financial assets and liabilities at fair value through profit or loss	\$ 150,770	\$ 598,270	\$ (1,167,735)
Impairment loss:			
Investments accounted for under the equity method	(837,153)	—	(46,225)
Available-for-sale financial assets, noncurrent	(492,140)	(664,948)	—
Financial assets measured at cost, noncurrent	(293,205)	(285,387)	—
Gain (loss) on disposal of investments	2,097,818	1,269,369	(19,286)
Others	233,310	76,788	104,956
Total	<u>\$ 859,400</u>	<u>\$ 994,092</u>	<u>\$ (1,128,290)</u>

b. Finance costs

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Interest expenses			
Bonds payable	\$ 595,311	\$ 763,124	\$ 710,663
Bank loans	654,181	1,563,590	1,782,544
Others	91	80,158	275,465
Financial expenses	164,720	88,290	82,553
Total	<u>\$ 1,414,303</u>	<u>\$ 2,495,162</u>	<u>\$ 2,851,225</u>

(23) Components of Other Comprehensive Income (Loss)

	For the year ended December 31, 2016				
	Arising during the period	Reclassification adjustments during the period	Other comprehensive income (loss), before tax	Income tax effect	Other comprehensive income (loss), net of tax
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Items that will not be reclassified subsequently to profit or loss:					
Remeasurements of defined benefit pension plans	\$ (75,893)	\$ —	\$ (75,893)	\$ 12,899	\$ (62,994)
Share of other comprehensive income (loss) of associates and joint ventures which will not be reclassified subsequently to profit or loss	2,459	—	2,459	—	2,459
Items that may be reclassified subsequently to profit or loss:					
Exchange differences on translation of foreign operations	(1,815,947)	—	(1,815,947)	(620)	(1,816,567)
Unrealized gains or losses on available-for-sale financial assets	(287,866)	(1,681,770)	(1,969,636)	95,705	(1,873,931)
Share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss	(331,615)	—	(331,615)	58,577	(273,038)
Total other comprehensive income (loss)	<u>\$(2,508,862)</u>	<u>\$ (1,681,770)</u>	<u>\$(4,190,632)</u>	<u>\$ 166,561</u>	<u>\$(4,024,071)</u>

For the year ended December 31, 2017					
Arising during the period NT\$ (In Thousands)	Reclassification adjustments during the period NT\$ (In Thousands)	Other comprehensive income (loss), before tax NT\$ (In Thousands)	Income tax effect NT\$ (In Thousands)	Other comprehensive income (loss), net of tax NT\$ (In Thousands)	
Items that will not be reclassified subsequently to profit or loss:					
Remeasurements of defined benefit pension plans	\$ (184,186)	\$ —	\$ (184,186)	\$ 31,311	\$ (152,875)
Share of other comprehensive income (loss) of associates and joint ventures which will not be reclassified subsequently to profit or loss	1,221	—	1,221	—	1,221
Items that may be reclassified subsequently to profit or loss:					
Exchange differences on translation of foreign operations	(5,975,203)	—	(5,975,203)	59,838	(5,915,365)
Unrealized gains or losses on available-for-sale financial assets	1,224,344	(642,905)	581,439	100,059	681,498
Share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss	604,675	102,302	706,977	(135,989)	570,988
Total other comprehensive income (loss)	<u>\$ (4,329,149)</u>	<u>\$ (540,603)</u>	<u>\$ (4,869,752)</u>	<u>\$ 55,219</u>	<u>\$ (4,814,533)</u>
For the year ended December 31, 2018					
Arising during the period NT\$ (In Thousands)	Reclassification adjustments during the period NT\$ (In Thousands)	Other comprehensive income (loss), before tax NT\$ (In Thousands)	Income tax effect NT\$ (In Thousands)	Other comprehensive income (loss), net of tax NT\$ (In Thousands)	
Items that will not be reclassified subsequently to profit or loss:					
Remeasurements of defined benefit pension plans	\$ (55,060)	\$ —	\$ (55,060)	\$ 32,647	\$ (22,413)
Unrealized gains or losses on financial assets at fair value through other comprehensive income	1,454,018	—	1,454,018	(419,198)	1,034,820
Gains or losses on hedging instruments which will not be reclassified subsequently to profit or loss	(2,572)	—	(2,572)	514	(2,058)
Share of other comprehensive income (loss) of associates and joint ventures which will not be reclassified subsequently to profit or loss	(103,319)	—	(103,319)	27,741	(75,578)
Items that may be reclassified subsequently to profit or loss:					
Exchange differences on translation of foreign operations	(47,417)	408	(47,009)	(28,845)	(75,854)
Share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss	(11,069)	(12,897)	(23,966)	659	(23,307)
Total other comprehensive income (loss)	<u>\$ 1,234,581</u>	<u>\$ (12,489)</u>	<u>\$ 1,222,092</u>	<u>\$ (386,482)</u>	<u>\$ 835,610</u>

(24) Income Tax

a. The major components of income tax expense for the years ended December 31, 2016, 2017 and 2018 were as follows:

i. Income tax expense recorded in profit or loss

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Current income tax expense (benefit):			
Current income tax charge	\$ 3,502,195	\$ 2,467,004	\$ (264,909)
Adjustments in respect of current income tax of prior periods	(424,939)	(364,951)	(899,219)
Deferred income tax expense (benefit):			
Deferred income tax related to origination and reversal of temporary differences	(2,770,767)	(1,033,142)	1,350,028
Deferred income tax related to recognition and derecognition of tax losses and unused tax credits	(54,519)	(424,608)	(335,367)
Deferred income tax related to changes in tax rates	—	12,477	(842,123)
Adjustment of prior year's deferred income tax	53,322	9,233	(2,744)
Deferred income tax arising from write-down or reversal of write-down of deferred tax assets	247,232	326,468	(135,543)
Income tax expense (benefit) recorded in profit or losses	<u>\$ 552,524</u>	<u>\$ 992,481</u>	<u>\$ (1,129,877)</u>

ii. Income tax related to components of other comprehensive income (loss)

Items that will not be reclassified subsequently to profit or loss:

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Remeasurements of defined benefit pension plans	\$ 12,899	\$ 31,311	\$ 11,012
Unrealized gains or losses on financial assets at fair value through other comprehensive income	—	—	(24,969)
Gains or losses on hedging instruments which will not be reclassified subsequently to profit or loss	—	—	514
Share of other comprehensive income (loss) of associates and joint ventures which will not be reclassified subsequently to profit or loss	—	—	18,045
Deferred income tax related to changes in tax rates	—	—	(362,898)
Income tax related to items that will not be reclassified subsequently to profit or loss	<u>\$ 12,899</u>	<u>\$ 31,311</u>	<u>\$ (358,296)</u>

Items that may be reclassified subsequently to profit or loss:

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Exchange differences on translation of foreign operations	\$ (620)	\$ 59,838	\$ (24,339)
Unrealized gains or losses on available-for-sale financial assets	95,705	100,059	—
Share of other comprehensive income (loss) of associates and joint ventures which may be reclassified subsequently to profit or loss	58,577	(135,989)	1,847
Deferred income tax related to changes in tax rates	—	—	(5,694)
Income tax related to items that may be reclassified subsequently to profit or loss	<u>\$ 153,662</u>	<u>\$ 23,908</u>	<u>\$ (28,186)</u>

iii. Deferred income tax recognized directly to equity

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Adjustments of changes in net assets of associates and joint ventures accounted for using equity method	\$ 1,608	\$ 227	\$ (414)
Deferred income tax related to changes in tax rates	—	—	(57,140)
Income tax recognized directly to equity	<u>\$ 1,608</u>	<u>\$ 227</u>	<u>\$ (57,554)</u>

b. A reconciliation between income tax expense and income before tax at UMC's applicable tax rate was as follows:

	For the years ended December 31,		
	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Income before tax	\$ 4,721,086	\$ 7,671,710	\$ 2,117,920
At UMC's statutory income tax rate	802,584	1,304,191	423,584
Adjustments in respect of current income tax of prior periods	(424,939)	(364,951)	(899,219)
Net change in loss carry-forward and investment tax credits	1,327,716	564,742	2,239,058
Adjustment of deferred tax assets/liabilities for write-downs/reversals and different jurisdictional tax rates	253,100	330,228	49,625
Tax effect of non-taxable income and non-deductible expenses:			
Tax exempt income	(1,707,646)	(1,549,018)	(451,589)
Investment gain	(658,375)	(639,979)	(886,546)
Dividend income	(88,518)	(83,154)	(112,810)
Others	254,903	259,590	140,278
Basic tax	70,316	33,207	—
Estimated income tax on unappropriated earnings	(299,338)	38,069	(849,328)
Deferred income tax related to changes in tax rates	—	12,477	(842,123)
Effect of different tax rates applicable to UMC and its subsidiaries	(13,103)	(21,615)	(118,404)
Taxes withheld in other jurisdictions	753,752	868,106	48,291
Others	282,072	240,588	129,306
Income tax expense (benefit) recorded in profit or loss	\$ 552,524	\$ 992,481	\$ (1,129,877)

- c. Significant components of deferred income tax assets and liabilities were as follows:

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Deferred income tax assets		
Depreciation	\$ 2,064,726	\$ 1,930,388
Loss carry-forward	425,247	502,331
Pension	697,478	825,792
Refund liabilities	—	232,854
Allowance for sales returns and discounts	171,213	—
Allowance for inventory valuation losses	365,658	416,270
Investment loss	262,346	748,983
Unrealized profit on intercompany sales	1,626,072	1,703,942
Investment tax credits	—	336,869
Deferred revenue	452,907	—
Others	50,482	98,367
Total deferred income tax assets	6,116,129	6,795,796
Deferred income tax liabilities		
Unrealized exchange gain	(348,198)	(535,595)
Depreciation	(306,472)	(440,524)
Investment gain	(1,139,940)	(513,322)
Convertible bond option	(176,361)	(139,693)
Amortizable assets	(353,477)	(342,607)
Others	(2,775)	(7,768)
Total deferred income tax liabilities	(2,327,223)	(1,979,509)
Net deferred income tax assets	\$ 3,788,906	\$ 4,816,287

d. Movement of deferred tax

	For the years ended December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Balance at January 1	\$ 2,624,599	\$ 3,788,906
Impact of retroactive applications	—	1,515,238
Adjusted balance at January 1	2,624,599	5,304,144
Amounts recognized in profit or loss during the period	1,109,572	(34,251)
Amounts recognized in other comprehensive income	55,219	(386,482)
Amounts recognized in equity	227	(57,554)
Exchange adjustments	(711)	(9,570)
Balance at December 31	<u>\$ 3,788,906</u>	<u>\$ 4,816,287</u>

- e. The Company is subject to taxation in Taiwan and other foreign jurisdictions. As of December 31, 2018, income tax returns of UMC and its subsidiaries in Taiwan have been examined by the tax authorities through 2014, while in other foreign jurisdictions, relevant tax authorities have completed the examination through 2010.
- f. UMC was granted income tax exemption for several periods with respect to income derived from the expansion of operations. The income tax exemption will expire on December 31, 2020.
- g. The information of the unused tax loss carry-forward for which no deferred income tax assets have been recognized was as follows:

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Expiry period		
1-5 years	\$14,881,800	\$27,072,604
6-10 years	15,055,903	10,799,310
more than 10 years	5,105	5,043
Total	<u>\$29,942,808</u>	<u>\$37,876,957</u>

- h. As of December 31, 2017 and 2018, deductible temporary differences for which no deferred income tax assets have been recognized amounted to NT\$7,141 million and NT\$5,971 million, respectively.
- i. UMC's earnings generated in and prior to the year ended December 31, 1997 have been fully appropriated.

- j. As of December 31, 2017 and 2018, the taxable temporary differences of unrecognized deferred tax liabilities associated with investments in subsidiaries amounted to NT\$9,289 million and NT\$11,036 million, respectively.
- k. According to the amendments to the R.O.C. Income Tax Act, effective from 2018, the corporate income tax rate is raised from 17% to 20%, and the 10% undistributed earnings tax is lowered to 5%.

(25) Earnings Per Share

a. Earnings per share-basic

Basic earnings per share amounts are calculated by dividing the net income for the year attributable to ordinary equity holders of the parent company by the weighted-average number of ordinary shares outstanding during the year. The reciprocal stockholdings held by subsidiaries and associates are deducted from the computation of weighted-average number of shares outstanding.

	For the years ended December 31,		
	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Net income attributable to the parent company	\$ 8,621,147	\$ 9,676,698	\$ 7,677,735
Weighted-average number of ordinary shares for basic earnings per share (thousand shares)	12,098,826	11,994,760	11,889,723
Earnings per share-basic (NTD)	\$ 0.71	\$ 0.81	\$ 0.65

b. Earnings per share-diluted

Diluted earnings per share is calculated by taking basic earnings per share plus the effect of additional common shares that would have been outstanding if the dilutive share equivalents had been issued. The net income attributable to ordinary equity holders of the parent company would be also adjusted for the interest and other income or expenses derived from any underlying dilutive share equivalents, such as convertible bonds. For employees' compensation that may be distributed in shares, the number of shares to be distributed is taken into consideration assuming the distribution will be made entirely in shares when calculating diluted earnings per share.

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Net income attributable to the parent company	\$ 8,621,147	\$ 9,676,698	\$ 7,677,735
Effect of dilution			
Unsecured convertible bonds	282,325	288,091	283,349
Income attributable to stockholders of the parent	\$ 8,903,472	\$ 9,964,789	\$ 7,961,084
Weighted-average number of common stocks for basic earnings per share (thousand shares)	12,098,826	11,994,760	11,889,723
Effect of dilution			
Employees' compensation	99,122	83,981	137,511
Unsecured convertible bonds	1,152,306	1,193,935	1,243,599
Weighted-average number of common stocks after dilution (thousand shares)	13,350,254	13,272,676	13,270,833
Earnings per share-diluted (NTD)	\$ 0.67	\$ 0.75	\$ 0.60

(26) Reconciliation of Liabilities Arising from Financing Activities

For the year ended December 31, 2017

	As of December 31, 2016	Cash Flows	Non-cash changes		As of December 31, 2017
	NT\$	NT\$	Foreign exchange NT\$	Other (Note 1) NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Short-term loans	\$ 20,550,801	\$ 5,878,717	\$(1,064,017)	\$ 80,039	\$ 25,445,540
Long-term loans (current portion included)	29,248,690	4,398,112	(1,483,165)	1,699	32,165,336
Bonds payable (current portion included)	41,980,931	6,184,215	—	352,485	48,517,631
Guarantee deposits (current portion included)	491,089	110,363	(36,876)	—	564,576
Other financial liabilities-noncurrent	20,311,688	—	(195,611)	370,042	20,486,119

For the year ended December 31, 2018

	As of December 31, 2017	Cash Flows	Non-cash changes		As of December 31, 2018
			Foreign exchange	Other (Note 1)	
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Short-term loans	\$ 25,445,540	\$(12,288,248)	\$ (292,466)	\$ 238,982	\$ 13,103,808
Long-term loans (current portion included)	32,165,336	(1,880,197)	556,777	(15,701)	30,826,215
Bonds payable (current portion included)	48,517,631	(7,500,000)	—	360,551	41,378,182
Guarantee deposits (current portion included)	564,576	88,131	13,086	—	665,793
Other financial liabilities-noncurrent	20,486,119	—	(456,551)	380,787	20,410,355

Note 1: Other non-cash changes mainly consisted of discount amortization measured by the EIR method.

