

Investment theory

Elementary tutorial of
how to read financial report
And
how the stock market react

Objective: introduce basic numerical
analysis scheme of financial report

Contents:

1. Introduction of financial report
2. How to analyze the three tables
3. Other indicators
4. What kind of reaction the stock
market will present

Pre-summary:

1. Tables in financial report:

- *Income (accrual basis)*
- *Balance Sheet (accrual basis)*
- *Cash Flow (cash basis)*

2. Other indicators:

- *EPS: the high the better*
- *PE: the low the better*
- *PB: the low the better*

3. Market reactions:

- Not only depends on these numeral
indicators.

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Introduction: What, When, Where, Why

What: a periodic report about company's financial state

When: (depends on company)

- Q1: Apr.~May.
- Q2 (half year report): July~Aug.
- Q3: Sep.~Nov.
- Q4 (year report): Jan.~Feb.

Where: available at company's homepage

- * Google: XXX company financial report
- * Homepage -> investor relations -> financial report

Why: to understand the company's financial state and to **estimate the value** of stocks or bonds

What to focus:

Common	For small companies	For big companies
Company's strategy: Year strategy, marketing, technical plan...	Industry research report: Market share, market size, competitor...	Indicator of macro environment: Economics, exchange rate, geopolitics...
Financial states: <ul style="list-style-type: none">• Income• Balance Sheet• Cash Flow	* Reliability of this financial report (e.g. move income from next quarter)	Indicator of industry environment (e.g. Nvidia's report provide forecast of HPC/PC industry)

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Accrual basis: records revenue and expenses when **transactions occur** but before money is received or dispensed
Cash basis: records revenue and expenses when **cash** related to those transactions is actually **received** or **dispensed**

Structure of financial report

Typical structure of financial report:

1. A letter from CEO (year report):
 - Introduce the structure/business of the company.
 - Recap the environment and the development of the company this year.
 - Forecast the market and the development of competitors in related industries.
2. Financial summary:
 - Income/Balance sheet/Cash flow
3. Introduction of each department:
 - What to sale/core of business
 - How to keep advantage/develop the market
4. Other details: inventory turnover rate, ...

Big companies provide global/macro indicators;
Small companies focus on deep information of a specific industry.

Fundamental reference to evaluate the stock price *of this company*.

Auxiliary reference to evaluate the *average* stock price *of an industry*.

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Income

Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries

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

	2021		2020	
	Amount	%	Amount	%
NET REVENUE (Notes 5, 22, 33 and 38)	\$1,587,415,037	100	\$1,339,254,811	100
COST OF REVENUE (Notes 5, 12, 29 and 33)	767,877,771	48	628,124,691	47
GROSS PROFIT	819,537,266	52	711,130,120	53
OPERATING EXPENSES (Notes 5, 29 and 33)				
Research and development	124,734,755	8	109,486,089	8
General and administrative	36,929,588	2	28,457,593	2
Marketing	7,558,591	1	7,112,867	1
Total operating expenses	169,222,934	11	145,056,549	11
OTHER OPERATING INCOME AND EXPENSES, NET (Notes 14, 15 and 29)	(333,435)	-	710,127	-
INCOME FROM OPERATIONS (Note 38)	649,980,897	41	566,783,698	42
NON-OPERATING INCOME AND EXPENSES				
Share of profits of associates	5,603,084	-	3,592,818	-
Interest income (Note 23)	5,708,765	-	9,018,400	1
Other income	973,141	-	660,607	-
Foreign exchange gain (loss), net (Note 36)	13,662,655	1	(3,303,298)	-
Finance costs (Note 24)	(5,414,218)	-	(2,081,455)	-
Other gains and losses, net (Note 25)	(7,388,010)	-	10,106,410	1
Total non-operating income and expenses	13,145,417	1	17,993,482	2

What to focus:

1. Net revenue: the global indicator of the income of this financial period.
2. Profit and profit rate: how much net profit the company can gain and can maintain; how superior the company is than others.
3. Operating expenses: represent the human/marketing cost control ability.

Additional:

1. Operating income: income from other financial operations, e.g. investment.
 - For financial major company (bank, insurance): the more the better.
 - For non-financial major company: should NOT occupy a higher-than-average percentage then others.

