

4Q22

Quarterly Management Report
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Operating Results Review:

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Topics in This Report:

- Revenue Analysis
- Profit & Expense Analysis
- Financial Condition Review
- Cash Flow
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Summary:

(Amounts are on consolidated basis and are in NT\$ billions unless otherwise noted)

	4Q22	3Q22	4Q21	QoQ	YoY	2022	2021
EPS (NT\$ per common share)	11.41	10.83	6.41	5.4%	78.0%	39.20	23.01
(US\$ per ADR unit)	1.82	1.79	1.15			6.57	4.12
Net Revenue (US\$ billions)	19.93	20.23	15.74	-1.5%	26.7%	75.88	56.82
Net Revenue	625.53	613.14	438.19	2.0%	42.8%	2,263.89	1,587.42
Gross Profit	389.19	370.50	230.76	5.0%	68.7%	1,348.35	819.54
Gross Margin	62.2%	60.4%	52.7%			59.6%	51.6%
Operating Expenses	(64.54)	(60.19)	(47.88)	7.2%	34.8%	(226.70)	(169.22)
Other Operating Income and Expenses	0.39	0.01	(0.11)			(0.37)	(0.34)
Operating Income	325.04	310.32	182.77	4.7%	77.8%	1,121.28	649.98
Operating Margin	52.0%	50.6%	41.7%			49.5%	40.9%
Non-Operating Items	9.63	6.37	2.05			22.91	13.15
Net Income Attributable to Shareholders of the Parent Company	295.90	280.87	166.23	5.4%	78.0%	1,016.53	596.54
Net Profit Margin	47.3%	45.8%	37.9%			44.9%	37.6%
Wafer Shipment (kpcs 12 inch-equiv.)	3,702	3,974	3,725	-6.8%	-0.6%	15,253	14,179
Average Exchange Rate--USD/NTD	31.39	30.32	27.85	3.5%	12.7%	29.84	27.94

Note: Diluted weighted average outstanding shares were 25,929mn units in 4Q22

Financial Highlights:**Fourth Quarter 2022**

- Net revenue was NT\$625.53 billion, representing a 2.0% increase from NT\$613.14 billion in 3Q22 and a 42.8% increase from NT\$438.19 billion in 4Q21.
- Gross margin was 62.2%, 1.8 percentage points higher than 3Q22 and 9.5 percentage points higher than 4Q21.
- Operating margin was 52.0%, up 1.4 percentage points from 3Q22 and up 10.3 percentage points from 4Q21.
- Non-operating items were a gain of NT\$9.63 billion, as compared to a gain of NT\$6.37 billion in 3Q22 and a gain of NT\$2.05 billion in 4Q21.
- Net income attributable to shareholders of the parent company was NT\$295.9 billion, up 5.4% from 3Q22 and up 78.0% from 4Q21. Net profit margin was 47.3% and diluted EPS was NT\$11.41.

Full Year 2022

- Net revenue was NT\$2,263.89 billion, representing an 42.6% increase from 2021. In US dollar terms, net revenue increased 33.5% to US\$75.88 billion in 2022.
- Gross margin was 59.6%, up 8.0 percentage points from 51.6% in 2021. Operating margin was 49.5%, up 8.6 percentage points from 40.9% in 2021.
- Diluted EPS was NT\$39.20, up 70.4% from NT\$23.01 in 2021. Net profit margin was 44.9%, up 7.3 percentage points from 37.6% in 2021.

I. Revenue Analysis

Wafer Revenue by Technology	4Q22	3Q22	4Q21
5nm	32%	28%	23%
7nm	22%	26%	27%
16nm	12%	12%	13%
28nm	11%	10%	11%
40/45nm	7%	7%	8%
65nm	5%	5%	5%
90nm	2%	2%	2%
0.11/0.13um	3%	3%	3%
0.15/0.18um	5%	6%	6%
0.25um and above	1%	1%	2%

Net Revenue by Platform	4Q22	3Q22	4Q21
High Performance Computing	42%	39%	37%
Smartphone	38%	41%	44%
Internet of Things	8%	10%	9%
Automotive	6%	5%	4%
Digital Consumer Electronics	2%	2%	3%
Others	4%	3%	3%

Net Revenue by Geography	4Q22	3Q22	4Q21
North America	69%	72%	66%
China	12%	8%	12%
Asia Pacific	7%	10%	12%
EMEA	6%	5%	5%
Japan	6%	5%	5%

Wafer Revenue by Technology	2022	2021
5nm	26%	19%
7nm	27%	31%
16nm	13%	14%
28nm	10%	11%
40/45nm	7%	7%
65nm	5%	5%
90nm	2%	2%
0.11/0.13um	3%	3%
0.15/0.18um	6%	6%
0.25um and above	1%	2%

Net Revenue by Platform	2022	2021
High Performance Computing	41%	37%
Smartphone	39%	44%
Internet of Things	9%	8%
Automotive	5%	4%
Digital Consumer Electronics	3%	4%
Others	3%	3%

Net Revenue by Geography	2022	2021
North America	68%	65%
China	11%	10%
Asia Pacific	11%	14%
EMEA	5%	6%
Japan	5%	5%

Revenue Analysis:

In the fourth quarter, revenue increased 2.0% sequentially, supported by a more favorable foreign exchange rate and the continued ramp-up for our industry-leading 5nm technologies, despite customers' inventory adjustment.

