

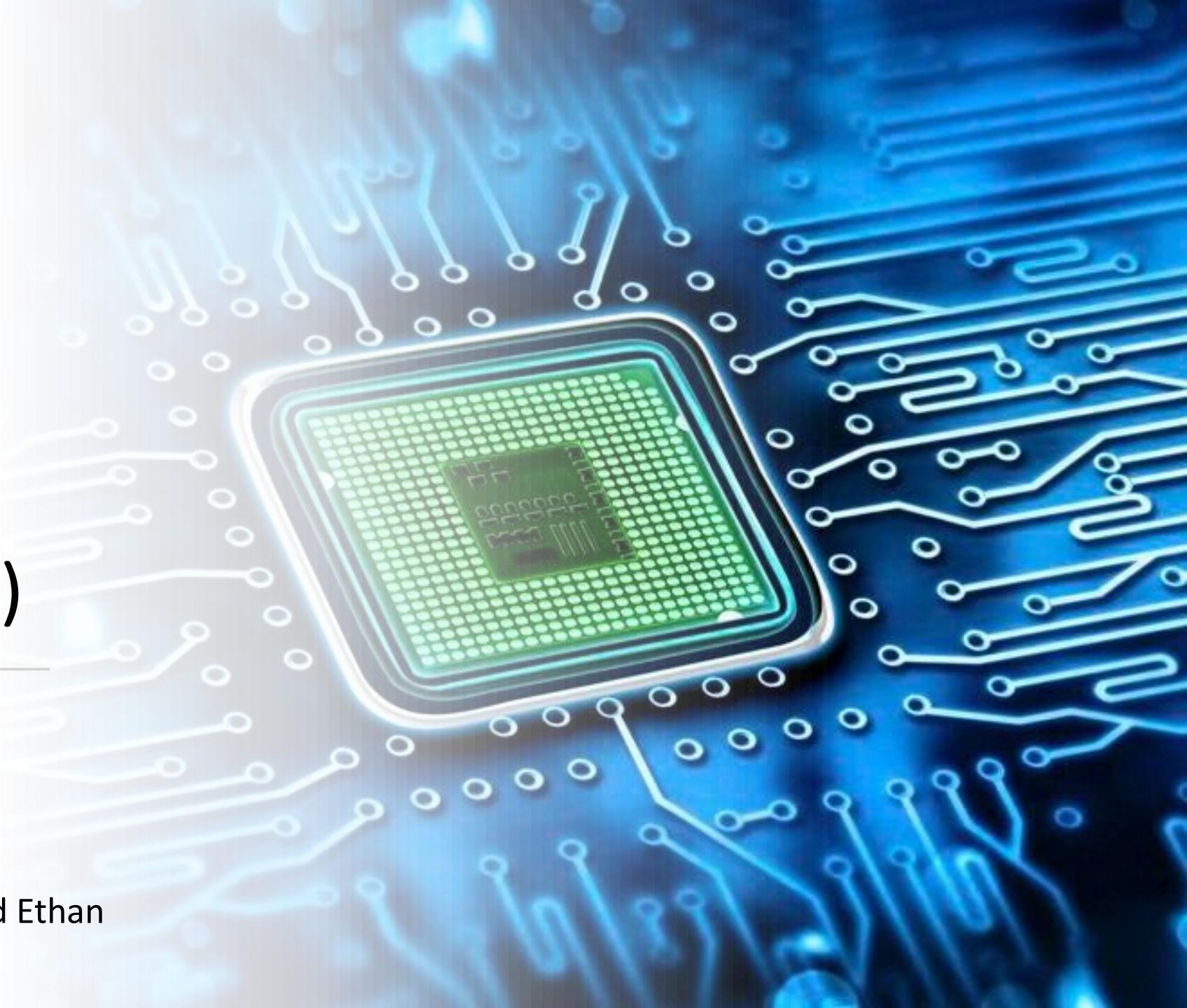


TSMC (NYSE: TSM)

CFAC

the compounding for a cure foundation.

Analysts: Jordan, Avram, Malia, and Ethan



Agenda

1 Company Overview

2 Industry Outlook

3 Investment Thesis

4 Valuation

5 Recommendation

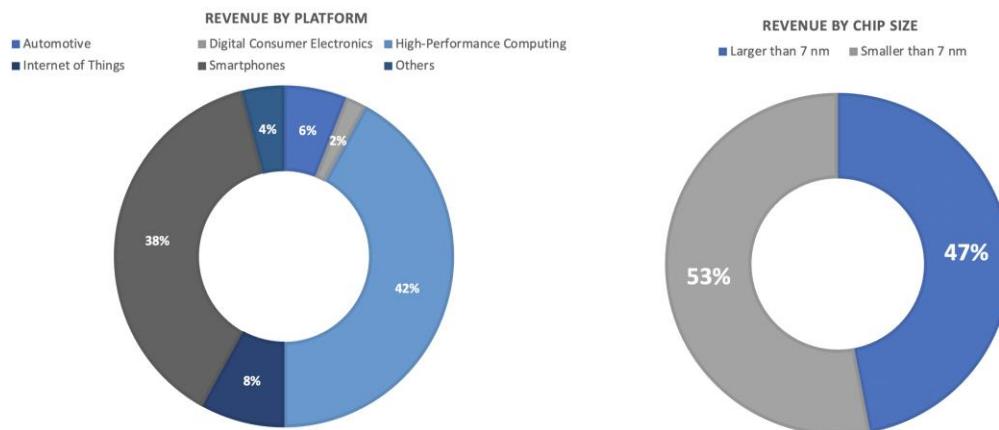
6 Catalysts and Risks

Taiwan Semiconductor Manufacturing Company (NYSE: TSM)

Business Description

- TSMC is a leading pure-play semiconductor foundry, specializing in the manufacturing of high-performance chips.
- Their chips are essential components in various electronic devices, including smartphones, supercomputers, AI systems, 5G networks, and cars.
- They are known for producing some of the most powerful chips in the world and operates a state-of-the-art manufacturing facility to maintain its competitive edge.
- The company is committed to ongoing research and development, and works with customers across the globe to deliver innovative, high-quality chip solutions.

Segmented Revenue (Q4 2022)



Management Team



Name	Dr. Mark Liu	Dr. CC Wei	Morris Chang
Position	Chair	CEO	Founder
Years Exp.	23 Years	24 Years	35 Years
Background	PhD UC Berkley Eng.	PhD Yale Eng.	PhD Stanford Eng.

Key Suppliers and Customers

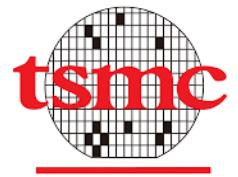
Key Supplier: **ASML**

Customers:



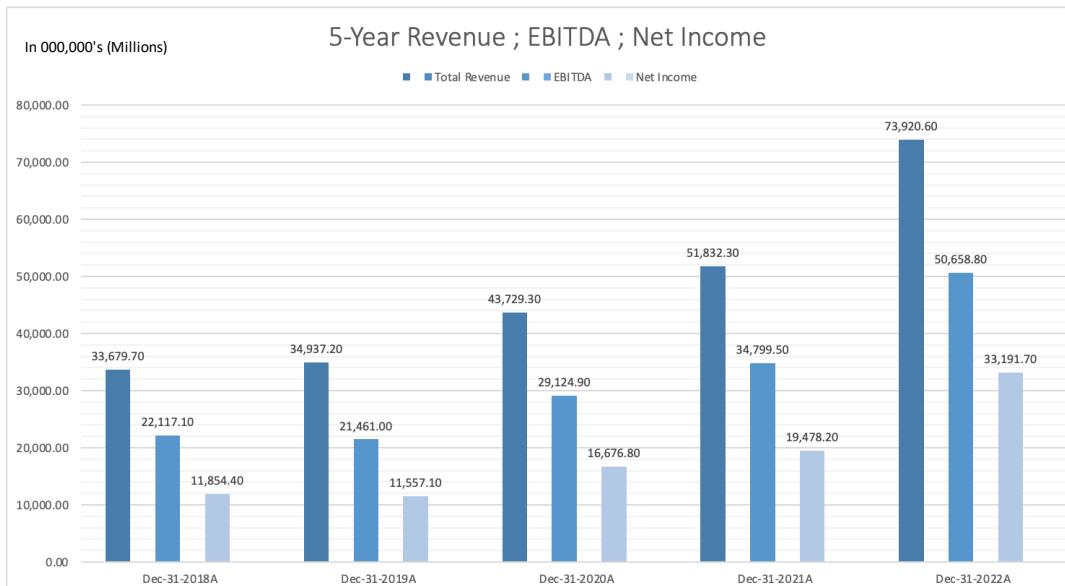
Company Overview

Performance and Stock Analysis



Key Stats

- Revenue FY22 \$73 Billion USD
- EBITDA FY22 \$51 Billions USD
- Revenue Growth FY22 YOY 41%
- EBITDA Growth FY22 YOY 46%
- Gross Margin FY22 59%
- EBITDA Margin Consistent 60%+



Key Stock Statistics

- NYSE: TSM
- Last Price Traded \$89.79 USD
- Mkt Cap \$465 Billion
- 9th Largest Company by Market Cap
- Largest Shareholder: State-Owned Investment Fund 6% of Mkt Cap
- Management Holds 0.37% of Mkt Cap (\$1.6 Billion Value)