Note 2: Please refer to Note 9 (6) for more details on other financial liabilities-noncurrent.

(27) Deconsolidation of Subsidiaries

UNISTARS CORP. (UNISTARS)

As UMC's subsidiary disposed of all of its shares of UNISTARS in December 2018, the Company lost control of UNISTARS, derecognizing the relevant assets and liabilities of UNISTARS at the date when the control is lost.

- a. Derecognized assets and liabilities mainly consisted of:

	NT\$ (In Thousands)
Assets	
Cash and cash equivalents	\$ 14,430
Notes and accounts receivable	18,239
Inventories	46,717
Property, plant and equipment	45,515
Others	2,365
	<u>127,266</u>
Liabilities	
Short-term loans	(34,313)
Payables	(29,309)
Current portion of long-term liabilities	(11,899)
Long-term loans	(5,502)
Others	(2,872)
	<u>(83,895)</u>
Net assets of the subsidiary deconsolidated	<u><u>\$ 43,371</u></u>

- b. Consideration received and loss recognized from the transaction:

	NT\$ (In Thousands)
Cash received	\$ 4,617
Less: Net assets of the subsidiary deconsolidated	(43,371)
Add: Non-controlling interests	7,074
Less: Goodwill	(176)
Loss on disposal of subsidiary	<u><u>\$ (31,856)</u></u>

Loss on disposal of subsidiary for the year ended December 31, 2018 was recognized as other gains and losses in the consolidated statement of comprehensive income.

- c. Analysis of net cash outflow arising from deconsolidation of the subsidiary:

	NT\$ (In Thousands)
Cash received	\$ 4,617
Net cash of subsidiary derecognized	(14,430)
Net cash outflow from deconsolidation	<u>\$ (9,813)</u>

7. SIGNIFICANT RELATED PARTY TRANSACTIONS

- a. Significant intercompany transactions between consolidated entities were as follows:

For the year ended December 31, 2016

Entity	Counterparty	Transactions (Note 1)		
		Account	Amount NT\$ (In Thousands)	Terms (Note 2)
UMC	UMC-USA	Sales	\$ 69,676,143	Net 60 days
UMC	UMC-USA	Accounts receivable	9,122,728	—
UMC	UMC GROUP JAPAN	Sales	4,056,027	Net 60 days
UMC	UMC GROUP JAPAN	Accounts receivable	681,621	—
UMC	USCXM	Sales	379,332 (Note 3)	Net 30 days
UMC	USCXM	Accounts receivable	3,091,249	—
UMC	WAVETEK	Sales	148,266	Month-end 30 days
UMC	WAVETEK	Accounts receivable	337	—
HJ	UMC-USA	Sales	429,216	Net 60 days
HJ	UMC-USA	Accounts receivable	99,626	—
HJ	UMC GROUP JAPAN	Sales	161,809	Net 60 days
HJ	UMC GROUP JAPAN	Accounts receivable	30,294	—

For the year ended December 31, 2017

Entity	Counterparty	Transactions (Note 1)		
		Account	Amount	Terms (Note 2)
			NT\$ (In Thousands)	
UMC	UMC-USA	Sales	\$ 59,968,172	Net 60 days
UMC	UMC-USA	Accounts receivable	6,737,723	—
UMC	UMC GROUP JAPAN	Sales	4,212,523	Net 60 days
UMC	UMC GROUP JAPAN	Accounts receivable	659,488	—
UMC	USCXM	Sales	998,899 (Note 4)	Net 30 days
UMC	USCXM	Accounts receivable	4,790,930	—
UMC	USCXM	Loan receivable	3,924,360	—
HJ	UMC-USA	Sales	214,147	Net 60 days
HJ	UMC-USA	Accounts receivable	35,498	—
HJ	UMC GROUP JAPAN	Sales	223,740	Net 60 days
HJ	UMC GROUP JAPAN	Accounts receivable	43,332	—
USCXM	UMC-USA	Sales	241,220	Net 60 days
USCXM	UMC-USA	Accounts receivable	141,272	—

For the year ended December 31, 2018

Entity	Counterparty	Transactions (Note 1)		
		Account	Amount NT\$ (In Thousands)	Terms (Note 2)
UMC	UMC-USA	Sales	\$ 57,107,585	Net 60 days
UMC	UMC-USA	Accounts receivable	7,312,272	—
UMC	UMC GROUP JAPAN	Sales	4,159,637	Net 60 days
UMC	UMC GROUP JAPAN	Accounts receivable	905,048	—
UMC	USCXM	Sales	1,356,567 (Note 4)	Net 30 days
UMC	USCXM	Accounts receivable	48,163	—
USCXM	UMC-USA	Sales	698,988	Net 60 days
USCXM	UMC-USA	Accounts receivable	120,678	—
HJ	UMC-USA	Sales	307,471	Net 60 days
HJ	UMC-USA	Accounts receivable	35,161	—
HJ	UMC GROUP JAPAN	Sales	272,218	Net 60 days
HJ	UMC GROUP JAPAN	Accounts receivable	61,971	—

Note 1: The significant intercompany transactions listed above include downstream transactions.

Note 2: The sales price to the above related parties was determined through mutual agreement in reference to market conditions.

Note 3: UMC authorized technology licenses to its subsidiary, USCXM, in the amount of US\$0.15 billion, which was recognized as deferred revenue and would be realized over time.

Note 4: UMC authorized technology licenses to its subsidiary, USCXM, in the amount of US\$0.35 billion, which was recognized as deferred revenue and would be realized over time.

b. Significant transactions between the Company and other related parties were as follows:

(i) Name and Relationship of Related Parties

Name of related parties	Relationship with the Company
FARADAY TECHNOLOGY CORP. and its subsidiaries	Associate
JINING SUNRICH SOLARENERGY CORPORATION	Joint venture's subsidiary
SILICON INTEGRATED SYSTEMS CORP.	The Company's director
SUBTRON TECHNOLOGY CO., LTD.	Subsidiary's supervisor
PHOTRONICS DNP MASK CORPORATION	Other related parties
TRIKNIGHT CAPITAL CORPORATION	Associate
CHUAN-FANG ZHUAN	Subsidiary's director

(ii) Operating revenues

	For the years ended December 31,		
	2016	2017	2018
	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)
Associates	\$ 1,961,451	\$ 1,357,720	\$ 1,291,398
Joint ventures	13,122	12,465	4,277
Others	2,305	30,417	27,881
Total	<u>\$ 1,976,878</u>	<u>\$ 1,400,602</u>	<u>\$ 1,323,556</u>

(iii) Accounts receivable, net

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Associates	\$ 84,839	\$ 134,646
Joint ventures	1,051	—
Others	7,908	4,266
Total	93,798	138,912
Less: Allowance for sales returns and discounts	(2,733)	—
Net	<u>\$ 91,065</u>	<u>\$ 138,912</u>

The sales price to the above related parties was determined through mutual agreement in reference to market conditions. The collection period for domestic sales to related parties was month-end 30~60 days, while the collection period for overseas sales was net 30~60 days.