By technology, 5nm process technology contributed 32% of total wafer revenue in 4Q22 while 7nm accounted for 22%. Advanced technologies (7nm and below) accounted for 54% of total wafer revenue.

By platform, HPC and Smartphone represented 42% and 38% of net revenue respectively, while IoT, Automotive, DCE, and Others each represented 8%, 6%, 2%, and 4%.

Sequentially, revenue from HPC, Automotive, and Others increased 10%, 10%, and 28% respectively, while Smartphone, IoT and DCE decreased 4%, 11%, and 23% respectively.

From a geographic perspective, revenue from customers based in North America accounted for 69% of total net revenue in 4Q22, while revenue from China, Asia Pacific, EMEA (Europe, Middle East, and Africa) and Japan accounted for 12%, 7%, 6%, and 6% of total net revenue respectively.

On a full year basis, 5nm contribution reached 26% of total wafer revenue in 2022 while 7nm process technology contributed 27%. Advanced technologies (7nm and below) accounted for 53% of total wafer revenue, up from 50% in 2021.

By platform, revenue from HPC, Smartphone, IoT, Automotive, DCE and Others increased 59%, 28%, 47%, 74%, 1%, and 51% respectively from 2021.

In 2022, revenue from customers based in North America accounted for 68% of total net revenue, while revenue from China, Asia Pacific, EMEA (Europe, Middle East, and Africa), and Japan accounted for 11%, 11%, 5%, and 5% of total net revenue respectively.

II. Profit & Expense Analysis

II - 1. Gross Profit Analysis

(In NT\$ billions)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>	<u>2022</u>	<u>2021</u>
Net Revenue	625.53	613.14	438.19	2,263.89	1,587.42
Cost of Revenue	(236.34)	(242.64)	(207.43)	(915.54)	(767.88)
Gross Profit	389.19	370.50	230.76	1,348.35	819.54
Gross Margin	62.2%	60.4%	52.7%	59.6%	51.6%

Gross Profit Analysis:

Gross margin was 62.2% in 4Q22, 1.8 percentage points higher than 3Q22, mainly due to a more favorable foreign exchange rate and cost improvement efforts, partially offset by lower capacity utilization.

On a full year basis, gross margin was 59.6% in 2022, up 8.0 percentage points from 2021, mainly reflecting a more favorable foreign exchange rate, valuing selling efforts, and cost improvement, partially offset by lower capacity utilization.

II - 2. Operating Income Analysis

(In NT\$ billions)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>	<u>2022</u>	<u>2021</u>
Total Operating Expenses	(64.54)	(60.19)	(47.88)	(226.70)	(169.22)
Research & Development	(44.59)	(42.98)	(32.24)	(163.26)	(124.73)
SG&A	(19.95)	(17.21)	(15.64)	(63.44)	(44.49)
Other Operating Income and Expenses	0.39	0.01	(0.11)	(0.37)	(0.34)
Operating Income	325.04	310.32	182.77	1,121.28	649.98
Operating Margin	52.0%	50.6%	41.7%	49.5%	40.9%
Total Operating Expenses as % of Net Revenue	10.3%	9.8%	11.0%	10.0%	10.7%

Operating Income Analysis:

Total operating expenses increased NT\$4.35 billion to NT\$64.54 billion in 4Q22. Operating margin improved 1.4 percentage points sequentially to 52.0% in 4Q22.

For full year 2022, total operating expenses represented 10.0% of net revenue as compared to 10.7% in 2021, mainly due to operating leverage.

II - 3. Non-Operating Items

(In NT\$ billions)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>	<u>2022</u>	<u>2021</u>
L-T Investments	1.74	2.08	1.65	7.80	5.60
Net Interest Income (Expenses)	7.25	3.25	(0.71)	10.67	0.30
Other Gains and Losses	0.64	1.04	1.11	4.44	7.25
Total Non-Operating Items	9.63	6.37	2.05	22.91	13.15

Non-Operating Items:

Total non-operating items were a gain of NT\$9.63 billion in 4Q22, as compared to a gain of NT\$6.37 billion in 3Q22. The increase was mainly due to higher interest income.