DEMO: TSMC 2021 Q4 (year) report. Bracket: minus value.

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Balance sheet: assets

ASSETS

CURRENT ASSETS

Cash and cash equivalents (Note 6)
 Financial assets at fair value through profit or loss (Note 7)
 Financial assets at fair value through other comprehensive income (Note 8)
 Financial assets at amortized cost (Note 9)
 Hedging financial assets (Note 10)
 Notes and accounts receivable, net (Note 11)
 Receivables from related parties (Note 33)
 Other receivables from related parties (Note 33)
 Inventories (Notes 5 and 12)
 Other financial assets (Note 34)
 Other current assets

Total current assets

NONCURRENT ASSETS

Financial assets at fair value through other comprehensive income (Note 8)
 Financial assets at amortized cost (Note 9)
 Investments accounted for using equity method (Note 13)
 Property, plant and equipment (Notes 5 and 14)
 Right-of-use assets (Notes 5 and 15)
 Intangible assets (Notes 5 and 16)
 Deferred income tax assets (Notes 5 and 26)
 Refundable deposits
 Other noncurrent assets

Total noncurrent assets

TOTAL

DEMO: TSMC 2021 Q4 (year) report

December 31, 2021		December 31, 2020	
Amount	%	Amount	%
\$ 1,064,990,192	29	\$ 660,170,647	24
159,048	-	2,259,412	-
119,519,251	3	122,448,453	5
3,773,571	-	6,597,992	-
13,468	-	47	-
197,586,109	5	145,480,272	5
715,324	-	558,131	-
61,531	-	50,645	-
193,102,321	5	137,353,407	5
16,630,611	1	10,676,111	1
10,521,481	-	6,590,191	-
<u>1,607,072,907</u>	<u>43</u>	<u>1,092,185,308</u>	<u>40</u>
5,887,892	-	4,514,940	-
1,533,391	-	4,372,207	-
21,963,418	1	18,841,061	1
1,975,118,704	53	1,555,589,120	56
32,734,537	1	27,728,382	1
26,821,697	1	25,768,179	1
49,153,886	1	25,958,184	1
2,624,854	-	1,343,001	-
2,592,169	-	4,411,023	-
<u>2,118,430,548</u>	<u>57</u>	<u>1,668,526,097</u>	<u>60</u>
<u>\$ 3,725,503,455</u>	<u>100</u>	<u>\$ 2,760,711,405</u>	<u>100</u>

Balance sheet: liabilities

LIABILITIES AND EQUITY

CURRENT LIABILITIES

Short-term loans (Notes 17 and 30)	\$ 114,921,333	3	\$ 88,559,026	3
Financial liabilities at fair value through profit or loss (Note 7)	681,914	-	94,128	-
Hedging financial liabilities (Note 10)	9,642	-	1,169	-
Accounts payable	47,285,603	1	38,987,284	1
Payables to related parties (Note 33)	1,437,186	-	2,107,718	-
Salary and bonus payable	23,802,100	1	20,071,241	1
Accrued profit sharing bonus to employees and compensation to directors and supervisors (Note 29)	36,524,741	1	35,681,046	1
Payables to contractors and equipment suppliers	145,742,148	4	157,804,961	6
Cash dividends payable (Note 21)	142,617,093	4	129,651,902	5
Income tax payable (Notes 5 and 26)	59,647,152	2	53,909,313	2
Long-term liabilities - current portion (Notes 18, 19 and 30)	4,566,667	-	2,600,000	-
Accrued expenses and other current liabilities (Notes 5, 15, 22, 30 and 33)	<u>162,267,779</u>	<u>4</u>	<u>87,683,260</u>	<u>3</u>
Total current liabilities	<u>739,503,358</u>	<u>20</u>	<u>617,151,048</u>	<u>22</u>

NONCURRENT LIABILITIES

Bonds payable (Notes 18 and 30)	610,070,652	16	254,105,084	9
Long-term bank loans (Notes 19 and 30)	3,309,131	-	1,967,611	-
Deferred income tax liabilities (Notes 5 and 26)	1,873,877	-	1,729,941	-
Lease liabilities (Notes 5, 15 and 30)	20,764,214	1	20,560,649	1
Net defined benefit liability (Note 20)	11,036,879	-	11,914,074	1
Guarantee deposits	686,762	-	265,599	-
Others (Note 22)	<u>167,525,377</u>	<u>5</u>	<u>2,395,400</u>	<u>-</u>
Total noncurrent liabilities	<u>815,266,892</u>	<u>22</u>	<u>292,938,358</u>	<u>11</u>

DEMO: TSMC 2021 Q4 (year) report

Balance sheet: assets & liabilities

Current assets (liquid assets)

Assets can be transformed into cash within one fiscal year or operating cycle: flexibility and robustness.