(iv) Refund liabilities (classified under other current liabilities)

	As of December 31, 2018 NT\$ (In Thousands)
Associates	\$ 1,287
Others	71
Total	<u>\$ 1,358</u>

(v) Significant asset transactions

Acquisition of intangible assets

	Purchase price For the years ended December 31,		
	2016 NT\$ (In Thousands)	2017 NT\$ (In Thousands)	2018 NT\$ (In Thousands)
Associates	<u>\$ 254,611</u>	<u>\$ 322,808</u>	<u>\$ 200,610</u>

Acquisition of investments accounted for under the equity method

For the years ended December 31, 2016 and 2017: None.

	Trading Volume (In thousands of shares)	Transaction underlying	For the year ended December 31, 2018 Purchase price NT\$ (In Thousands)
Associates	84,000	Stock	<u>\$ 840,000</u>

Disposal of subsidiary

For the years ended December 31, 2016 and 2017: None.

	Trading Volume (In thousands of shares)	Transaction underlying	For the year ended December 31, 2018	
			Proceeds NT\$ (In Thousands)	Disposal (loss) gain NT\$ (In Thousands)
Others	46,168	UNISTARS	<u>\$ 4,617</u>	<u>\$ (31,856)</u>

Disposal of financial assets

	Trading Volume (In thousands of shares)	Transaction underlying	For the year ended December 31, 2017	
			Proceeds	Disposal (loss) gain
			NT\$ (In Thousands)	NT\$ (In Thousands)
Others	6,489	ASIA PACIFIC MICROSYSTEMS, INC.	\$ 50,745	\$ (13,753)

For the years ended December 31, 2016 and 2018: None.

(vi) Others

Mask expenditure

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Others	\$ —	\$ 994,710	\$ 1,750,088

Other payables of mask expenditure

	As of December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Others	\$ —	\$ 580,789	\$ 571,036

c. Key management personnel compensation

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Short-term employee benefits	\$ 267,501	\$ 271,554	\$ 387,294
Post-employment benefits	2,773	3,478	4,660
Termination benefits	939	6,957	—
Share-based payment	10	68	293,857
Others	422	294	435
Total	\$ 271,645	\$ 282,351	\$ 686,246

8. ASSETS PLEDGED AS COLLATERAL

	As of December 31,		Party to which asset(s) was pledged	Purpose of pledge
	2017	2018		
	NT\$ (In Thousands)	NT\$ (In Thousands)		
Refundable Deposits (Bank deposit and Time deposit)	\$ 818,195	\$ 961,198	Customs	Customs duty guarantee
Refundable Deposits (Time deposit)	246,008	237,358	Science Park Administration	Collateral for land lease
Refundable Deposits (Time deposit)	20,991	19,579	Science Park Administration	Collateral for dormitory lease
Refundable Deposits (Time deposit)	800	—	Science Park Administration	Industry-university cooperative research project performance guarantees
Refundable Deposits (Time deposit)	37,084	37,084	Liquefied Natural Gas Business Division, CPC Corporation, Taiwan	Energy resources guarantee
Refundable Deposits (Time deposit)	—	1,000,000	Bank of China	Bank performance guarantee
Buildings	6,083,976	5,823,938	Taiwan Cooperative Bank and Secured Syndicated Loans from China Development Bank and 6 others	Collateral for long-term loans
Machinery and equipment	32,428,768	25,762,086	Taiwan Cooperative Bank, Mega International Commercial Bank and Secured Syndicated Loans from China Development Bank and 6 others	Collateral for long-term loans
Other noncurrent assets	323,001	309,108	Secured Syndicated Loans from China Development Bank and 6 others	Collateral for long-term loans
Total	<u>\$39,958,823</u>	<u>\$34,150,351</u>		

9. SIGNIFICANT CONTINGENCIES AND UNRECOGNIZED CONTRACT COMMITMENTS

- (1) As of December 31, 2018, amounts available under unused letters of credit for importing machinery and equipment was NT\$0.4 billion.
- (2) As of December 31, 2018 the Company entrust financial institutes to open performance guarantee, mainly related to the litigations and customs tax guarantee, amounted to NT\$1.6 billion.
- (3) The Company entered into several patent license agreements and development contracts of intellectual property for a total contract amount of approximately NT\$12.1 billion. As of December 31, 2018, the portion of royalties and development fees not yet recognized was NT\$1.2 billion.
- (4) The Company entered into several construction contracts for the expansion of its operations. As of December 31, 2018, these construction contracts amounted to approximately NT\$3.1 billion and the portion of the contracts not yet recognized was approximately NT\$0.9 billion.
- (5) The Company entered into several operating lease contracts for land and office. These renewable operating leases will expire in various years through 2038. Future minimum lease payments under those leases are as follows:

Year	As of December 31, 2018 NT\$ (In Thousands)
2019	\$ 600,876
2020	618,194
2021	608,434
2022	609,325
2023	578,203
2024 and thereafter	4,393,337
Total	<u>\$ 7,408,369</u>

- (6) The Board of Directors of UMC resolved in October 2014 to participate in a 3-way agreement with Xiamen Municipal People's Government and FUJIAN ELECTRONIC & INFORMATION GROUP to form a company which will focus on 12'' wafer foundry services. As of December 31, 2018, the Company obtained R.O.C. government authority's approval for the investment and invested RMB¥8.3 billion in USCXM, representing ownership interest of 65.22%. Furthermore, based on the agreement, UMC recognized a financial liability in other noncurrent liabilities for the purchase from the other investors of their investments in USCXM at their original investment cost plus interest totally amounting to RMB ¥4.9 billion, beginning from the seventh year (2022) following the last instalment payment made by the other investors. Accordingly, the Company recognizes non-controlling interests as required by IFRS 10 during the reporting period. At the end of each reporting period, the Company recognizes a financial liability for its commitment to the other investors in accordance with IFRS 9, at the same time derecognizing the non-controlling interests. Any difference between the financial liability and the non-controlling interests balance is recognized in equity.
- (7) On July 1, 2016, INTERNATIONAL BUSINESS MACHINES CORPORATION (IBM) filed a complaint in the United States District Court for the Southern District of New York alleging that UMC failed to pay the technology license fees in accordance with the technology license agreement and claimed US\$10 million with interest of 12% per annum. UMC appealed a judgment issued on September 15, 2017 by the United States District Court of Southern District of New York for the subject matter. The United States Court of Appeals for the Second Circuit made a summary order on March 11, 2019, vacated part of the district court's judgment and remanded the case. On March 27, 2019, UMC reached a US\$3.8 million settlement with IBM and mutually withdrew the litigation. UMC accrued the settlement in current liabilities as of December 31, 2018.
- (8) On August 31, 2017, the Taichung District prosecutors office indicted UMC for the Trade Secret Act of the R.O.C., alleging that employees of UMC misappropriated the trade secrets of MICRON TECHNOLOGY INC. (MICRON). On December 5, 2017, MICRON filed a civil action with similar cause against UMC with the United States District Court, Northern District of California. MICRON claimed entitlement to the actual damages, treble damages and relevant fees and requested the court to issue an order that enjoins UMC from using its trade secrets in question. The case is currently in progress and UMC has appointed counsels to prepare answers against these charges.

On January 12, 2018, UMC filed three patent infringement actions with the Fuzhou Intermediate People's Court against, among others, MICRON (XI'AN) CO., LTD. and MICRON (SHANGHAI) TRADING CO., LTD., requesting the court to order the defendants to stop manufacturing, processing, importing, selling, and committing to sell the products deploying the infringing patents in questions, and also to destroy all inventories and related molds and tools. On July 3, 2018, the Fuzhou Intermediate People's Court ruled against the aforementioned two defendants, holding that the two defendants must immediately cease to manufacture, sell, and import products that infringe the patent rights of UMC. The lawsuit filed by UMC is still on trial.