On a full year basis, total non-operating items increased by NT\$9.76 billion to a gain of NT\$22.91 billion in 2022.

II - 4. Net Profit and EPS

(In NT\$ billions)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>	<u>2022</u>	<u>2021</u>
Income before Tax	334.67	316.69	184.82	1,144.19	663.13
Income Tax Expenses	(38.79)	(35.72)	(18.45)	(127.29)	(66.06)
Effective Tax Rate	11.7%	11.4%	10.1%	11.2%	10.0%
Net Income Attributable to the Parent Company	295.90	280.87	166.23	1,016.53	596.54
Net Profit Margin	47.3%	45.8%	37.9%	44.9%	37.6%
EPS (NT\$ per common share)	11.41	10.83	6.41	39.20	23.01

Net Profit and EPS:

Net income attributable to shareholders of the parent company was NT\$295.90 billion in 4Q22, up 5.4% from 3Q22 and up 78.0% from 4Q21.

On a full year basis, both net income and EPS increased by 70.4% from 2021.

III. Financial Condition Review

III - 1. Liquidity Analysis			
(Balance Sheet Items)			
(In NT\$ billions)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>
Cash & Marketable Securities	1,561.49	1,498.87	1,188.46
Accounts Receivable	231.34	261.54	198.30
Inventories	221.15	218.34	193.10
Other Current Assets	38.92	35.48	27.21
Total Current Assets	2,052.90	2,014.23	1,607.07
Short-term Loans	0.00	0.00	114.92
Accounts Payable	270.02	221.80	194.46
Current Portion of Bonds Payable and Bank Loans	19.32	23.43	4.57
Dividends Payable	142.62	142.62	142.62
Accrued Liabilities and Others	512.27	419.58	282.93
Total Current Liabilities	944.23	807.43	739.50
Current Ratio (x)	2.2	2.5	2.2
Net Working Capital	1,108.67	1,206.80	867.57

Liquidity Analysis:

On a sequential basis, total current assets increased by NT\$38.67 billion, mainly due to the increase of NT\$62.62 billion in cash and marketable securities, partially offset by the decrease of NT\$30.20 billion in accounts receivable.

Total current liabilities increased by NT\$136.80 billion, mainly due to the increase of NT\$48.22 billion in accounts payable and the increase of NT\$92.69 billion in accrued liabilities and others.

Net working capital was NT\$1,108.67 billion and current ratio was 2.2x in 4Q22.

III - 2. Receivable/Inventory Days			
(In Number of Days)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>
Days of Receivable	36	36	40
Days of Inventory	93	90	88

Receivable and Inventory Days:

Days of receivable was 36 days in 4Q22.

Days of inventory increased by 3 days to 93 days in 4Q22, primarily due to an increase in raw materials and N4 wafer prebuild.

III - 3. Debt Service			
(In NT\$ billions)	<u>4Q22</u>	<u>3Q22</u>	<u>4Q21</u>
Cash & Marketable Securities	1,561.49	1,498.87	1,188.46
Interest-Bearing Debts	(858.41)	(868.87)	(732.87)
Net Cash Reserves	703.08	630.00	455.59

Debt Service:

Net cash reserves increased NT\$73.08 billion to NT\$703.08 billion in 4Q22.

Interest-bearing debts decreased NT\$10.46 billion in 4Q22.

IV. Cash Flow

IV - 1. Quarterly Cash Flow Analysis			
(In NT\$ billions)	4Q22	3Q22	4Q21
Income before Tax	334.67	316.69	184.82
Depreciation & Amortization	107.59	105.34	110.66
Other Operating Sources/(Uses)	44.62	(9.33)	82.72
Net Operating Sources/(Uses)	486.88	412.70	378.20
Capital Expenditures	(336.84)	(265.97)	(235.56)
Marketable Financial Instruments	(19.59)	(24.61)	(8.38)
Other Investing Sources/(Uses)	13.90	6.18	(1.40)
Net Investing Sources/(Uses)	(342.53)	(284.40)	(245.34)
Short-term Loans	0.00	(116.01)	(1.86)
Cash Dividends	(71.30)	(71.30)	(71.31)
Bonds Payable	5.80	59.65	157.47
Other Financing Sources/(Uses)	(4.33)	(2.74)	(2.02)
Net Financing Sources/(Uses)	(69.83)	(130.40)	82.28
Exchange Rate Changes	(27.72)	44.92	(3.96)
Cash Position Net Changes	46.80	42.82	211.18
Ending Cash Balance	1,342.81	1,296.01	1,064.99

Summary of Cash Flow:

During the fourth quarter, cash generated from operating activities totaled NT\$486.88 billion, including (1) NT\$334.67 billion from income before tax, (2) NT\$107.59 billion from depreciation & amortization expenses, and (3) NT\$44.62 billion from other operating sources. The increase of other operating sources compared to 3Q22 were mainly attributable to changes in working capital.