- Cash and equivalents (stocks, securities, ...)
- Accounts receivable
- Others

Current liabilities

Indicator to exam a company's ability to leverage cash.

- Short-term loans
- Accounts payable

Noncurrent assets (fixed assets)

Assets can NOT be transformed into cash quickly: long-term profitability and strategy.

- Investments (factory, production line, ...)
- Others

Noncurrent liabilities

Indicator of company's financial health.

- Long-term loans
- Others

Leverage ratio=liabilities/asset: financial health and ability of development.

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Cash flow: Operating activities

	2021	2020
CASH FLOWS FROM OPERATING ACTIVITIES		
Income before income tax	\$ 663,126,314	\$ 584,777,180
Adjustments for:		
Depreciation expense	414,187,700	324,538,443
Amortization expense	8,207,169	7,186,248
Expected credit losses recognized (reversal) on investments in debt instruments	(2,735)	3,672
Finance costs	5,414,218	2,081,455
Share of profits of associates	(5,603,084)	(3,592,818)
Interest income	(5,708,765)	(9,018,400)
Share-based compensation	7,788	6,612
Loss (gain) on disposal or retirement of property, plant and equipment, net	273,627	(188,863)
Loss on disposal or retirement of intangible assets, net	1,228	599
Impairment loss on property, plant and equipment	274,388	10,159
Gain on financial instruments at fair value through profit or loss, net	-	(3,005)
Gain on disposal of investments in debt instruments at fair value through other comprehensive income, net	(93,229)	(1,439,420)
Gain on foreign exchange, net	(16,115,936)	(1,372,610)
Dividend income	(362,310)	(637,575)
Others	(414,219)	13,554
Changes in operating assets and liabilities:		
Financial instruments at fair value through profit or loss	2,649,244	(2,965,270)
Notes and accounts receivable, net	(52,105,823)	(8,082,708)
Receivables from related parties	(157,193)	303,939
Other receivables from related parties	(10,886)	7,588
Inventories	(55,748,914)	(54,372,211)
Other financial assets	(8,236,897)	1,389,493
Other current assets	(3,899,043)	(1,358,129)
Accounts payable	8,298,319	404,607
Payables to related parties	(670,532)	672,818
Salary and bonus payable	3,730,859	3,798,888
Accrued profit sharing bonus to employees and compensation to directors and supervisors	843,695	12,032,143
Accrued expenses and other current liabilities	84,322,721	20,617,359
Other noncurrent liabilities	154,085,985	-
Net defined benefit liability	(635,116)	(785,171)
Cash generated from operations	1,195,658,573	874,028,577
Income taxes paid	(83,497,851)	(51,362,365)
Net cash generated by operating activities	<u>1,112,160,722</u>	<u>822,666,212</u>

What to focus:

1. Operating activities: main business
 - Income: major income and others
 - Depreciation: fixed assets, inventors, ...
 - Amortization: average price based on expected life
2. Investing activities: investments/profits
3. Financing activities: fundraising/loans

DEMO: TSMC 2021 Q4 (year) report

(Continued)