On November 1, 2018, the Department of Justice of the United States (DOJ) unsealed an indictment against UMC, FUJIAN JINHUA INTEGRATED CIRCUIT CO., LTD. (JINHUA), and three individuals, including one current employee and two former employees of UMC, alleging that UMC and others conspired to steal trade secrets of MICRON, and used that information to develop technology that was subsequently transferred to JINHUA. On the same day, the DOJ filed a civil complaint enjoining the aforementioned defendants from exporting to the United States any products containing DRAM manufactured by UMC or JINHUA and preventing the defendants from transferring the trade secrets to anyone else. The indictment and civil complaint are still on trial. UMC has suspended the joint technology development activities with JINHUA and appointed counsel to prepare answers against these charges. Given these litigations are still in the preliminary stages, UMC cannot assess the legal proceeding and probable outcome or impact.

10. SIGNIFICANT SUBSEQUENT EVENTS

None.

11. FINANCIAL RISK AND FAIR VALUE DISCLOSURES

(1) Categories of financial instruments

Financial Assets	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
<u>Non-derivative financial instruments</u>		
Financial assets at fair value through profit or loss	\$ 876,318	\$ 12,080,736
Financial assets at fair value through other comprehensive income	—	11,585,477
Available-for-sale financial assets	20,636,332	—
Financial assets measured at cost	2,218,472	—
Financial assets measured at amortized cost		
Cash and cash equivalents (excludes cash on hand)	81,670,212	83,655,648
Receivables	22,149,072	24,583,451
Refundable deposits	1,903,041	2,757,399
Other financial assets	2,645,003	2,320,037
Subtotal	108,367,328	113,316,535
<u>Derivative financial instruments</u>		
Financial assets at fair value through profit or loss	31,605	3,561
Total	<u>\$132,130,055</u>	<u>\$136,986,309</u>

Financial Liabilities	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Non-derivative financial instruments		
Financial liabilities measured at amortized cost		
Short-term loans	\$ 25,445,540	\$ 13,103,808
Payables	24,274,413	23,559,548
Guarantee deposit (current portion included)	564,576	665,793
Bonds payable (current portion included)	48,517,631	41,378,182
Long-term loans (current portion included)	32,165,336	30,826,215
Other financial liabilities	20,486,119	20,523,099
Total	\$151,453,615	\$130,056,645

(2) Financial risk management objectives and policies

The Company's risk management objectives are to manage the market risk, credit risk and liquidity risk related to its operating activities. The Company identifies, measures and manages the aforementioned risks based on policy and risk preference.

The Company has established appropriate policies, procedures and internal controls for financial risk management. Before entering into significant financial activities, approval process by the Board of Directors and Audit Committee must be carried out based on related protocols and internal control procedures. The Company complies with its financial risk management policies at all times.

(3) Market risk

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

Foreign currency risk

The Company's exposure to the risk of changes in foreign exchange rates relates primarily to the Company's operating activities (when revenue or expense is denominated in a different currency from the Company's functional currency) and the Company's net investments in foreign subsidiaries.

The Company applies natural hedges on the foreign currency risk arising from purchases or sales, and utilizes spot or forward exchange contracts to manage foreign currency risk and the net effect of the risks related to monetary financial assets and liabilities is minor. The notional amounts of the foreign currency contracts are the same as the amount of the hedged items. In principle, the Company does not carry out any forward exchange contracts for uncertain commitments. The Company designates certain forward currency contracts as cash flow hedges to hedge its exposure to foreign currency exchange risk associated with certain highly probable forecast transactions. On the basis of assessment, the Company expects that the value of forward currency exchange contracts and the value of the hedged transactions will change systematically in opposite directions for given changes in foreign exchange rates. Hedge ineffectiveness in these hedging relationships mainly arises from the counterparties' credit risk, impacting the fair value movements of the hedging instruments and hedged items. No other sources of ineffectiveness emerged from these hedging relationships. Furthermore, as net investments in foreign subsidiaries are for strategic purposes, they are not hedged by the Company.

The Company designated certain forward exchange contracts, amounting to JPY 23 billion, to partially hedge foreign currency exchange rate risks associated with the highly probable purchase of the remaining outstanding shares of MIFS in JPY. The Company discontinued hedge accounting when the hedging instrument expired prior to December 31, 2018. The cash flow hedge reserve in other components of equity amounted to NT\$(2) million as of December 31, 2018.

The foreign currency sensitivity analysis of the possible change in foreign exchange rates on the Company's profit is performed on significant monetary items denominated in foreign currencies as of the end of the reporting period. When NTD strengthens/weakens against USD by 10%, the profit for the years ended December 31, 2016, 2017 and 2018 decreases/increases by NT\$33 million, NT\$1,330 million and NT\$1,367 million, respectively. When RMB strengthens/weakens against USD by 10%, the profit for the years ended December 31, 2016, 2017 and 2018 increases/decreases by NT\$3,781 million, NT\$4,011 million and NT\$2,624 million, respectively.

Interest rate risk

The Company is exposed to interest rate risk arising from borrowing at floating interest rates. All of the Company's bonds have fixed interest rates and are measured at amortized cost. As such, changes in interest rates would not affect the future cash flows. On the other hand, as the interest rates of the Company's short-term and long-term bank loans are floating, changes in interest rates would affect the future cash flows but not the fair value. Please refer to Note 6(11), 6(12) and 6(13) for the range of interest rates of the Company's bonds and bank loans.

At the reporting dates, a change of 10 basis points of interest rate in a reporting period could cause the profit for the years ended December 31, 2016, 2017 and 2018 to decrease/increase by NT\$50 million, NT\$58 million and NT\$44 million, respectively.

Equity price risk

The Company's listed and unlisted equity securities are susceptible to market price risk arising from uncertainties about future performance of equity markets. The Company's equity investments are classified as financial assets at fair value through profit or loss and financial assets at fair value through other comprehensive income.

The sensitivity analysis for the equity instruments is based on the change in fair value as of the reporting date. A change of 5% in the price of the aforementioned financial assets at fair value through profit or loss of listed companies could increase/decrease the Company's profit for the years ended December 31, 2016, 2017 and 2018 by NT\$31 million, NT\$33 million and NT\$171 million, respectively. A change of 5% in the price of the aforementioned financial assets at fair value through other comprehensive income of listed companies could increase/decrease the Company's other comprehensive income for the year ended December 31, 2018 by NT\$408 million. A change of 5% in the price of the aforementioned available-for-sale financial instruments could increase/decrease the Company's other comprehensive income for the years ended December 31, 2016, and 2017 by NT\$976 million and NT\$979 million, respectively.

(4) Credit risk management

The Company only trades with approved and creditworthy third parties. Where the Company trades with third parties which have less credit, it will request collateral from them. It is the Company's policy that all customers who wish to trade on credit terms are subject to credit verification procedures. In addition, notes and accounts receivable balances are monitored on an ongoing basis, which consequently minimizes the Company's exposure to bad debts.

The Company mitigates the credit risks from financial institutions by limiting its counter parties to only reputable domestic or international financial institutions with good credit standing and spreading its holdings among various financial institutions. The Company's exposure to credit risk arising from the default of counter-parties is limited to the carrying amount of these instruments.

As of December 31, 2017 and 2018, accounts receivable from the top ten customers represent 54% and 54% of the total accounts receivable of the Company, respectively. The credit concentration risk of other accounts receivable is insignificant.

(5) Liquidity risk management

The Company's objectives are to maintain a balance between continuity of funding and flexibility through the use of cash and cash equivalents, bank loans and bonds.