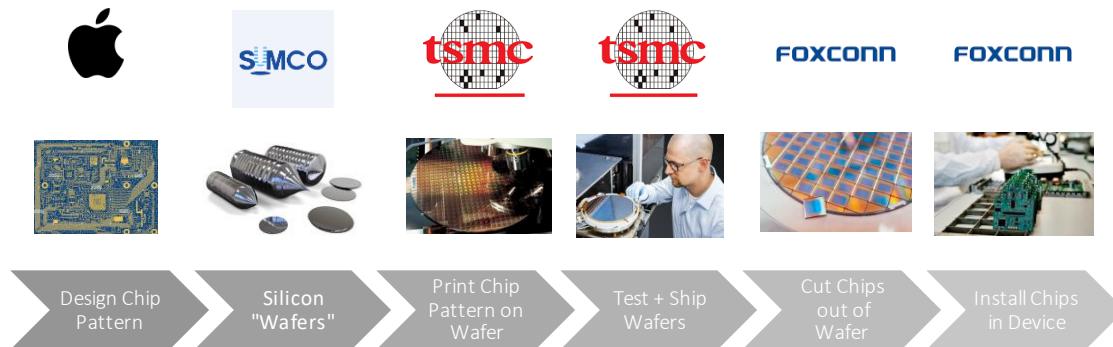
Sources: Bloomberg, Yahoo Finance, TSMC

Company Overview

Business Model



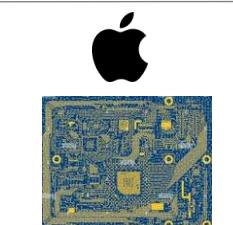
Semiconductor Process



\$600mn+
In design
process

Special Machines
Costing up to
\$300mn
ASML

Fabless

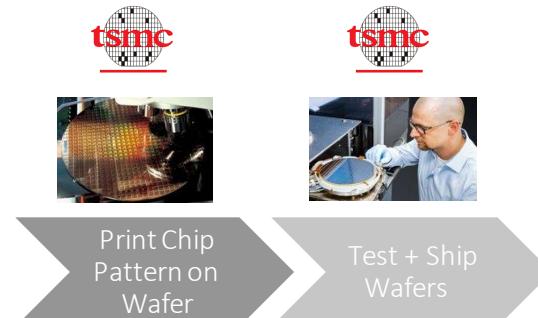


Design Chip Pattern

Integrated Device Manufacturer (IDM)



Pure Play Foundry



Sources: ASMC, Company Filings, Bloomberg, BusinessWire

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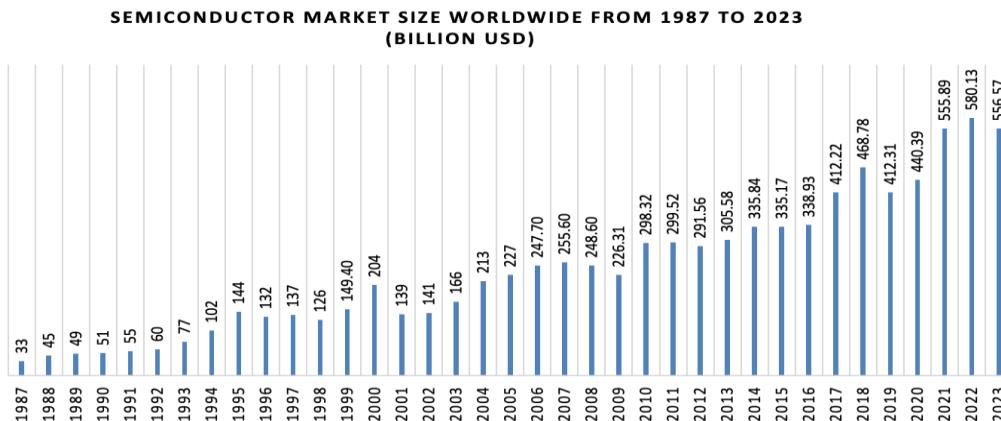
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Semiconductor Industry

The Global Semiconductor Industry

- Comprised of firms that design and fabricate semiconductor chips for their use in products such as computers, smartphones, appliances, gaming hardware, and medical equipment.
- Global semiconductor industry sales totaled **\$573.5 billion in 2022**,
 - Increase of 3.2% compared to the 2021 total of \$555.9 billion
 - Projected to be a trillion dollar industry by 2030



Industry growth can be attributed to:

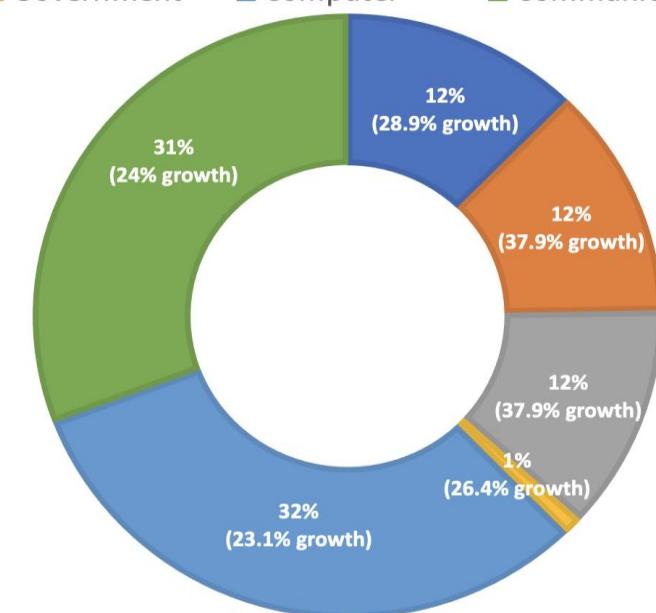
- Sales into end-use categories such as computers and electronics experienced significant increases, as remote work increased during the pandemic
- The overall advancement of data processing technology

Industry Trends

- The emergence and widespread corporate integration of AI technology is putting an upwards pressure on GPU manufacturers
- Autonomous Vehicles and smart cars becoming more prominent increasing growth within the automotive sector of the industry
 - Regarded as the strongest growth-segment pre-2023

GLOBAL SEMICONDUCTOR INDUSTRY DEMAND DRIVERS

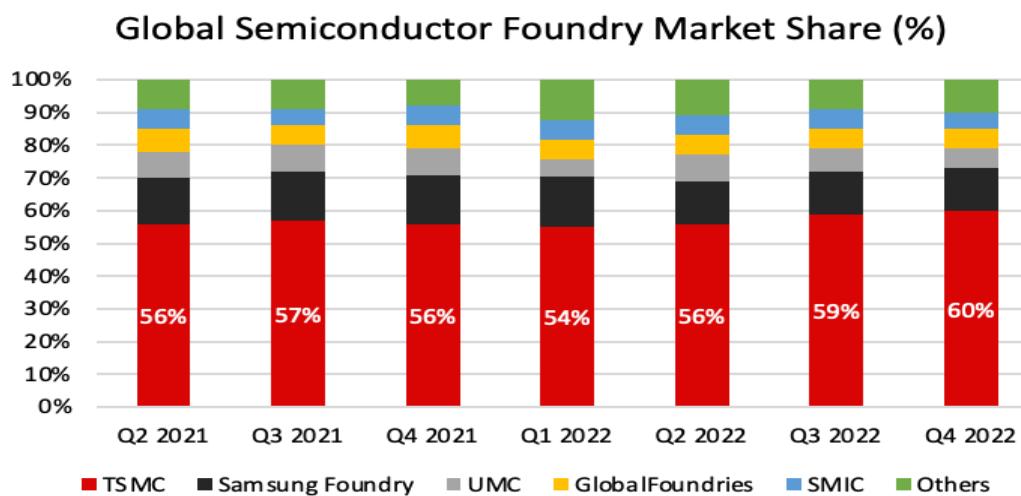
- | | | |
|--------------|--------------|-----------------|
| ■ Consumer | ■ Automotive | ■ Industrial |
| ■ Government | ■ Computer | ■ Communication |



Competition and Comparable Businesses

Points of Difference – Long-term Oriented

- TSMC is a pure-play foundry
 - Increased level of specialization and cost reduction
 - Very few direct competitors within this space
- A trend within the client industry is to switch to fabless manufacturing processes
 - Due to extremely high manufacturing costs and the impressive efficiency of pure-play foundries
 - This means firms like TSMC are under increasing demand from industry peers such as Nvidia and AMD



Comparable Businesses	P/E ratio	Market Cap (Billions USD)
	13.78	541.62
	35.49	116.83
	11.69	145.54
	22.00	250.49
	78.50	549.49
	72.37	134.16
	7.81	294.90

- Direct competitors are other smaller scale pure-play foundries, other tech giants within the industry are primarily clients
- In 2020 TSMC dominated the 5-10nm chip space with 89% market share
 - Only competitor within this space is Samsung with 11%
 - These chips are required for advanced computing processes and other applications such as autonomous smart cars
- TSMC has 72% market share within the 12-32nm chip space (2020)

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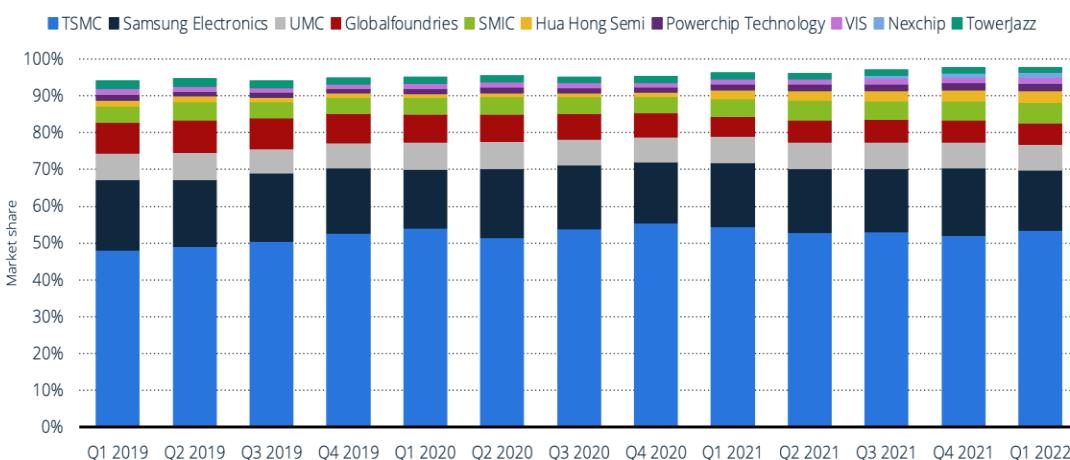
Investment Thesis

Effective Positioning



I. Strong Market Power

- TSMC currently has a strong position in the semiconductor foundry market, with over a 50% share in the sector
- Given TSMC's strong position in the market with long-term contracts, they have the facilities, knowledge, and resources to win the technological advancement 'arms race'
- Second largest player in industry is Samsung with only ~16% market share, two past competitors, GlobalFoundries and UMC were not able to keep up with smaller chip production with both not able to produce chips smaller than 7nm



Sources: Bloomberg, Statista

II. Increase in Market Demand

- Technological advancements with AI, and within the HPC and automotive industries have sparked rising demands for semiconductor chips
- TSMC being the forefront of the foundry market, the business has the opportunity to capitalize on this catalyst for the industry by continuing to invest heavily in R&D through capital expenditures
- Automotive industry still faces shortages of semiconductor chips and demand is still forecasted to drastically increase over next few years