Cash flow: Investing & Financing activities

	2021	2020
CASH FLOWS FROM INVESTING ACTIVITIES		
Acquisitions of:		
Financial assets at fair value through other comprehensive income	\$ (255,888,679)	\$ (262,637,496)
Financial assets at amortized cost	(3,799,737)	(4,302,770)
Property, plant and equipment	(839,195,708)	(507,238,722)
Intangible assets	(9,040,751)	(9,542,387)
Proceeds from disposal or redemption of:		
Financial instruments at fair value through profit or loss - debt instruments	-	30,049
Financial assets at fair value through other comprehensive income	254,604,537	266,931,916
Financial assets at amortized cost	9,368,275	285,210
Property, plant and equipment	390,364	606,732
Proceeds from return of capital of investments in equity instruments at fair value through other comprehensive income	115,627	51,052
Derecognition of hedging financial instruments	276,261	(308,776)
Interest received	5,990,948	9,775,120
Proceeds from government grants - property, plant and equipment	821,312	1,044,327
Proceeds from government grants - others	6,605	25,369
Other dividends received	362,310	735,081
Dividends received from investments accounted for using equity method	2,136,426	2,752,043
Increase in prepayments for leases	(1,200,000)	(4,693,416)
Refundable deposits paid	(1,997,337)	(726,883)
Refundable deposits refunded	<u>683,684</u>	<u>1,431,837</u>
Net cash used in investing activities	<u>(836,365,863)</u>	<u>(505,781,714)</u>
CASH FLOWS FROM FINANCING ACTIVITIES		
Increase (decrease) in short-term loans	35,668,397	(31,571,567)
Proceeds from short-term bills payable	-	7,485,303
Repayments of short-term bills payable	-	(7,500,000)
Proceeds from issuance of bonds	364,592,792	236,725,675
Repayment of bonds	(2,600,000)	(31,800,000)
Proceeds from long-term bank loans	1,510,000	2,000,000
Payments for transaction costs attributable to the issuance of bonds	(737,724)	(390,730)
Repayment of the principal portion of lease liabilities	(1,985,338)	(2,615,708)
Interest paid	(3,833,633)	(1,781,097)
Guarantee deposits received	469,041	145,633
Guarantee deposits refunded	(36,763)	(16,060)
Cash dividends	(265,786,399)	(259,303,805)
Disposal of ownership interests in subsidiaries (without losing control)	9,451,798	-
Donation from shareholders	11,282	7,269
Decrease in non-controlling interests	<u>(115,015)</u>	<u>-</u>
Net cash generated by (used in) financing activities	<u>136,608,438</u>	<u>(88,615,087)</u>

(Continued)

What to focus:

1. Operating activities: main business
2. Investing activities: investments/profits
 - Compare with historical data
 - Compare with marketing forecast
3. Financing activities: fundraising/loans
 - Check: cash flow/total loans
 - Compare with historical data
 - Compare with marketing forecast

DEMO: TSMC 2021 Q4 (year) report

Cash flow: Overall

	2021	2020
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	\$ (7,583,752)	\$ (23,498,100)
NET INCREASE IN CASH AND CASH EQUIVALENTS	404,819,545	204,771,311
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	<u>660,170,647</u>	<u>455,399,336</u>
CASH AND CASH EQUIVALENTS, END OF YEAR	<u>\$1,064,990,192</u>	<u>\$ 660,170,647</u>

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

(Concluded)

What to focus:

- Net increase of cash
 - Major ingredients of the change: Marketing? Selling assets? Investments?
- Ability to create cash: Cash from operating activities / Total cash (end of year)
- Ability to defray loans: Cash from operating activities / loans
 - Total loans / short-term loans / long-term loans
- Ability of investment: Cash from operating activities / Investment expend
- Ability to defray stock dividend: Cash from operating activities / dividend

DEMO: TSMC 2021 Q4 (year) report

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Other indicators

1. EPS (Earning-per-share):

$$= \frac{\text{Net Profit}}{\text{Stock Number}}; \text{ the higher the better}$$

2. PE (Price-to-Earning Ratio):

$$PE_{LYR} = \frac{\text{Stock Price}}{EPS_{\text{LastYear}}}; \text{ (less used)}$$

$$PE_{TTM} = \frac{\text{Stock Price}}{EPS_{\text{Last12Month}}}$$

$$PE_{\text{Forward}} = \frac{\text{Stock Price}}{\text{Predicted } EPS_{\text{NextYear}}}$$