The table below summarizes the maturity profile of the Company's financial liabilities based on the contractual undiscounted payments and contractual maturity:

	As of December 31, 2017				
	Less than 1 year	2 to 3 years	4 to 5 years	> 5 years	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Non-derivative financial liabilities					
Short-term loans	\$25,622,430	\$ —	\$ —	\$ —	\$ 25,622,430
Payables	23,807,378	—	—	104,755	23,912,133
Guarantee deposits	95,085	14,071	29,876	425,544	564,576
Bonds payable	26,321,530	5,564,967	10,590,265	8,689,971	51,166,733
Long-term loans	3,855,962	8,728,249	13,397,515	13,450,444	39,432,170
Other financial liabilities	—	—	13,402,849	8,935,552	22,338,401
Total	\$79,702,385	\$14,307,287	\$37,420,505	\$31,606,266	\$163,036,443

	As of December 31, 2018				
	Less than 1 year	2 to 3 years	4 to 5 years	> 5 years	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Non-derivative financial liabilities					
Short-term loans	\$13,171,811	\$ —	\$ —	\$ —	\$ 13,171,811
Payables	23,088,071	199,788	—	—	23,287,859
Guarantee deposits	52,890	154,787	15,385	442,731	665,793
Bonds payable	3,000,855	23,187,913	8,484,393	8,563,021	43,236,182
Long-term loans	4,036,260	10,997,829	17,209,849	4,765,719	37,009,657
Other financial liabilities	112,744	—	17,477,984	4,369,730	21,960,458
Total	\$43,462,631	\$34,540,317	\$43,187,611	\$18,141,201	\$139,331,760

(6) Foreign currency risk management

UMC entered into forward exchange contracts for hedging the exchange rate risk arising from the net monetary assets or liabilities denominated in foreign currency. The details of forward exchange contracts entered into by UMC are summarized as follows:

As of December 31, 2017: None.

As of December 31, 2018

Type	Notional Amount	Contract Period
Forward exchange contracts	Sell USD 28 million	December 10, 2018~January 7, 2019

(7) Fair value measurement

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

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

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

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

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

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

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

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

- a. Assets and liabilities measured and recorded at fair value on a recurring basis:

	As of December 31, 2017			
	Level 1	Level 2	Level 3	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Financial assets:				
Financial assets at fair value through profit or loss, current	\$ 663,138	\$ 22,175	\$ 31,605	\$ 716,918
Financial assets at fair value through profit or loss, noncurrent	174,760	16,245	—	191,005
Available-for-sale financial assets, noncurrent	10,959,194	—	9,677,138	20,636,332

	As of December 31, 2018			
	Level 1	Level 2	Level 3	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Financial assets:				
Financial assets at fair value through profit or loss, current	\$ 493,481	\$ 34,969	\$ —	\$ 528,450
Financial assets at fair value through profit or loss, noncurrent	3,612,243	44,597	7,899,007	11,555,847
Financial assets at fair value through other comprehensive income, noncurrent	8,166,277	—	3,419,200	11,585,477

Fair values of financial assets at fair value through profit or loss, financial assets at fair value through other comprehensive income and available-for-sale financial assets that are categorized into Level 1 are based on the quoted market prices in active markets. If there is no active market, the Company estimates the fair value by using the valuation techniques (income approach and market approach) in consideration of cash flow forecast, recent fund raising activities, valuation of similar companies, individual company's development, market conditions and other economic indicators. If there are restrictions on the sale or transfer of a financial asset, which are a characteristic of the asset, the fair value of the asset will be determined based on similar but unrestricted financial assets' quoted market price with appropriate discounts for the restrictions. To measure fair values, if the lowest level input that is significant to the fair value measurement is directly or indirectly observable, then the financial assets are classified as Level 2 of the fair value hierarchy, otherwise as Level 3.

During the years ended December 31, 2017 and 2018, there were no significant transfers between Level 1 and Level 2 fair value measurements.

Reconciliations for fair value measurement in Level 3 fair value hierarchy were as follows:

	Financial assets at fair value through profit or loss	Available-for-sale financial assets			
	Option	Common stock	Funds	Preferred stock	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
As of January 1, 2017	\$ —	\$ 7,687,752	\$ 942,296	\$ 1,203,589	\$ 9,833,637
Recognized in profit (loss)	31,605	(240,037)	(64,515)	(14,364)	(318,916)
Recognized in other comprehensive income (loss)	—	(551,004)	26,269	(32,081)	(556,816)
Acquisition	—	170,457	266,992	429,627	867,076
Disposal	—	(244,970)	—	—	(244,970)
Return of Capital	—	—	(6,369)	—	(6,369)
Transfer to Level 3	—	87,830	—	342,832	430,662
Transfer out of Level 3	—	(181,637)	—	—	(181,637)
Exchange effect	—	(34,072)	(47,264)	(64,193)	(145,529)
As of December 31, 2017	<u>\$ 31,605</u>	<u>\$ 6,694,319</u>	<u>\$ 1,117,409</u>	<u>\$ 1,865,410</u>	<u>\$ 9,677,138</u>

	Financial assets at fair value through profit or loss					Financial assets at fair value through other comprehensive income (loss)		
	Option	Common stock	Preferred stock	Funds	Total	Common stock	Preferred stock	Total
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
As of January 1, 2018	\$ 31,605	\$ 3,832,537	\$ 2,994,294	\$ 1,183,940	\$ 8,042,376	\$ 3,350,694	\$ 233,326	\$ 3,584,020
Recognized in profit (loss)	(31,605)	(3,356)	(394,931)	69,827	(360,065)	—	—	—
Recognized in other comprehensive loss	—	—	—	—	—	(115,520)	(49,300)	(164,820)
Acquisition	—	140,338	630,626	577,347	1,348,311	—	—	—
Disposal	—	(468,337)	(310,025)	—	(778,362)	—	—	—
Return of capital	—	(22,954)	—	—	(22,954)	—	—	—
Transfer to Level 3	—	22,050	—	—	22,050	—	—	—
Transfer out of Level 3	—	(442,138)	—	—	(442,138)	—	—	—
Exchange effect	—	19,551	51,564	18,674	89,789	—	—	—
As of December 31, 2018	<u>\$ —</u>	<u>\$ 3,077,691</u>	<u>\$ 2,971,528</u>	<u>\$ 1,849,788</u>	<u>\$ 7,899,007</u>	<u>\$ 3,235,174</u>	<u>\$ 184,026</u>	<u>\$ 3,419,200</u>

The Company's policy to recognize the transfer into and out of fair value hierarchy levels is based on the event or changes in circumstances that caused the transfer.

The total losses of NT\$331 million, NT\$286 million and NT\$203 million for the years ended December 31, 2016, 2017 and 2018, were included in profit or loss that is attributable to the change in unrealized gains or losses relating to those financial assets without quoted market prices held at the end of the reporting period.

Significant unobservable inputs of fair value measurement in Level 3 fair value hierarchy were as follow:

As of December 31, 2017

Category of equity securities	Valuation technique	Significant unobservable inputs	Quantitative information	Interrelationship between inputs and fair value	Sensitivity analysis of interrelationship between inputs and fair value
Unlisted stock	Market Approach	Discount for lack of marketability	20%~50%	The greater degree of lack of marketability, the lower the estimated fair value is determined.	A change of 5% in the discount for lack of marketability of the aforementioned fair values of unlisted stocks could decrease/increase the Company's other comprehensive income (loss) for the year ended December 31, 2017 by NT\$401 million.