III. Superior Business Model

- Despite decreases in business spending during Covid-19, TSMC is able to minimize the impact of an economic downturn through long-term contracts and can maintain a consistent revenue stream
- TSMC has seen significant increases in revenue growth, all while maintaining strong margins. EBITDA growth exceeded revenue growth in both 2021 and 2022
- By maintaining consistent revenue streams, TSMC is able to continually invest in new technology to stay ahead of the technological curve, and still withstand risk of over-investment possibilities

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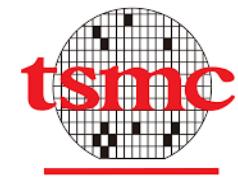
Comparables Analysis

Comparable Companies: Peer Universe

(in USD Millions)			EV/Revenue		EV/EBITDA		EV / EBIT		Pricing Multiples		
	Market Cap	Enterprise Value	LTM	NTM	LTM	NTM	LTM	P/EPS LTM	P/Tang BV LTM	NTM P/E	
Semiconductor Producers											
MediaTek Inc.	39,180.5	33,925.8	1.9x	2.04x	7.2x	9.92x	8.1x	9.92x	3.2x	13.69x	
United Microelectronics Corporation	21,063.8	17,049.7	1.8x	2.15x	3.5x	4.82x	4.9x	4.82x	1.9x	1..30x	
Novatek Microelectronics Corporation	7,783.5	6,475.3	1.6x	-	4.6x	8.88x	4.8x	8.88x	4.0x	13.49x	
Realtek Semiconductor Corp	6,083.5	4,088.6	1.0x	1.34x	6.0x	13.30x	6.6x	13.30x	4.1x	21.69x	
ASE Technology Holding Co.	15,052.0	19,956.1	0.9x	0.94x	4.4x	5.09x	7.4x	5.09x	2.1x	10.80x	
Vanguard International Semiconductor Corp	5,200.3	4,589.9	2.5x	3.16x	5.5x	7.88x	6.9x	7.88x	3.7x	18.16x	
SK Hynix Inc.	51,474.3	64,687.3	1.7x	31.3x	3.2x	11.02x	6.3x	11.02x	1.0x	-	
Intel Corporation	114,719.0	129,375.0	2.1x	2.54x	8.0x	12.67x	55.4x	12.67x	1.7x	52.07x	
Raydium Semiconductor Corporation	947.6	583.6	0.7x	0.97x	3.6x	7.13x	3.8x	7.13x	2.3x	17.15x	
China Electronics Huada Technology	421.5	378.8	1.5x	-	9.1x	-	10.6x	-	2.5x	-	
Maximum	114,719.0	129,375.0	2.5x	3.16x	9.1x	13.3x	55.4x	14.3x	4.1x	52.07x	
Median	11,417.8	11,762.5	1.6x	2.10x	5.1x	8.88x	5.1x	8.4x	2.4x	15.42x	
Mean	26,192.5	28,111.0	1.6x	2.03x	5.5x	8.97x	5.5x	8.9x	2.7x	19.79x	
Minimum	421.5	378.8	0.7x	0.94x	3.2x	4.82x	3.8x	6.1x	1.0x	10.80x	
TSMC Semiconductor Company	468,657.7	445,633.6	5.9x	5.79x	11.9x	8.56x	11.9x	13.9x	4.8x	16.13x	

Comparable Companies: Analysis Commentary

- The companies were selected based on geographic region and business model
- Despite the multiples used to value TSMC, the companies selected are not direct comparables because there are differences between TSMC and the other companies in terms of their size, market share, and other factors that could affect their valuation.
- In terms of the multiples generated from averaging companies, the NTM P/E and EV/EBITDA metrics have given the largest multipliers. This suggests that investors are willing to pay a premium for TSMC's future earnings potential and its ability to generate cash flow from its operations.



Output Table: TSMC is trading at Extreme Premium

Output	Multiple					Implied Enterprise Value				Implied Equity Value				Implied Share Price			
	Metric	High	Low	Mean	Median	High	Low	Mean	Median	High	Low	Mean	Median	High	Low	Mean	Median
LTM EV / Revenues		2.1x	0.3x	0.7x	0.4x	18,194.1	2,897.6	6,581.6	3,821.7	16,852.1	1,555.6	5,239.6	2,479.7	195.5	18.0	60.8	28.8
LTM EV / EBITDA		18.1x	4.5x	8.4x	7.0x	16,924.1	4,177.5	7,851.8	6,520.1	15,582.1	2,835.5	6,509.8	5,178.1	180.8	32.9	75.5	60.1
LTM EV / EBIT		42.6x	9.1x	18.0x	12.6x	24,390.1	5,221.9	10,319.9	7,189.1	23,048.1	3,879.9	8,977.9	5,847.1	267.4	45.0	104.2	67.8
NTM EV / Revenue		2.21x	0.32x	0.76x	0.39x	22,230.86	3,260.95	7,647.64	3,935.48	20,888.86	1,918.95	6,305.64	2,593.48	242.36	22.26	73.16	30.09
NTM EV / EBITDA		13.00x	3.62x	6.47x	6.28x	16,783.92	4,679.61	8,355.46	8,106.33	15,441.92	3,337.61	7,013.46	6,764.33	179.16	38.72	81.37	78.48
LTM P / E		56.6x	6.9x	21.2x	14.0x					23,701.0	2,892.35	8,876.62	5,859.68	274.99	33.56	102.99	67.99
NTM P / E		25.22x	8.77x	13.55x	12.47x					14,286.96	4,969.62	7,675.75	7,066.25	165.76	57.66	89.06	81.98
LTM P / TangBV		26.9x	0.5x	5.5x	1.1x					33,110.05	631.97	6,771.43	1,382.04	384.15	7.33	78.56	16.03

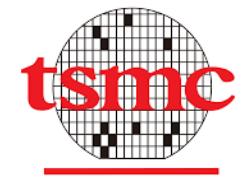
Mean Equity Value Across Multiples	Equity Value	Price per Share
High	20,363.89	236.27
Low	2,752.7	31.94
Mean	7,171.27	83.2
Median	4,646.33	53.91

Conclusion

- Comparable analysis indicates that both the median and mean implied share price of Autoliv show that it is currently trading at a premium, with prices of \$53.91 and \$83.20 respectively
- However, it is important to note that the foundry market, in which TSMC operates, has unique characteristics that make it difficult to find comparable firms. Therefore, the accuracy of the valuation based on this analysis may be limited.

Valuation

Discounted Cash Flows



TSMC

IT / Technology Services, Asia, USD in millions

Operating Model

	Historical			Projected				
	2020	2021	2022	2023	2024	2025	2026	2027
Total Revenue	\$47,672.2	\$57,280.5	\$73,692.0	\$75,902.8	\$83,493.0	\$96,017.0	\$115,220.4	\$138,264.5
<i>Growth Rate</i>	—	20.2%	28.7%	3.0%	10.0%	15.0%	20.0%	20.0%
EBITDA	\$31,750.9	\$38,467.3	\$50,731.8	\$48,152.2	\$52,132.4	\$56,730.5	\$65,767.4	\$77,601.8
<i>Margin</i>	66.6%	67.2%	68.8%	63.4%	62.4%	59.1%	57.1%	56.1%
<i>Growth Rate</i>	—	21.2%	31.9%	(5.1%)	8.3%	8.8%	15.9%	18.0%
(-) Change in NWC	\$16,384.4	\$30,625.4	\$36,087.4	\$37,170.0	\$40,887.0	\$47,020.1	\$56,424.1	\$67,708.9
(-) Capital Expenditures	(\$18,055.7)	(\$30,281.7)	(\$35,242.1)	(\$38,413.9)	(\$42,255.3)	(\$47,748.5)	(\$54,433.2)	(\$62,053.9)
(-) Cash Taxes	11.4%	(\$2,624.8)	(\$2,531.5)	(\$4,143.4)	(\$3,717.5)	(\$3,994.1)	(\$4,265.2)	(\$4,987.0)
Cash Available for Debt Paydown (FCFF)	\$27,454.8	\$36,279.5	\$47,433.7	\$43,190.8	\$46,770.0	\$51,736.9	\$62,771.2	\$77,272.5
<i>Growth Rate</i>		32.14%	30.75%	-8.94%	8.29%	10.62%	21.33%	23.10%

Historical Analysis

- In years 2021 and 2022, TSMC saw major revenue growth YoY that led to even larger increases in EBITDA growth during the same time frame
- This historical growth mainly came from macroeconomic demand for semiconductors and strong market power of TSMC
- Despite this large growth seen in past years, it would be unfair to assume this same level of growth in future expectations of the company each year

Projection Assumptions & Commentary

- Given that interest rates are currently high, growth is expected to be stunted for the rest of 2023 to **3%**
- Assuming that interest rates will be lowered in the future, TSMC will be able to leverage their market share to capitalize on the increasing demand for semi-conductors
- With growth rates of **10%, 15% and 20%** for the following years after 2023, we estimate that this demand will continue to increase

Sources: Bloomberg

Discounted Cash Flows II

	2020	2021	2022	2023	2024	2025	2026	2027
Discounted Cash Flow Analysis								
Free Cash Flow to Firm				\$43,190.8	\$46,770.0	\$51,736.9	\$62,771.2	\$77,272.5
Period				1.0	2.0	3.0	4.0	5.0
Discount Rate				12.7%	12.7%	12.7%	12.7%	12.7%
Discounted Cash Flow				\$38,333.2	\$36,841.4	\$36,170.4	\$38,949.1	\$42,554.5

Discount Rate Calculation

<u>WACC Calculation</u>	
Equity to Debt Ratio	93.20%
Cost of Equity	13.3%
Market Risk Premium	9.7%
Risk Free Rate	3.7%
Beta	1.210
Cost of Debt	3.79%
WACC	12.7%

Utilizing Bloomberg estimates on market risk premium, risk-free rate, beta, and cost of debt, we calculated our WACC to be **12.7%**

Sensitivity Analysis

	11.7%	12.2%	12.7%	13.2%	13.7%
4.0%	\$ 147.59	\$ 138.13	\$ 129.82	\$ 122.47	\$ 115.92
4.5%	\$ 156.23	\$ 145.58	\$ 136.30	\$ 128.14	\$ 120.92
5.0%	\$ 166.15	\$ 154.06	\$ 143.61	\$ 134.50	\$ 126.49
5.5%	\$ 177.67	\$ 163.81	\$ 151.94	\$ 141.69	\$ 132.74
6.0%	\$ 191.22	\$ 175.13	\$ 161.52	\$ 149.87	\$ 139.80

Valuation

<u>Enterprise Value Walk</u>	
Total PV of Cash Flows	\$192,848.6
Terminal Value	\$802,779.1
Total Enterprise Value	\$995,627.7
(-) Net Debt	(\$27,787.2)
Total Equity Value	\$967,840.5

<u>Return Analysis</u>	
Today's Share Price	\$96.69
Intrinsic Value	\$186.66
Discount/Premium	93.1%

Analysis and Commentary

- TSMC does not use a constant debt level, thus we used a Weight Average Cost Calculation (WACC) to discount our FCF. This WACC of 12.7% was used to discount the years 2023-2027 as well as the terminal value
- Adding our PV of cash flows to our TV, we calculated an EV of \$995,627,700, giving us an equity value of \$967,840,500
- By dividing the equity value by the number of outstanding shares, TSMC's intrinsic share price value is **\$186.66**, giving the stock a **93.1% discount**

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Catalysts and Risks



Catalysts

Catalyst 1: Widespread adoption and implementation of AI technology that requires extremely advanced graphics processing units and state of the art semiconductor chips

Evaluation: Likelihood: 90% Impact: 30%

Catalyst 2: Autonomous and electronic smart vehicles growing in both popularity and availability within the consumer vehicle industry.