The lower the better

3. PB (Price-to-Book Ratio):

$$PB = \frac{\text{Stock Price}}{\text{Net Asset Value per Share}}$$

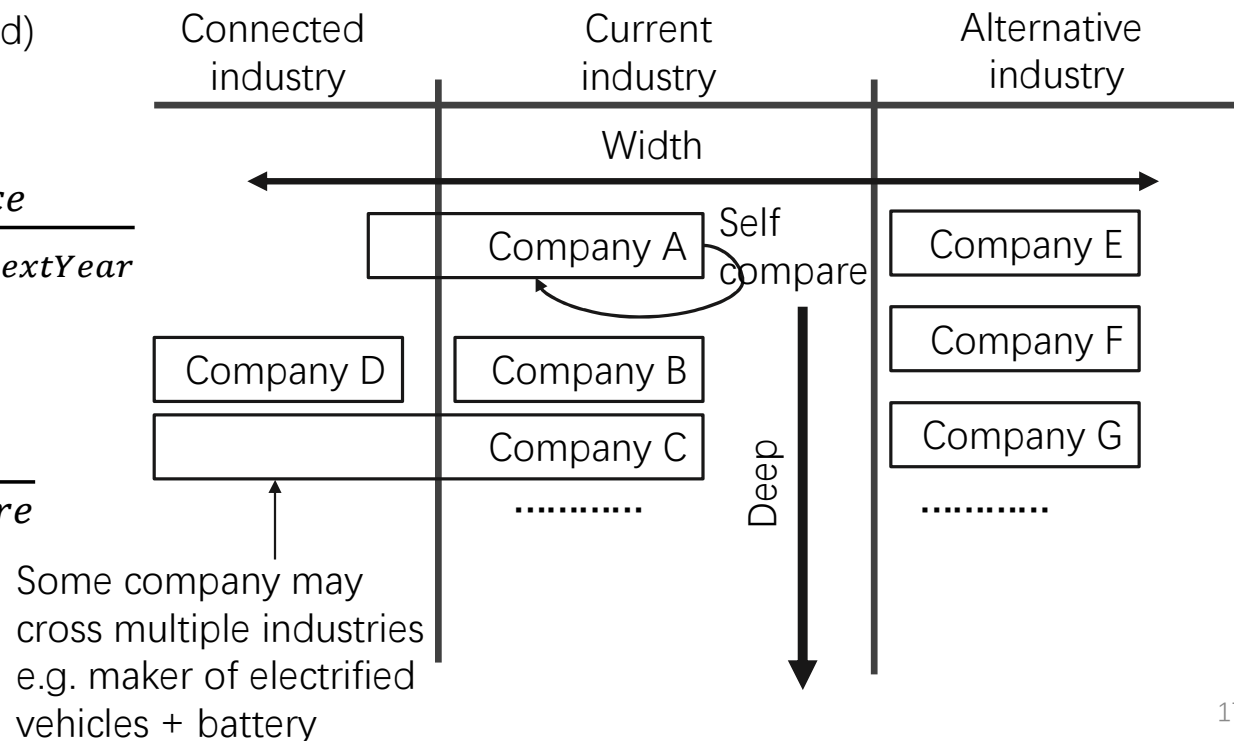
The lower the better

TTM: Trailing 12 months

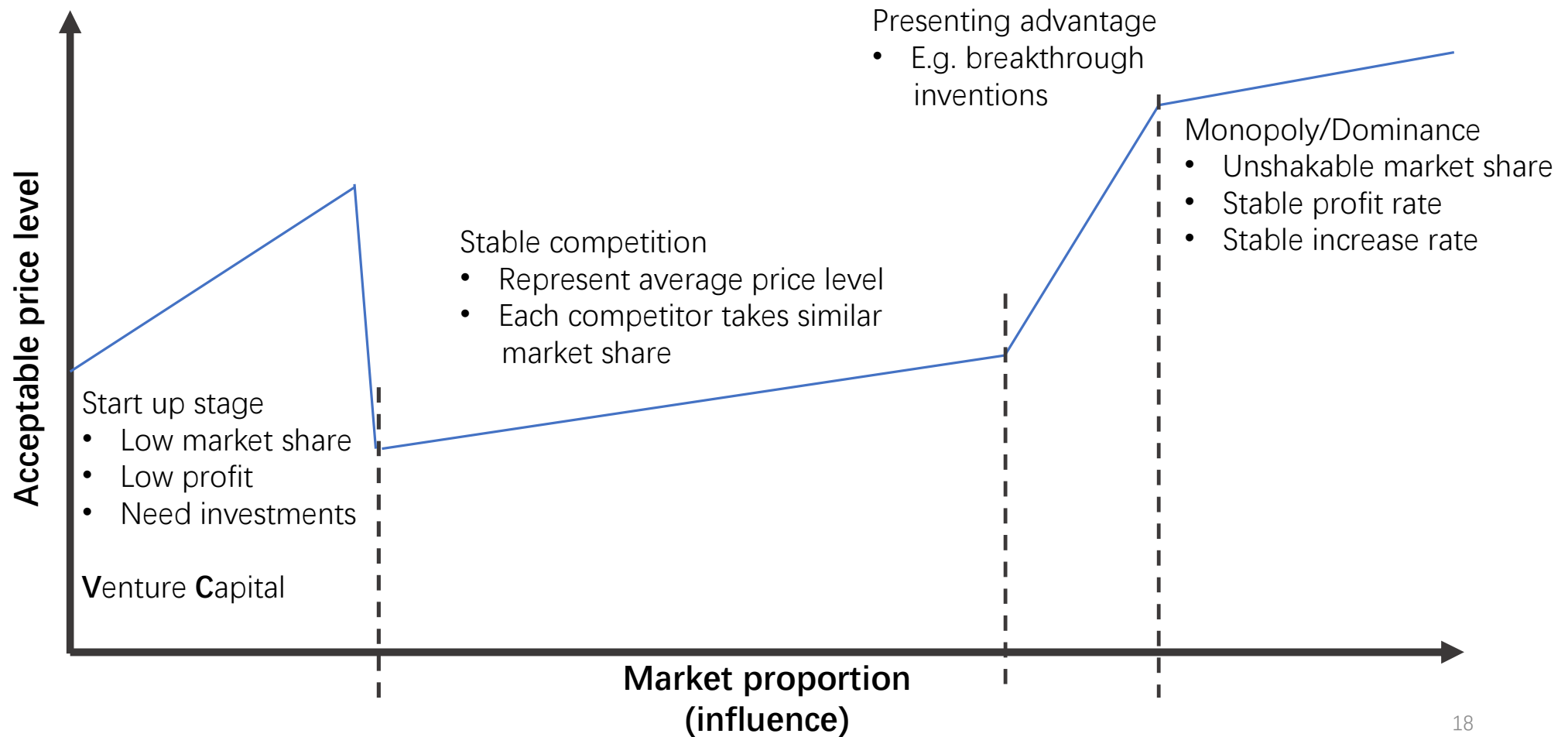
LYR: Last Year Ratio

Who to compare:

- Historical data: **self-vs.-self**
- Competitors in same industry: deep
- Average level of industry: width
- Other alternative industries: width



Other indicators



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Examples: TSMC

Summary Chart Conversations Statistics Historical Data Profile Financials Analysis

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Show: **Income Statement** Balance Sheet Cash Flow Annual Quarterly

Income Statement Currency in TWD. All numbers in thousands Expand All

Breakdown	TTM	6/29/2022	3/30/2022	12/30/2021	9/29/2021
> Total Revenue	1,878,076,329	534,140,808	491,075,873	438,189,000	414,567,890
Cost of Revenue	845,904,117	218,672,814	217,872,707	207,434,000	201,821,695
Gross Profit	1,032,172,212	315,467,994	273,203,166	230,755,000	212,746,195
> Operating Expense	192,482,840	53,344,245	49,413,048	47,983,000	41,742,647
Operating Income	839,689,372	262,123,749	223,790,118	182,772,000	171,003,548
> Net Non Operating Interest Inc...	-513,664	641,714	-466,887	-712,000	22,481
> Other Income Expense	12,234,805	3,232,818	3,508,465	2,759,000	2,825,610
Pretax Income	851,410,513	265,998,281	226,831,696	184,819,000	173,851,639
Tax Provision	92,696,752	28,818,029	23,958,322	18,446,000	17,372,485
> Net Income Common Stockhold...	758,070,057	237,027,317	202,732,975	166,232,000	156,258,287
Diluted NI Available to Com Stock...	758,070,057	237,027,317	202,732,975	166,232,000	156,258,287

Quick compare: year/year & quarter/quarter details

Increase/decrease of income, net profit & profit rate, investment, cash flow/loans...

~21Q4

Stable increasing gross profits;

Stable increasing operating cash flow;

Stable cash flow;

.....