As of December 31, 2018

Category of equity securities	Valuation technique	Significant unobservable inputs	Quantitative information	Interrelationship between inputs and fair value	Sensitivity analysis of interrelationship between inputs and fair value
Unlisted stock	Market Approach	Discount for lack of marketability	15%~50%	The greater degree of lack of marketability, the lower the estimated fair value is determined.	A change of 5% in the discount for lack of marketability of the aforementioned fair values of unlisted stocks could decrease/increase the Company's profit or loss and other comprehensive income (loss) for the year ended December 31, 2018 by NT\$309 million and by NT\$241 million, respectively.

- b. Assets and liabilities not recorded at fair value but for which fair value is disclosed:

The fair value of bonds payable is estimated by the market price or using a valuation model. The model uses market-based observable inputs including share price, volatility, credit spread and risk-free interest rates. The fair value of long-term loans is determined using discounted cash flow model, based on the Company's current incremental borrowing rates of similar loans.

The fair values of the Company's short-term financial instruments including cash and cash equivalents, receivables, refundable deposits, other financial assets-current, short-term loans, payables and guarantee deposits approximate their carrying amount due to their maturities within one year.

As of December 31, 2017

Items	Fair value NT\$ (In Thousands)	Fair value measurements during reporting period using			Carrying amount NT\$ (In Thousands)
		Level 1	Level 2	Level 3	
		NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	
Bonds payables (current portion included)	\$49,342,714	\$31,422,772	\$17,919,942	\$ —	\$48,517,631
Long-term loans (current portion included)	32,165,336	—	32,165,336	—	32,165,336

As of December 31, 2018

Items	Fair value NT\$ (In Thousands)	Fair value measurements during reporting period using			Carrying amount NT\$ (In Thousands)
		Level 1	Level 2	Level 3	
		NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)	
Bonds payables (current portion included)	\$41,714,368	\$23,929,019	\$17,785,349	\$ —	\$41,378,182
Long-term loans (current portion included)	30,826,215	—	30,826,215	—	30,826,215

12. OPERATING SEGMENT INFORMATION

- (1) The Company determined its operating segments based on business activities with discrete financial information regularly reported through the Company's internal reporting protocols to the Company's chief operating decision maker. The Company is organized into business units based on its products and services. As of December 31, 2018, the Company had the following segments: wafer fabrication and new business. There were no material differences between the accounting policies described in Note 4 and those applied by the operating segments. The primary operating activity of the wafer fabrication segment is the manufacture of chips to the design specifications of our customers by using our own proprietary processes and techniques. The Company maintains a diversified customer base across industries, including communication, consumer electronics, computer, memory and others, while continuing to focus on manufacturing for high growth, large volume applications, including networking, telecommunications, internet, multimedia, PCs and graphics. New business segment primarily includes researching, developing, manufacturing, and providing solar energy and new generation light-emitting diode (LED).

Reportable segment information for the years ended December 31, 2016, 2017 and 2018 were as follows:

For the year ended December 31, 2016					
	Wafer Fabrication NT\$ (In Thousands)	New Business NT\$ (In Thousands)	Subtotal NT\$ (In Thousands)	Adjustment and Elimination (Note) NT\$ (In Thousands)	Consolidated NT\$ (In Thousands)
Operating revenues from external customers	\$147,444,265	\$ 425,859	\$147,870,124	\$ —	\$147,870,124
Operating revenues from sales among intersegments	—	6,547	6,547	(6,547)	—
Segment net income (loss), net of tax	4,218,948	(1,661,885)	2,557,063	1,611,499	4,168,562
Capital expenditure	91,542,436	18,203	91,560,639	—	91,560,639
Depreciation	49,288,201	402,834	49,691,035	—	49,691,035
Share of profit or loss of associates and joint ventures	(1,285,380)	(210,746)	(1,496,126)	1,180,460	(315,666)
Income tax expense (benefit)	992,580	(9,017)	983,563	(431,039)	552,524
Impairment loss	1,296,529	781,045	2,077,574	—	2,077,574

For the year ended December 31, 2017					
	Wafer Fabrication NT\$ (In Thousands)	New Business NT\$ (In Thousands)	Subtotal NT\$ (In Thousands)	Adjustment and Elimination (Note) NT\$ (In Thousands)	Consolidated NT\$ (In Thousands)
Operating revenues from external customers	\$148,939,836	\$ 344,870	\$149,284,706	\$ —	\$149,284,706
Operating revenues from sales among intersegments	—	13,600	13,600	(13,600)	—
Segment net income (loss), net of tax	6,728,620	(665,895)	6,062,725	616,504	6,679,229
Capital expenditure	44,229,488	6,788	44,236,276	—	44,236,276
Depreciation	50,737,240	227,880	50,965,120	—	50,965,120
Share of profit or loss of associates and joint ventures	(258,959)	(32,619)	(291,578)	449,415	157,837
Income tax expense	1,167,154	3	1,167,157	(174,676)	992,481
Impairment loss	632,207	318,128	950,335	—	950,335

For the year ended December 31, 2018					
	Wafer Fabrication	New Business	Subtotal	Adjustment and Elimination (Note)	Consolidated
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Operating revenues from external customers	\$151,023,932	\$ 228,639	\$151,252,571	\$ —	\$151,252,571
Operating revenues from sales among intersegments	—	19,290	19,290	(19,290)	—
Segment net income (loss), net of tax	2,688,331	(602,809)	2,085,522	1,162,275	3,247,797
Capital expenditure	19,589,770	305	19,590,075	—	19,590,075
Depreciation	49,777,242	171,347	49,948,589	—	49,948,589
Share of profit or loss of associates and joint ventures	(1,201,986)	(23,245)	(1,225,231)	608,566	(616,665)
Income tax expense (benefit)	(456,058)	(2,595)	(458,653)	(671,224)	(1,129,877)
Impairment loss	46,225	—	46,225	—	46,225

As of December 31, 2017					
	Wafer Fabrication	New Business	Subtotal	Adjustment and Elimination (Note)	Consolidated
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Segment assets	<u>\$392,370,323</u>	<u>\$ 3,030,057</u>	<u>\$395,400,380</u>	<u>\$(4,268,160)</u>	<u>\$391,132,220</u>
Segment liabilities	<u>\$178,362,985</u>	<u>\$ 1,700,045</u>	<u>\$180,063,030</u>	<u>\$ 1,448,192</u>	<u>\$181,511,222</u>

	As of December 31, 2018				
	Wafer Fabrication	New Business	Subtotal	Adjustment and Elimination (Note)	Consolidated
	NT\$	NT\$	NT\$	NT\$	NT\$
	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)	(In Thousands)
Segment assets	\$363,529,040	\$ 1,263,368	\$364,792,408	\$ (2,195,179)	\$362,597,229
Segment liabilities	\$157,000,054	\$ 1,068,722	\$158,068,776	\$ 130,970	\$158,199,746

Note: The adjustments primarily consisted of intragroup elimination entries and GAAP difference adjustments.

(2) Geographic information

Non-current assets

	As of December 31,	
	2017	2018
	NT\$	NT\$
	(In Thousands)	(In Thousands)
Taiwan	\$114,047,141	\$ 90,046,190
Singapore	18,501,088	16,881,746
China (includes Hong Kong)	80,180,759	73,627,957
USA	29,866	31,919
Europe	165,590	155,489
Others	60	232
Total	\$212,924,504	\$180,743,533

Non-current assets include property, plant and equipment, intangible assets, prepayment for equipment and other noncurrent assets.

(3) Major customers

Individual customers accounting for at least 10% of operating revenues for the years ended December 31, 2016, 2017 and 2018 were as follows:

	For the years ended December 31,		
	2016	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)	NT\$ (In Thousands)
Customer A from wafer fabrication segment	\$13,324,560	\$15,632,722	\$15,357,470
Customer B from wafer fabrication segment	20,816,001	10,499,880	5,057,335
Total	\$34,140,561	\$26,132,602	\$20,414,805

13. CAPITAL MANAGEMENT

The primary objective of the Company's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios to support its business and maximize the stockholders' value. The Company also ensures its ability to operate continuously to provide returns to stockholders and the interests of other related parties, while maintaining the optimal capital structure to reduce costs of capital.