Evaluation: Likelihood: 60% Impact: 50%

Catalyst 3: The expansion of the 5G services market within urban areas. This technology relies on the most efficient semiconductor chips and is being implemented through many large scale developments around the world.

Evaluation: Likelihood: 85% Impact: 30%

Catalyst 4: TSMC's plans to expand globally to Arizona and other locations such as Europe and Japan in order to distance operations from the worrying political situation in Taiwan.

Evaluation: Likelihood: 100% Impact: 70%

Risks

External Risks

Geopolitical Issues (ER1)

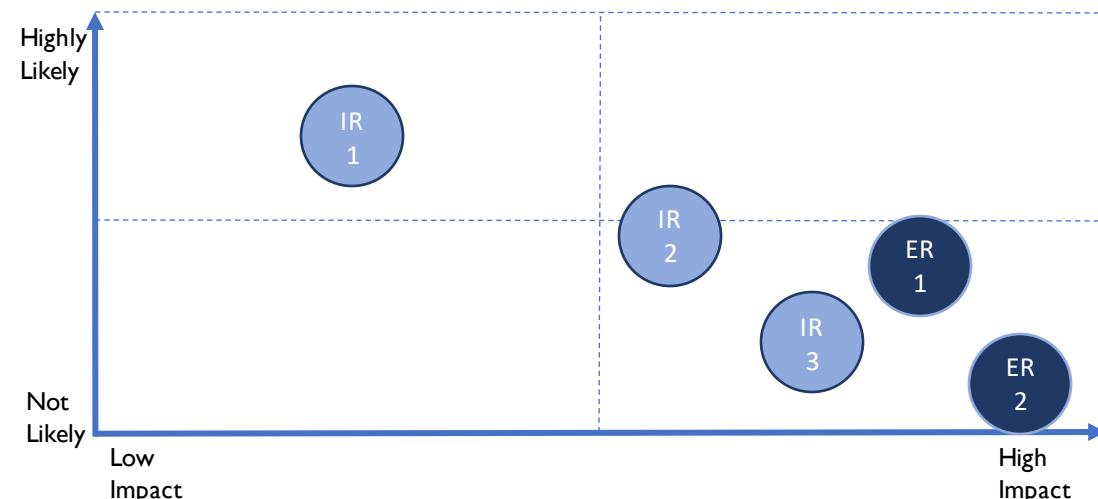
Emerging Technology Replacing Semiconductors (ER2)

Internal Risks

Failure to Maintain Chip Innovation Rate (Moore's Law) (IR1)

Capital Expenditure Outpacing Demand for Technological Improvement (IR2)

Global Expansion Does Not Go as Planned (IR3)



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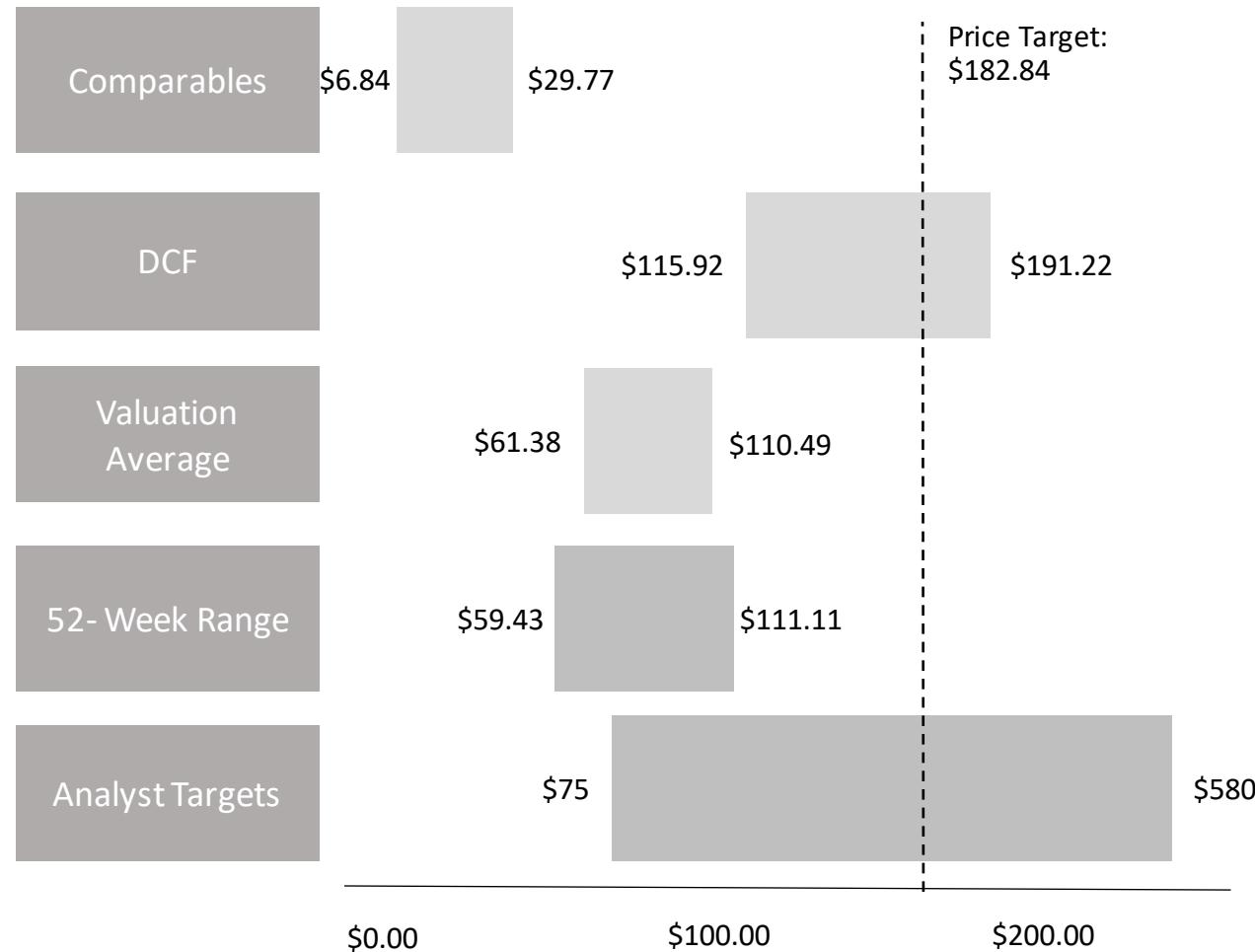
6 Catalysts and Risks

Recommendation

Buy With a Price Target of ~ \$182.84 (+109.9%)