Why the price slump?

Examples: TSMC

FOMC: US Federal Open Market Committee
The time of determination of increased interest rate are marked
as reference of risk-free interest rate

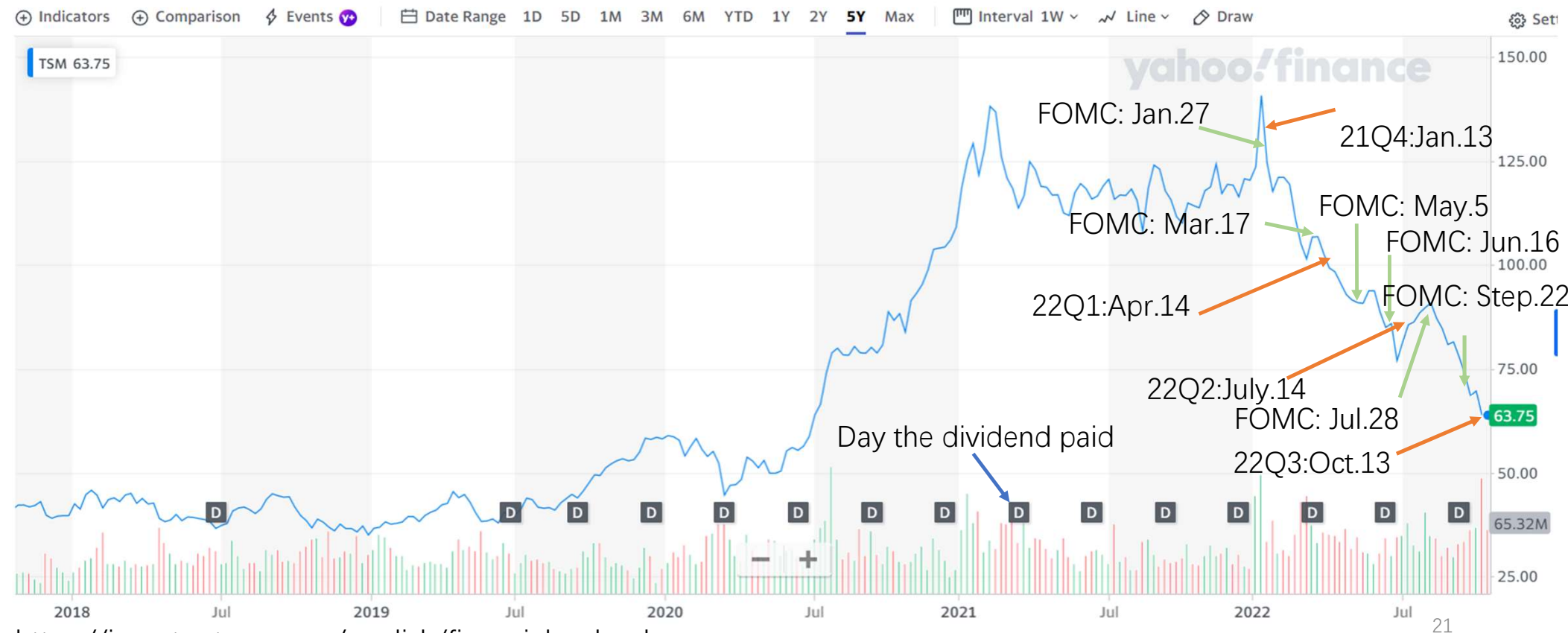
Taiwan Semiconductor Manufacturing Company Limited (TSM) ☆

NYSE - NYSE Delayed Price. Currency in USD

63.75 **+0.17** **(+0.27%)** **64.05** **+0.30** **(+0.47%)**

At close: 04:00PM EDT

After hours: 07:59PM EDT



<https://investor.tsmc.com/english/financial-calendar>

Examples: TSMC

NASDAQ Composite (^IXIC) ☆

Nasdaq GIDS - Nasdaq GIDS Real Time Price. Currency in USD

10,859.72 +244.87 (+2.31%)

At close: October 21 05:15PM EDT



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 - *PB: the low the better*
 - *Price curve*
3. Market reactions
 - Not only depends on these numeral indicators

Reading financial report is just elementary skill for investors.
Market is not only moved by objective things.