Net cash used in investing activities was NT\$342.53 billion in 4Q22, primarily attributable to capital expenditures of NT\$336.84 billion.

Net cash used in financing activities was NT\$69.83 billion, mainly reflecting the payment of 1Q22 cash dividends of NT\$71.30 billion.

As a result, cash position increased NT\$46.80 billion to NT\$1,342.81 billion at the end of 4Q22.

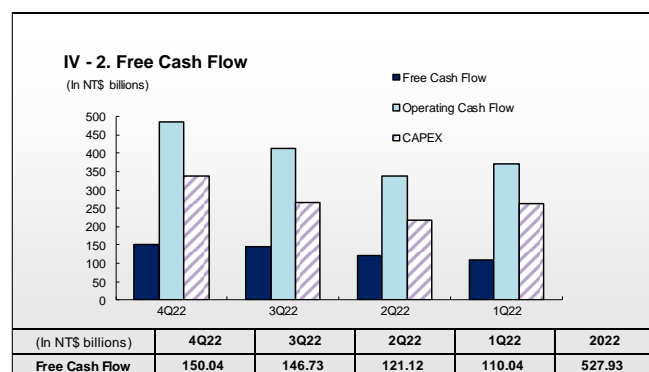
IV - 1.2. Annual Cash Flow Analysis			
(In NT\$ billions)	2022	2021	Diff.
Income before Tax	1,144.19	663.13	481.06
Depreciation & Amortization	437.26	422.40	14.86
Other Operating Sources/(Uses)	29.15	26.63	2.52
Net Operating Sources/(Uses)	1,610.60	1,112.16	498.44
Capital Expenditures	(1,082.67)	(839.20)	(243.47)
Marketable Financial Instruments	(130.53)	4.28	(134.81)
Other Investing Sources/(Uses)	22.27	(1.45)	23.72
Net Investing Sources/(Uses)	(1,190.93)	(836.37)	(354.56)
Short-term Loans	(111.96)	35.67	(147.63)
Cash Dividends	(285.24)	(265.79)	(19.45)
Bonds Payable	193.89	361.99	(168.10)
Other Financing Sources/(Uses)	3.06	4.74	(1.68)
Net Financing Sources/(Uses)	(200.25)	136.61	(336.86)
Exchange Rate Changes	58.40	(7.58)	65.98
Cash Position Net Changes	277.82	404.82	(127.00)
Ending Cash Balance	1,342.81	1,064.99	277.82

On a full year basis, cash generated from operating activities totaled NT\$1,610.60 billion, including (1) NT\$1,144.19 billion from income before tax, (2) NT\$437.26 billion from depreciation & amortization, and (3) NT\$29.15 billion from other operating sources.

Net cash used in investing activities was NT\$1,190.93 billion, primarily including capital expenditures of NT\$1,082.67 billion.

Net cash used in financing activities totaled NT\$200.25 billion, mainly reflecting the net decrease in short-term loans and the payment of cash dividends, partially offset by the issuance of corporate bonds.

At the end of 2022, cash position was NT\$1,342.81 billion.



Operating and Free Cash Flow:

Free cash flow increased NT\$3.31 billion to an inflow of NT\$150.04 billion in 4Q22, mainly due to the increase in operating cash flow during the quarter.

Total free cash flow generated in 2022 was NT\$527.93 billion, an increase from NT\$272.96 billion in 2021, as the increase in operating cash flow outpaced the increase in capital expenditures in 2022.

V. CapEx

V. Capital Expenditures
(in US\$ billions)

	<u>4Q22</u>	<u>3Q22</u>	<u>2Q22</u>	<u>1Q22</u>	<u>2022</u>
Capital Expenditures	10.82	8.75	7.34	9.38	36.29

Capital Expenditures:

Capital expenditures for TSMC on a consolidated basis totaled US\$10.82 billion in 4Q22 and US\$36.29 billion for the year.

VI. Recap of Recent Important Events & Announcements

- TSMC Held a 3nm Volume Production And Capacity Expansion Ceremony at Its Fab 18 New Construction Site in The Southern Taiwan Science Park (2022/12/29)
- TSMC Announced That TSMC Arizona Has Started The Construction of a Second Fab Which Is Scheduled to Begin Production of 3nm Process Technology in 2026. The Overall Investment for Two Fabs Will Be Approximately US\$40 Billion (2022/12/06)
- TSMC Board of Directors Approved NT\$2.75 Cash Dividend for the Third Quarter of 2022 and Set March 16 as Ex-Dividend Date, March 22 as the Record Date and April 13, 2023 as the Distribution Date (2022/11/08)