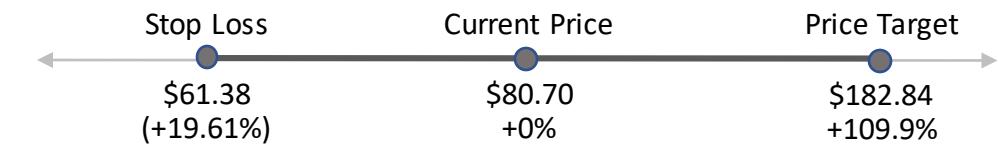


Indicative Valuation Range



Price Target

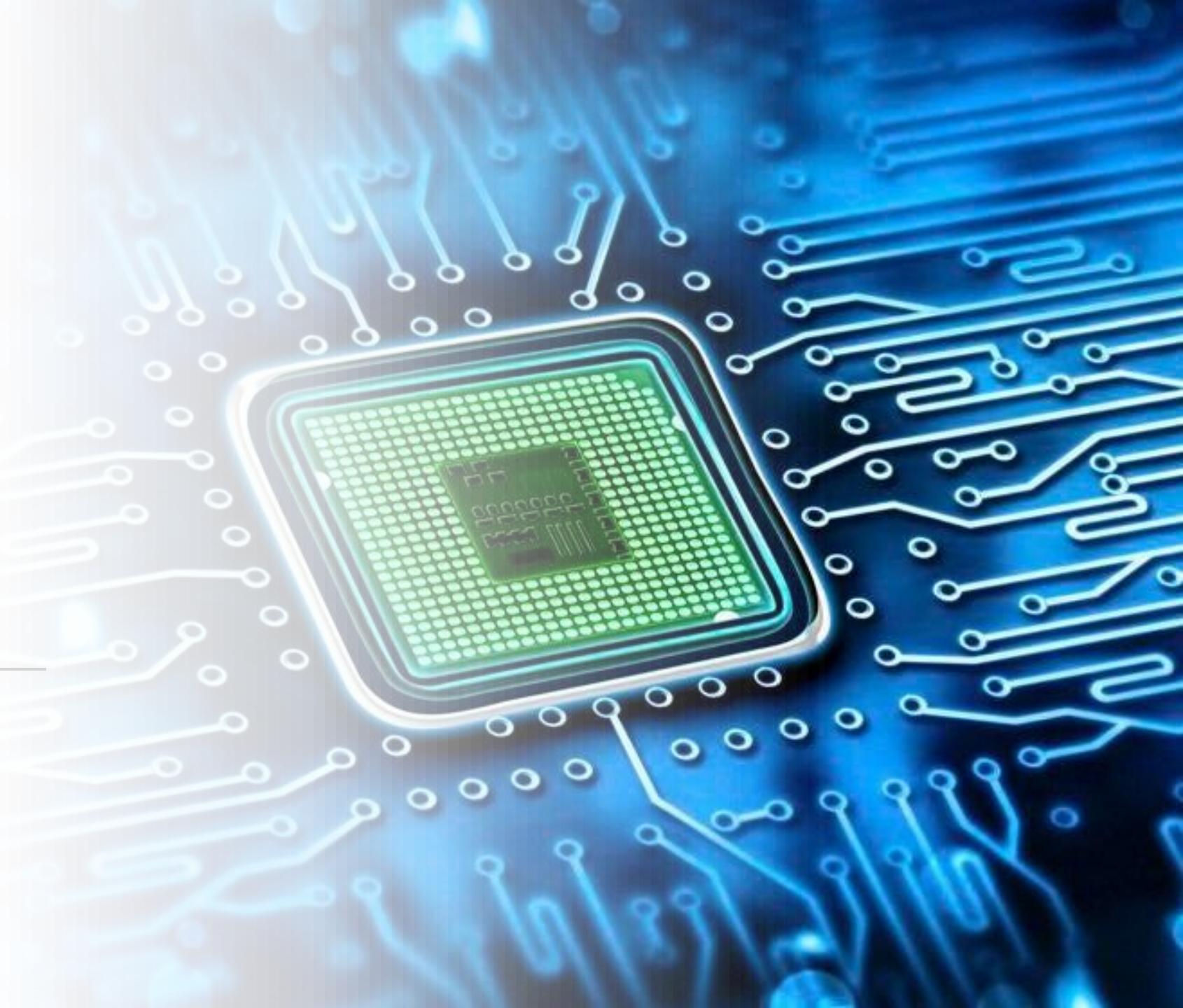
Valuation Summary		
Analysis	Price	Weight
Comparables	\$18.30	0%
Discounted CF	\$186.66	75%
Street Consensus	\$171.39	25%
Average	\$182.84	100%



Analyst Ratings

	3 Months Ago	1 Month Ago	Current
Buy	30	30	31
Overweight	5	5	5
Hold	4	4	3
Sell	0	0	0

Appendix



Appendix

Shareholder Overview



Top Holders [View All¹](#)

Holder	Common Stock Equivalent Held	% of Total Shares Outstanding	Market Value (TWD in mm) ²	Position Date
National Development Fund, Executive Yuan	1,653,709,980	6.38	853,314.4	Sep-30-2022
Capital Research and Management Company	1,116,487,244	4.31	576,107.4	Jan-31-2023
The Vanguard Group, Inc.	941,594,523	3.63	485,862.8	Jan-31-2023
BlackRock, Inc.	851,789,307	3.28	439,523.3	Feb-28-2023
GIC Private Limited	649,496,949	2.50	335,140.4	Dec-22-2021

Appendix

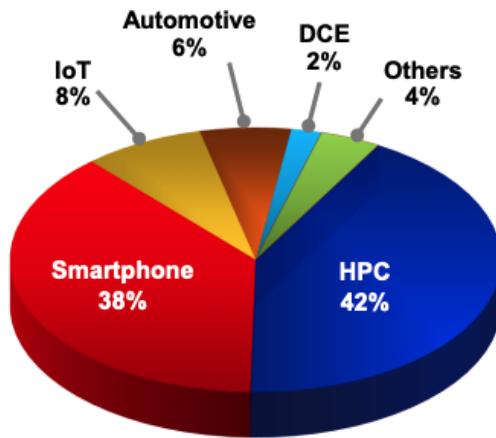


Management Stock Ownership

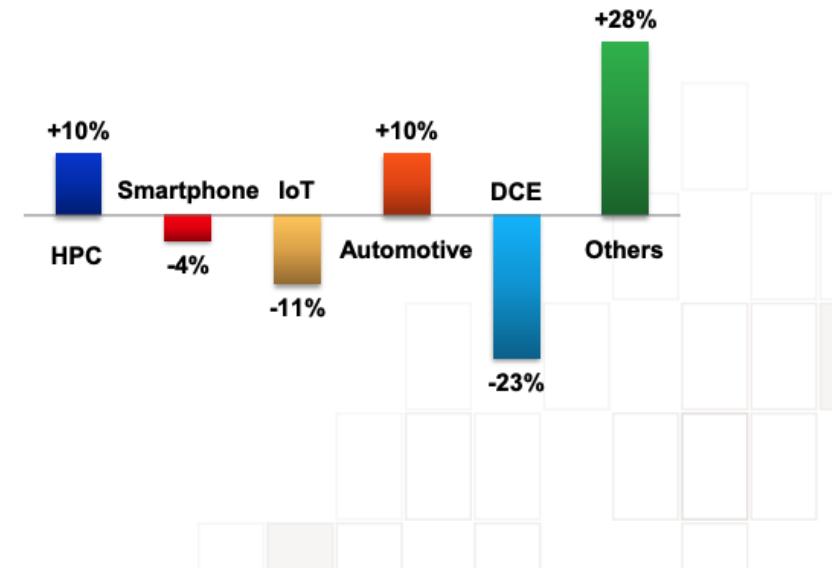
Latest Holders											
Holder	Common Stock Equivalent Held	% Of CSO	Market Value (TWD In mm)	Change in Shares	% Change	Position Date	Source	Owner Type	History		
National Development Fund, Executive Yuan	1,653,709,980	6.378	901,272.0	-	0.00	Sep-30-2022	Press Release	VC/PE Firms (>5% stake)			
Tseng Ph.D., Fan Cheng Director	29,605,530	0.114	16,135.0	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Lin, J. K. Chief Information Security Officer, Senior VP of Info. Tech. and Materials Mgmt. & Risk Mgmt.	13,696,212	0.053	7,464.4	1,047,961	8.29	Dec-31-2022	Press Release	Individuals/Insiders			
Liu Ph.D., Mark Chairman	12,915,062	0.050	7,038.7	1,948	0.02	Dec-31-2022	Press Release	Individuals/Insiders			
Chin, Y. P. Senior Vice President of Operations	9,111,229	0.035	4,965.6	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Berkshire Hathaway Inc. (NYSE:BRK.A)	7,507,610	0.029	4,091.6	7,507,610	New	Sep-30-2022	13F	Corporations (Public)			
Wei, C. C. Vice Chairman & CEO	7,046,468	0.027	3,840.3	467,000	7.10	Dec-31-2022	Press Release	Individuals/Insiders			
He Ho, Li Mei Senior Vice President of Human Resources	6,458,872	0.025	3,520.1	-	0.00	Mar-31-2022	Press Release	Individuals/Insiders			
Wang, J. K. Former Senior VP of Corporate Planning Organization	2,603,947	0.010	1,419.2	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Yoo, C. S.	1,703,690	0.007	928.5	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Huang, Jen-Chau VP & CFO	1,651,904	0.006	900.3	50	0.00	Dec-31-2022	Press Release	Individuals/Insiders			
Lo, Wei-Jen Senior Vice President of Research & Development	1,441,127	0.006	785.4	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Wang, Y. L.	1,354,064	0.005	738.0	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Fang, Sylvia VP of Legal, General Counsel, Corporate Governance Officer & Secretary	1,119,397	0.004	610.1	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Mii, Y. J. Senior Vice President of Research & Development	1,000,419	0.004	545.2	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Liaw, Y.H. Former Vice President	800,000	0.003	436.0	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Wu, Michael	684,444	0.003	373.0	3,000	0.44	Nov-30-2022	Press Release	Individuals/Insiders			
Hou, Cliff Senior VP of Europe & Asia Sales and Research & Development/Corporate Research	463,510	0.002	252.6	5,700	1.25	Dec-31-2022	Press Release	Individuals/Insiders			
Cao, Min	397,622	0.002	216.7	34,470	9.49	Sep-30-2022	Press Release	Individuals/Insiders			
Jang, Simon	352,358	0.001	192.0	1,000	0.29	Oct-31-2022	Press Release	Individuals/Insiders			
Ma, Connie Former Vice President of Human Resources	293,235	0.001	159.8	16,235	5.86	Oct-31-2022	Press Release	Individuals/Insiders			
Yu Ph.D., Douglas	250,000	0.001	136.3	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Rollins, Richard R.	190,227	0.001	103.7	15,000	8.56	Dec-31-2022	Press Release	Individuals/Insiders			
Chang, T. S.	173,781	0.001	94.7	-	0.00	Feb-28-2022	Annual Report	Individuals/Insiders			
Zhang, Kevin Senior Vice President of Business Development	105,000	0.000	57.2	5,000	5.00	Nov-30-2022	Press Release	Individuals/Insiders			

Revenue by Platform

4Q22 Revenue by Platform



Growth Rate by Platform (QoQ)



Shareholder Overview

Table 9: Calculation of foundry sale price per chip in 2020 by node

Line	Node (nm)	90	65	40	28	20	16/12	10	7	5
1	Mass production year and quarter ²²⁰	2004 Q4	2006 Q4	2009 Q1	2011 Q4	2014 Q3	2015 Q3	2017 Q2	2018 Q3	2020 Q1
2	Capital investment per wafer processed per year	\$4,649	\$5,456	\$6,404	\$8,144	\$10,356	\$11,220	\$13,169	\$14,267	\$16,746
3	Net capital depreciation at start of 2020 (25.29% / year)	65%	65%	65%	65%	65%	65%	55.1%	35.4%	0.0%
4	Undepreciated capital per wafer processed per year (remaining value at start of 2020)	\$1,627	\$1,910	\$2,241	\$2,850	\$3,625	\$3,927	\$5,907	\$9,213	\$16,746
5	Capital consumed per wafer processed in 2020	\$411	\$483	\$567	\$721	\$917	\$993	\$1,494	\$2,330	\$4,235
6	Other costs and markup per wafer	\$1,293	\$1,454	\$1,707	\$2,171	\$2,760	\$2,990	\$4,498	\$7,016	\$12,753
7	Foundry sale price per wafer	\$1,650	\$1,937	\$2,274	\$2,891	\$3,677	\$3,984	\$5,992	\$9,346	\$16,988
8	Foundry sale price per chip	\$2,433	\$1,428	\$713	\$453	\$399	\$331	\$274	\$233	\$238