To maintain or adjust the capital structure, the Company may adjust the dividend payment to stockholders, return capital to stockholders, issue new shares or dispose assets to redeem liabilities.

Similar to its peers, the Company monitors its capital based on debt to capital ratio. The ratio is calculated as the Company's net debt divided by its total capital. The net debt is derived by taking the total liabilities on the consolidated balance sheets minus cash and cash equivalents. The total capital consists of total equity (including capital, additional paid-in capital, retained earnings, other components of equity and non-controlling interests) plus net debt.

The Company's strategy, which is unchanged for the reporting periods, is to maintain a reasonable ratio in order to raise capital with reasonable cost. The debt to capital ratios as of December 31, 2017 and 2018 were as follows:

	As of December 31,	
	2017	2018
	NT\$ (In Thousands)	NT\$ (In Thousands)
Total liabilities	\$181,511,222	\$158,199,746
Less: Cash and cash equivalents	(81,674,572)	(83,661,739)
Net debt	99,836,650	74,538,007
Total equity	209,620,998	204,397,483
Total capital	\$309,457,648	\$278,935,490
Debt to capital ratios	32.26%	26.72%

List of Significant Subsidiaries of United Microelectronics Corporation

Company	Jurisdiction of Incorporation	Percentage of Ownership as of December 31, 2018
UMC Group (USA)	U.S.A.	100.00%
United Microelectronics (Europe) B.V.	The Netherlands	100.00%
UMC Capital Corp.	Cayman Islands	100.00%
TLC Capital Co., Ltd.	Taiwan, R.O.C.	100.00%
Green Earth Limited	Samoa	100.00%
Fortune Venture Capital Corp.	Taiwan, R.O.C.	100.00%
UMC Investment (Samoa) Limited	Samoa	100.00%
UMC Capital (USA)	U.S.A.	100.00%
ECP Vita Pte. Ltd.	Singapore	100.00%
Soaring Capital Corp.	Samoa	100.00%
Unitruth Advisor (Shanghai) Co., Ltd.	China	100.00%
Tera Energy Development Co., Ltd.	Taiwan, R.O.C.	100.00%
United Microchip Corporation	Cayman Islands	100.00%
Nexpower Technology Corp.	Taiwan, R.O.C.	93.36%
Wavetek Microelectronics Corporation	Taiwan, R.O.C.	78.47%
Everrich Energy Investment (HK) Limited	China	100.00%
Everrich (Shandong) Energy Co., Ltd.	China	100.00%
SocialNex Italia 1 S.R.L.	Italy	93.36%
Wavetek Microelectronics Investment (Samoa) Limited	Samoa	78.47%
Wavetek Microelectronics Corporation (USA)	U.S.A.	78.47%
Best Elite International Limited	British Virgin Islands	100.00%
Infoshine Technology Limited	British Virgin Islands	100.00%
Oakwood Associates Limited	British Virgin Islands	100.00%
Hejian Technology (Suzhou) Co., Ltd.	China	98.14%
UnitedDS Semiconductor (Shandong) Co., Ltd.	China	98.14%
United Semiconductor (Xiamen) Co., Ltd.	China	64.95%
UMC Group Japan	Japan	100.00%
UMC Korea Co., Ltd.	Korea	100.00%
Omni Global Limited	Samoa	100.00%
United Microtechnology Corporation (California)	U.S.A.	100.00%
United Microtechnology Corporation (New York)	U.S.A.	100.00%
Sino Paragon Limited	Samoa	100.00%
UMC Technology Japan Co., Ltd.	Japan	100.00%

CERTIFICATION OF OUR CO-PRESIDENT

I, Jason Wang, certify that:

1. **I have reviewed this annual report on Form 20-F of United Microelectronics Corporation;**
2. **Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;**
3. **Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;**
4. **The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:**
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by this report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. **The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):**
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal controls over financial reporting.

Date: April 25, 2019

By: /s/ Jason Wang

Name: Jason Wang

Title: Co-president and Director

CERTIFICATION OF OUR CO-PRESIDENT

I, Shan-Chieh Chien, certify that:

1. **I have reviewed this annual report on Form 20-F of United Microelectronics Corporation;**
2. **Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;**
3. **Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;**
4. **The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:**
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by this report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. **The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):**
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal controls over financial reporting.

Date: April 25, 2019

By: /s/ Shan-Chieh Chien

Name: Shan-Chieh Chien

Title: Co-president and Director

CERTIFICATION OF OUR CHIEF FINANCIAL OFFICER

I, Chitung Liu, certify that:

1. **I have reviewed this annual report on Form 20-F of United Microelectronics Corporation;**
2. **Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;**
3. **Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;**
4. **The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:**
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by this report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. **The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):**
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal controls over financial reporting.

Date: April 25, 2019

By: /s/ Chitung Liu

Name: Chitung Liu

Title: Director, Chief Financial Officer and Vice President

CERTIFICATION OF PERIODIC FINANCIAL REPORT
Pursuant to 18 U.S.C. Section 1350

In connection with the Annual Report of United Microelectronics Corporation, or the Company, on Form 20-F for the fiscal year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof, or the Report, I, Jason Wang, Co-president of the Company, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to the best of my knowledge, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 25, 2019

By: /s/ Jason Wang

Name: Jason Wang

Title: Co-president and Director

* A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to us and will be retained by us and furnished to the Securities and Exchange Commission or its staff upon request.

CERTIFICATION OF PERIODIC FINANCIAL REPORT
Pursuant to 18 U.S.C. Section 1350

In connection with the Annual Report of United Microelectronics Corporation, or the Company, on Form 20-F for the fiscal year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof, or the Report, I, Shan-Chieh Chien, Co-president of the Company, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to the best of my knowledge, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 25, 2019

By: /s/ Shan-Chieh Chien

Name: Shan-Chieh Chien

Title: Co-president and Director

* A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to us and will be retained by us and furnished to the Securities and Exchange Commission or its staff upon request.

CERTIFICATION OF PERIODIC FINANCIAL REPORT
Pursuant to 18 U.S.C. Section 1350

In connection with the Annual Report of United Microelectronics Corporation, or the Company, on Form 20-F for the fiscal year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof, or the Report, I, Chitung Liu, Chief Financial Officer of the Company, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to the best of my knowledge, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 25, 2019

By: /s/ Chitung Liu

Name: Chitung Liu

Title: Director, Chief Financial Officer and Vice President

* A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to us and will be retained by us and furnished to the Securities and Exchange Commission or its staff upon request.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements pertaining to the employee stock option plans of United Microelectronics Corporation:

1. Registration Statement (Form S-8 No. 333-102605) pertaining to the Employee Stock Option Plan,
2. Registration Statement (Form S-8 No. 333-126889) pertaining to the Employee Stock Option Plan and the 2004 Employee Stock Option Plan, and
3. Registration Statement (Form S-8 No. 333-142809) pertaining to the 2004 Employee Stock Option Plan and 2005 Employee Stock Option Plan

of our reports dated April 25, 2019, with respect to the consolidated financial statements of United Microelectronics Corporation and the effectiveness of internal control over financial reporting of United Microelectronics Corporation, included in its Annual Report (Form 20-F) of United Microelectronics Corporation for the year ended December 31, 2018.

/s/ Ernst & Young

Taipei, Taiwan,
Republic of China
April 25, 2019