Appendix

Operating Statistics



**S&P
Capital IQ**

Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330) > Quick Comparable Analysis > Operating Statistics

Details

Template:	Capital IQ Default Comps
Currency:	US Dollar
As-Of Date:	Feb-10-2023

Company Comp Set

Company Name	LTM Gross Margin %	LTM EBITDA Margin %	LTM EBIT Margin %	LTM Net Income Margin %	LTM Total Revenues, 1 Yr Growth %	LTM EBITDA, 1 Yr Growth %	LTM EBIT, 1 Yr Growth %	LTM Net Income, 1 Yr Growth %	LTM Total Debt/Capital %	LTM Total Debt/EBITDA	NTM LT EPS Growth Rate (Capital IQ)	5 Year Beta
MediaTek Inc. (TWSE:2454)	49.4%	25.8%	23.1%	21.53%	11.22%	20.35%	17.35%	6.03%	0.83%	0.0x	1.60%	1.2
United Microelectronics Corporation (TWSE:2303)	45.1%	53.3%	37.4%	31.29%	30.84%	54.04%	102.34%	56.32%	13.57%	0.4x	2.41%	1.32
Novatek Microelectronics Corp. (TWSE:3034)	48.9%	33.9%	33.0%	28.10%	2.31%	5.11%	4.85%	10.40%	0.36%	0.0x	(14.30%)	1.11
Realtek Semiconductor Corp. (TWSE:2379)	50.8%	17.3%	15.9%	15.91%	17.14%	22.02%	21.79%	25.57%	21.53%	0.6x	(6.20%)	1.13
ASE Technology Holding Co., Ltd. (TWSE:3711)	20.1%	20.2%	12.0%	9.26%	17.70%	18.67%	29.06%	(2.84%)	37.82%	1.4x	(3.09%)	1.22
Vanguard International Semiconductor Corporation (TPEX:5347)	47.8%	45.1%	36.4%	30.11%	37.38%	61.98%	69.67%	66.42%	25.37%	0.6x	(3.00%)	1.51
SK hynix Inc. (KOSDAQ:000660)	43.9%	51.7%	26.2%	18.80%	27.83%	36.53%	41.29%	15.13%	25.74%	0.9x	11.73%	0.93
Intel Corporation (NasdaqGS:INTC)	42.6%	24.4%	3.7%	12.71%	(20.21%)	(54.62%)	(89.42%)	(59.66%)	29.14%	2.6x	5.72%	0.78
Raydium Semiconductor Corporation (TWSE:3592)	43.4%	19.1%	18.1%	18.47%	12.75%	9.02%	8.56%	33.41%	0.45%	0.0x	-	1.25
China Electronics Huada Technology Company Limited (SEHK:85)	39.1%	15.1%	14.0%	13.44%	38.70%	327.86%	403.21%	-	32.99%	2.1x	-	0.69

Taiwan Semiconductor Manufacturing Company Limited	59.6%	68.8%	49.5%	44.90%	42.61%	46.20%	72.36%	71.61%	22.38%	0.5x	20.56%	1.26
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Summary Statistics	LTM Gross Margin %	LTM EBITDA Margin %	LTM EBIT Margin %	LTM Net Income Margin %	LTM Total Revenues, 1 Yr Growth %	LTM EBITDA, 1 Yr Growth %	LTM EBIT, 1 Yr Growth %	LTM Net Income, 1 Yr Growth %	LTM Total Debt/Capital %	LTM Total Debt/EBITDA	NTM LT EPS Growth Rate (Capital IQ)	5 Year Beta
High	50.8%	53.3%	37.4%	31.29%	38.70%	327.86%	403.21%	66.42%	37.82%	2.6x	11.73%	1.51
Low	20.1%	15.1%	3.7%	9.26%	(20.21%)	(54.62%)	(89.42%)	(59.66%)	0.36%	0.0x	(14.30%)	0.69
Mean	43.1%	30.6%	22.0%	19.96%	17.57%	50.09%	60.87%	16.75%	18.78%	0.9x	(0.64%)	1.11
Median	44.5%	25.1%	20.6%	18.63%	17.42%	21.18%	25.42%	15.13%	23.45%	0.6x	(0.70%)	1.16

Displaying 11 Companies.

Values converted at today's spot rate.

Companies by default are sorted by S&P Capital IQ's proprietary relevancy score.

Appendix



Business Description

S&P
Capital IQ

Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330) > Quick Comparable Analysis > Business Description

Picture

Details

Template:	Capital IQ Default Comps
Currency:	US Dollar
As-Of Date:	Feb-10-2023

Company Comp Set

Company Name	Business Description	Headquarters
MediaTek Inc. (TWSE:2454)	MediaTek Inc. researches, develops,	No. 1, Dusing 1st Road, Hsinchu
United Microelectronics Corporation (TWSE:2303)	United Microelectronics Corporation	Hsinchu Science Park, No. 3 Li-Hsin
Novatek Microelectronics Corp. (TWSE:3034)	Novatek Microelectronics Corp.,	No. 13, Innovation Road I, 2F,
Realtek Semiconductor Corp. (TWSE:2379)	Realtek Semiconductor Corp.,	No. 2, Innovation Road II, Hsinchu
ASE Technology Holding Co., Ltd. (TWSE:3711)	ASE Technology Holding Co., Ltd.	26, Chin 3rd Road, Nanzih District,
Vanguard International Semiconductor Corporation (TPEX:5347)	Vanguard International	Hsinchu Science Park, No.123, Park
SK hynix Inc. (KOSE:A000660)	SK hynix Inc., together with its	2091 Gyeongchung-daero,
Intel Corporation (NasdaqGS:INTC)	Intel Corporation designs, develops,	2200 Mission College Boulevard,
Raydium Semiconductor Corporation (TWSE:3592)	Raydium Semiconductor Corporation	No 23. Li-Hsin Road, Hsinchu
China Electronics Huada Technology Company Limited (SEHK:85)	China Electronics Huada Technology	China Resources Building, Room

Taiwan Semiconductor Manufacturing Company Limited

Taiwan Semiconductor

Hsinchu Science Park, No. 8, Li-Hsin

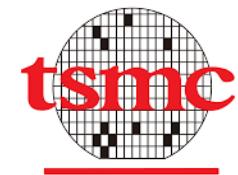
Displaying 11 Companies.

Values converted at today's spot rate.

Companies by default are sorted by S&P Capital IQ's proprietary relevancy score.

Appendix

Trading Multiples



S&P
Capital IQ

Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330) > Quick Comparable Analysis > Trading Multiples

Details

Template:	Capital IQ Default Comps
Currency:	US Dollar
As-Of Date:	Feb-10-2023

Company Comp Set

Company Name	TEV/Total Revenues LTM - Latest	TEV/EBITDA LTM - Latest	TEV/EBIT LTM - Latest	P/Diluted EPS Before Extra LTM - Latest	P/TangBV LTM - Latest	NTM TEV/Forward Total Revenue (Capital IQ)	NTM TEV/Forward EBITDA (Capital IQ)	NTM Forward P/E (Capital IQ)
MediaTek Inc. (TWSE:2454)	1.9x	7.2x	8.1x	9.9x	3.2x	2.04x	9.92x	13.69x
United Microelectronics Corporation (TWSE:2303)	1.8x	3.5x	4.9x	7.2x	1.9x	2.15x	4.82x	11.30x
Novatek Microelectronics Corp. (TWSE:3034)	1.6x	4.6x	4.8x	6.7x	4.0x	-	8.88x	13.49x
Realtek Semiconductor Corp. (TWSE:2379)	1.0x	6.0x	6.6x	10.1x	4.1x	1.34x	13.30x	21.69x
ASE Technology Holding Co., Ltd. (TWSE:3711)	0.9x	4.4x	7.4x	6.1x	2.1x	0.94x	5.09x	10.80x
Vanguard International Semiconductor Corporation (TPEX:5347)	2.5x	5.5x	6.9x	9.7x	3.7x	3.16x	7.88x	18.16x
SK hynix Inc. (KOS: A000660)	1.7x	3.2x	6.3x	7.0x	1.0x	3.13x	11.02x	NM
Intel Corporation (NasdaqGS:INTC)	2.1x	8.0x	55.4x	14.3x	1.7x	2.54x	12.67x	52.07x
Raydium Semiconductor Corporation (TWSE:3592)	0.7x	3.6x	3.8x	6.1x	2.3x	0.97x	7.13x	17.15x
China Electronics Huada Technology Company Limited (SEHK:85)	1.5x	9.1x	10.6x	12.3x	2.5x	-	-	-
Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330)	5.9x	8.6x	11.9x	13.9x	4.8x	5.79x	8.56x	16.13x
Summary Statistics	TEV/Total Revenues LTM - Latest	TEV/EBITDA LTM - Latest	TEV/EBIT LTM - Latest	P/Diluted EPS Before Extra LTM - Latest	P/TangBV LTM - Latest	NTM TEV/Forward Total Revenue (Capital IQ)	NTM TEV/Forward EBITDA (Capital IQ)	NTM Forward P/E (Capital IQ)
High	2.5x	9.1x	55.4x	14.3x	4.1x	3.16x	13.30x	52.07x
Low	0.7x	3.2x	3.8x	6.1x	1.0x	0.94x	4.82x	10.80x
Mean	1.6x	5.5x	11.5x	8.9x	2.7x	2.03x	8.97x	19.79x
Median	1.6x	5.1x	6.8x	8.4x	2.4x	2.10x	8.88x	15.42x

Appendix

Financial Data



**S&P
Capital IQ**

Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330) > Quick Comparable Analysis > Financial Data

Details

Template:	Capital IQ Default Comps
Currency:	US Dollar
As-Of Date:	Feb-10-2023

Company Comp Set

Company Name	Day Close Price Latest	Shares Outstanding Latest	Market Capitalization	LTM Net Debt	LTM Total Pref. Equity	LTM Minority Interest	Total Enterprise Value Latest	LTM Tangible Book Value/Share	LTM Filing Date, Income Statement	LTM Total Revenue	LTM EBITDA	LTM EBIT	LTM Diluted EPS Excl. Extra Items	NTM Revenue (Capital IQ)	NTM EBITDA (Capital IQ)	NTM EPS (Capital IQ)
MediaTek Inc. (TWSE:2454)	24.62	1,591.5	39,180.5	(5,352.6)	-	97.98	33,925.8	7.68	Feb-04-2023	18,233.0	4,710.0	4,212.4	2.48	16,616.89	3,419.82	1.8
United Microelectronics Corporation (TWSE:2303)	1.68	12,504.7	21,063.5	(4,025.2)	-	11.43	17,049.7	0.9	Jan-16-2023	9,259.6	4,932.5	3,465.0	0.24	7,926.98	3,539.09	0.15
Novatek Microelectronics Corp. (TWSE:3034)	12.79	608.5	7,783.6	(1,308.3)	-	-	6,475.3	3.21	Oct-28-2022	4,122.4	1,398.5	1,361.1	1.9	-	729.45	0.95
Realtek Semiconductor Corp. (TWSE:2379)	11.86	512.9	6,083.0	(1,994.7)	-	0.32	4,088.6	2.86	Nov-11-2022	3,900.4	674.5	619.0	1.17	3,062.45	307.5	0.55
ASE Technology Holding Co., Ltd. (TWSE:3711)	3.51	4,294.3	15,052.0	4,284.9	-	619.29	19,956.1	1.82	Feb-09-2023	22,288.9	4,506.1	2,663.7	0.46	21,260.6	3,924.02	0.32
Vanguard International Semiconductor Corporation (TPEX:5347)	3.17	1,639.0	5,200.3	(610.4)	-	-	4,589.9	0.86	Nov-01-2022	1,822.6	821.4	662.6	0.33	1,451.06	582.6	0.17
SK hynix Inc. (KOSE:A000660)	74.86	687.7	51,474.3	13,174.2	-	38.75	64,687.3	72.84	Nov-14-2022	39,113.6	20,212.7	10,250.8	10.69	20,649.46	5,867.85	(5.75)
Intel Corporation (NasdaqGS:INTC)	27.73	4,137.0	114,719.0	12,793.0	-	1,863.0	129,375.0	16.39	Jan-27-2023	63,054.0	15,371.0	2,336.0	1.94	50,855.78	10,214.51	0.53
Raydium Semiconductor Corporation (TWSE:3592)	12.49	75.9	947.6	(364.0)	-	-	583.6	5.33	Nov-09-2022	840.1	160.4	152.1	2.04	602.99	81.86	0.73
China Electronics Huada Technology Company Limited (SEHK:85)	0.21	2,029.9	421.5	(45.7)	-	2.96	378.8	0.08	Sep-29-2022	255.3	38.6	35.7	0.02	-	-	-

Taiwan Semiconductor Manufacturing Company Limited

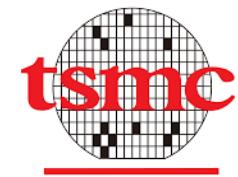
18.07	25,930.4	468,657.7	(23,516.9)	-	492.91	445,633.6	3.77	Jan-12-2023	75,214.8	51,780.2	37,253.0	1.3	76,908.57	52,057.53	1.12
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Summary Statistics

	Day Close Price Latest	Shares Outstanding Latest	Market Capitalization	LTM Net Debt	LTM Total Pref. Equity	LTM Minority Interest	Total Enterprise Value Latest	LTM Tangible Book Value/Share	LTM Filing Date, Income Statement	LTM Total Revenue	LTM EBITDA	LTM EBIT	LTM Diluted EPS Excl. Extra Items	NTM Revenue (Capital IQ)	NTM EBITDA (Capital IQ)	NTM EPS (Capital IQ)
High	74.86	12,504.7	114,719.0	13,174.2	-	1,863.0	129,375.0	72.84	-	63,054.0	20,212.7	10,250.8	10.69	50,855.78	10,214.51	1.8
Low	0.21	75.9	421.5	(5,352.6)	-	0.32	378.8	0.08	-	255.3	38.6	35.7	0.02	602.99	81.86	(5.75)
Mean	17.29	2,808.1	26,192.5	1,655.1	-	376.25	28,111.0	11.2	-	16,289.0	5,282.6	2,575.8	2.13	15,303.28	3,185.19	(0.06)
Median	12.18	1,615.2	11,417.8	(487.2)	-	38.75	11,762.5	3.04	-	6,691.0	2,952.3	1,848.6	1.54	12,271.94	3,419.82	0.53

Appendix

Implied Valuation



S&P Capital IQ									
Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330) > Quick Comparable Analysis > Implied Valuation									
Details									
Template:	Capital IQ Default Comps								
Currency:	US Dollar								
As-Of Date:	Feb-10-2023								
Company Comp Set									
Company Name	LTM Total Revenue	LTM EBITDA	LTM EBIT	NTM Revenue (Capital IQ)	NTM EBITDA (Capital IQ)	LTM Basic EPS	NTM EPS (Capital IQ)	LTM Tangible Book Value/Share	
Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330)	75,214.8	51,780.2	37,253.0	76,908.57	52,057.53	1.3	1.12	3.77	
Total Enterprise Value Multiples									
High	LTM TEV/Total Revenues	LTM TEV/EBITDA	LTM TEV/EBIT	NTM TEV/Forward Total Revenue	NTM TEV/Forward EBITDA	LTM P/Diluted EPS Before Extra	NTM Forward P/E	LTM P/TangBV	4.1x High
Low	2.5x	9.1x	55.4x	3.16x	13.30x	14.3x	52.07x		1.0x Low
Mean	0.7x	3.2x	3.8x	0.94x	4.82x	6.1x	10.80x		
Median	1.6x	5.5x	11.5x	2.03x	8.97x	8.9x	19.79x		2.7x Mean
	1.6x	5.1x	6.8x	2.10x	8.88x	8.4x	15.42x		2.4x Median
Pricing Multiples									
High									
Low									
Mean									
Median									
Implied Enterprise Value									
High	189,415.3	471,338.3	2,063,189.8	243,271.47	692,159.21				
Low	52,253.3	165,084.9	142,929.7	72,189.8	250,789.63				
Mean	117,521.4	286,017.5	427,441.2	156,449.69	466,747.55				
Median	121,268.9	262,782.2	252,086.5	161,219.35	462,107.82				
+ Total Cash & ST Investments	51,878.3	51,878.3	51,878.3	51,878.3	51,878.3	51,878.3	51,878.3	51,878.3	
- Total Debt	28,361.4	28,361.4	28,361.4	28,361.4	28,361.4	28,361.4	28,361.4	28,361.4	
- Total Pref. Equity	-	-	-	-	-	-	-	-	
- Minority Interest	492.91	492.91	492.91	492.91	492.91	492.91	492.91	492.91	
= Implied Equity Value									
High	212,439.4	494,362.3	2,086,213.8	266,295.49	715,183.23	482,769.06	1,512,553.4	406,139.36	
Low	75,277.3	188,108.9	165,953.7	95,213.82	273,813.65	205,847.19	313,747.54	100,579.59	
Mean	140,545.4	309,041.5	450,465.2	179,473.71	489,771.57	302,083.33	574,948.09	259,870.63	
Median	144,293.0	285,806.2	275,110.6	184,243.37	485,131.84	284,761.31	447,853.51	236,783.99	
/ Shares Outstanding	25,930.38	25,930.38	25,930.38	25,930.38	25,930.38	25,930.38	25,930.38	25,930.38	
= Implied Price per Share									
High	8.2	19.1	80.5	10.27	27.58	18.62	58.33	15.66	
Low	2.9	7.3	6.4	3.67	10.56	7.94	12.1	3.88	
Mean	5.4	11.9	17.4	6.92	18.89	11.65	22.17	10.02	
Median	5.6	11.0	10.6	7.11	18.71	10.98	17.27	9.13	
Mean Equity Value Across Multiples	Equity Value	Price Per Share							
High	771,994.5	29.77							
Low	177,317.71	6.84							
Mean	338,274.93	13.05							
Median	292,997.97	11.3							

Appendix



Base Case Operating Model

Operating Model				Projected				
	2020	2021	2022	2023	2024	2025	2026	2027
Total Revenue	\$47,672.2	\$57,280.5	\$73,692.0	\$75,902.8	\$83,493.0	\$96,017.0	\$115,220.4	\$138,264.5
<i>Growth Rate</i>	—	20.2%	28.7%	3.0%	10.0%	15.0%	20.0%	20.0%
<7nm Chips	\$19,545.6	\$28,640.3	\$39,056.8	\$41,746.5	\$47,591.0	\$57,610.2	\$73,741.0	\$95,402.5
<i>Growth Rate</i>	—	46.5%	36.4%	6.89%	14.00%	21.05%	28.00%	29.38%
<i>% of Total Revenue</i>	41.0%	50.0%	53.0%	55.0%	57.0%	60.0%	64.0%	69.0%
>7nm Chips	\$28,126.6	\$28,640.3	\$34,635.2	\$34,156.2	\$35,902.0	\$38,406.8	\$41,479.3	\$42,862.0
<i>Growth Rate</i>	—	1.8%	20.9%	(1.4%)	5.1%	7.0%	8.0%	3.3%
<i>% of Total Revenue</i>	59.0%	50.0%	47.0%	45.0%	43.0%	40.0%	36.0%	31.0%
(-) COGS	(\$22,358.8)	(\$27,708.2)	(\$29,801.6)	(\$36,433.3)	(\$40,076.7)	(\$46,088.2)	(\$55,305.8)	(\$66,366.9)
<i>% of Revenue</i>	46.9%	48.4%	40.4%	48.0%	48.0%	48.0%	48.0%	48.0%
Gross Profit	\$25,313.4	\$29,572.3	\$43,890.4	\$39,469.4	\$43,416.4	\$49,928.8	\$59,914.6	\$71,897.5
<i>Margin</i>	53.1%	51.6%	59.6%	52.0%	52.0%	52.0%	52.0%	52.0%
<i>Growth Rate</i>	—	16.8%	48.4%	33.5%	10.0%	15.0%	20.0%	20.0%
(-) Operating Expenses	(\$5,144.5)	(\$6,098.5)	(\$7,391.6)	(\$6,831.2)	(\$8,349.3)	(\$12,482.2)	(\$16,130.9)	(\$19,357.0)
<i>% of Revenue</i>	10.8%	10.6%	10.0%	9.0%	10.0%	13.0%	14.0%	14.0%
EBIT	\$20,168.9	\$23,473.8	\$36,498.8	\$32,638.2	\$35,067.1	\$37,446.6	\$43,783.7	\$52,540.5
<i>Margin</i>	42.3%	41.0%	49.5%	43.0%	42.0%	39.0%	38.0%	38.0%
<i>Growth Rate</i>	—	16.4%	55.5%	(10.6%)	7.4%	6.8%	16.9%	20.0%
Other Income	\$636.4	\$451.2	\$745.8	—	—	—	—	—
<i>Growth Rate</i>	—	-29.10%	65.29%	—	—	—	—	—
(-) Interest, Tax & MI Expense	(\$2,624.8)	(\$2,550.2)	(\$4,155.5)	(\$3,717.5)	(\$3,994.1)	(\$4,265.2)	(\$4,987.0)	(\$5,984.4)
<i>Growth Rate</i>	—	32.14%	30.75%	-8.94%	8.29%	10.62%	21.33%	23.10%
Net Income	\$18,180.5	\$21,374.8	\$33,089.1	\$28,920.7	\$31,072.9	\$33,181.5	\$38,796.8	\$46,556.1
<i>% of Revenue</i>	38.14%	37.32%	44.90%	38.10%	37.22%	34.56%	33.67%	33.67%
<i>Growth Rate</i>	—	17.57%	54.80%	-12.60%	7.44%	6.79%	16.92%	20.00%
(+) Depreciation and Amortization	\$11,582.0	\$14,993.5	\$14,233.0	\$15,514.0	\$17,065.4	\$19,283.9	\$21,983.6	\$25,061.3
EBITDA	\$31,750.9	\$38,467.3	\$50,731.8	\$48,152.2	\$52,132.4	\$56,730.5	\$65,767.4	\$77,601.8
<i>Margin</i>	66.6%	67.2%	68.8%	63.4%	62.4%	59.1%	57.1%	56.1%
<i>Growth Rate</i>	—	21.2%	31.9%	(5.1%)	8.3%	8.8%	15.9%	18.0%
(-) Change in NWC	\$16,384.4	\$30,625.4	\$36,087.4	\$37,170.0	\$40,887.0	\$47,020.1	\$56,424.1	\$67,708.9
(-) Capital Expenditures	(\$18,055.7)	(\$30,281.7)	(\$35,242.1)	(\$38,413.9)	(\$42,255.3)	(\$47,748.5)	(\$54,433.2)	(\$62,053.9)
(-) Cash Taxes	11.4%	—	—	—	—	—	—	—
Cash Available for Debt Paydown (FCFF)	\$27,454.8	\$36,279.5	\$47,433.7	\$43,190.8	\$46,770.0	\$51,736.9	\$62,771.2	\$77,272.5
<i>Growth Rate</i>	—	32.14%	30.75%	-8.94%	8.29%	10.62%	21.33%	23.10%

Appendix

Base Case DCF



Discounted Cash Flow Analysis						
Free Cash Flow to Firm		\$43,190.8	\$46,770.0	\$51,736.9	\$62,771.2	\$77,272.5
Period		1.0	2.0	3.0	4.0	5.0
Discount Rate		12.7%	12.7%	12.7%	12.7%	12.7%
Discounted Cash Flow		\$38,333.2	\$36,841.4	\$36,170.4	\$38,949.1	\$42,554.5
<u>Enterprise Value Walk</u>		<u>WACC Calculation</u>				
Total PV of Cash Flows		\$192,848.6	Equity to Debt Ratio			93.20%
Terminal Value	1	\$802,779.1	Cost of Equity			13.3%
Total Enterprise Value		\$995,627.7	Market Risk Premium			9.7%
(-) Net Debt		(\$27,787.2)	Risk Free Rate			3.7%
Total Equity Value		\$967,840.5	Beta			1.210
Diluted Shares Outstanding		5,185.0	Cost of Debt			3.79%
Intrinsic Share Price		\$186.66	WACC			12.7%
<u>1) Gordon Growth Model</u>		<u>Return Analysis</u>				
Terminal Growth Rate	7.0%	Exit EV/EBITDA Multiple	Today's Share Price			\$96.69
Discount Rate	12.7%	EBITDA in Last Year	Intrinsic Value			\$186.66
Terminal Value	\$802,779.1	Terminal Value	Discount/Premium			93.1%

Appendix

Bear Case Operating Model



Operating Model									
	Historical			Projected					
	2020	2021	2022	2023	2024	2025	2026	2027	
Total Revenue	\$47,672.2	\$57,280.5	\$73,692.0	\$73,692.0	\$77,376.6	\$82,793.0	\$91,072.3	\$100,179.5	
<i>Growth Rate</i>	—	20.2%	28.7%	—	5.0%	7.0%	10.0%	10.0%	
<7nm Chips	\$19,545.6	\$28,640.3	\$39,056.8	\$39,056.8	\$41,783.4	\$46,364.1	\$53,732.6	\$63,113.1	
<i>Growth Rate</i>	—	46.5%	36.4%	0.0%	6.98%	10.96%	15.89%	17.46%	
<i>% of Total Revenue</i>	41.0%	50.0%	53.0%	53.0%	54.0%	56.0%	59.0%	63.0%	
>7nm Chips	\$28,126.6	\$28,640.3	\$34,635.2	\$33,161.4	\$33,271.9	\$33,117.2	\$32,786.0	\$31,055.6	
<i>Growth Rate</i>	—	1.8%	20.9%	(4.3%)	0.3%	(0.5%)	(1.0%)	(5.3%)	
<i>% of Total Revenue</i>	59.0%	50.0%	47.0%	45.0%	43.0%	40.0%	36.0%	31.0%	
(-) COGS	(\$22,358.8)	(\$27,708.2)	(\$29,801.6)	(\$40,530.6)	(\$42,557.1)	(\$45,536.1)	(\$50,089.7)	(\$55,098.7)	
<i>% of Revenue</i>	46.9%	48.4%	40.4%	55.0%	55.0%	55.0%	55.0%	55.0%	
Gross Profit	\$25,313.4	\$29,572.3	\$43,890.4	\$33,161.4	\$34,819.5	\$37,256.8	\$40,982.5	\$45,080.8	
<i>Margin</i>	53.1%	51.6%	59.6%	45.0%	45.0%	45.0%	45.0%	45.0%	
<i>Growth Rate</i>	—	16.8%	48.4%	12.1%	5.0%	7.0%	10.0%	10.0%	
(-) Operating Expenses	(\$5,144.5)	(\$6,098.5)	(\$7,391.6)	(\$7,000.7)	(\$8,511.4)	(\$12,005.0)	(\$15,026.9)	(\$16,529.6)	
<i>% of Revenue</i>	10.8%	10.6%	10.0%	9.5%	11.0%	14.5%	16.5%	16.5%	
EBIT	\$20,168.9	\$23,473.8	\$36,498.8	\$26,160.7	\$26,308.0	\$25,251.9	\$25,955.6	\$28,551.2	
<i>Margin</i>	42.3%	41.0%	49.5%	35.5%	34.0%	30.5%	28.5%	28.5%	
<i>Growth Rate</i>	—	16.4%	55.5%	(28.3%)	0.6%	(4.0%)	2.8%	10.0%	
Other Income	\$636.4	\$451.2	\$745.8	—	—	—	—	—	
<i>Growth Rate</i>	—	-29.10%	65.29%	—	—	—	—	—	
(-) Interest, Tax & MI Expense	(\$2,624.8)	(\$2,550.2)	(\$4,155.5)	(\$2,979.7)	(\$2,996.5)	(\$2,876.2)	(\$2,956.3)	(\$3,252.0)	
<i>Growth Rate</i>	—	32.14%	30.75%	-23.55%	-1.64%	-5.57%	-0.43%	3.40%	
Net Income	\$18,180.5	\$21,374.8	\$33,089.1	\$23,181.0	\$23,311.6	\$22,375.7	\$22,999.3	\$25,299.2	
<i>% of Revenue</i>	38.14%	37.32%	44.90%	31.46%	30.13%	27.03%	25.25%	25.25%	
<i>Growth Rate</i>	—	17.57%	54.80%	-29.94%	0.56%	-4.01%	2.79%	10.00%	
(+) Depreciation and Amortization	\$11,582.0	\$14,993.5	\$14,233.0	\$15,585.1	\$17,299.5	\$19,807.9	\$23,076.2	\$26,883.8	
EBITDA	\$31,750.9	\$38,467.3	\$50,731.8	\$41,745.8	\$43,607.5	\$45,059.8	\$49,031.8	\$55,435.0	
<i>Margin</i>	66.6%	67.2%	68.8%	56.6%	56.4%	54.4%	53.8%	55.3%	
<i>Growth Rate</i>	—	21.2%	31.9%	(17.7%)	4.5%	3.3%	8.8%	13.1%	
(-) Change in NWC	\$16,384.4	\$30,625.4	\$36,087.4	\$36,087.4	\$37,891.8	\$40,544.2	\$44,598.6	\$49,058.5	
(-) Capital Expenditures	(\$18,055.7)	(\$30,281.7)	(\$35,242.1)	(\$38,590.1)	(\$42,835.0)	(\$49,046.1)	(\$57,138.7)	(\$66,566.6)	
(-) Cash Taxes	(\$2,624.8)	(\$2,531.5)	(\$4,143.4)	(\$2,979.7)	(\$2,996.5)	(\$2,876.2)	(\$2,956.3)	(\$3,252.0)	
Cash Available for Debt Paydown (FCFF)	\$27,454.8	\$36,279.5	\$47,433.7	\$36,263.4	\$35,667.8	\$33,681.7	\$33,535.4	\$34,674.9	
<i>Growth Rate</i>	—	32.14%	30.75%	-23.55%	-1.64%	-5.57%	-0.43%	3.40%	

Appendix

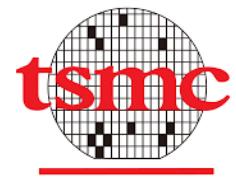
Bear Case DCF



Discounted Cash Flow Analysis						
Free Cash Flow to Firm		\$36,263.4	\$35,667.8	\$33,681.7	\$33,535.4	\$34,674.9
Period		1.0	2.0	3.0	4.0	5.0
Discount Rate		12.7%	12.7%	12.7%	12.7%	12.7%
Discounted Cash Flow		\$32,184.9	\$28,096.0	\$23,547.6	\$20,808.5	\$19,095.7
<u>Enterprise Value Walk</u>		<u>WACC Calculation</u>				
Total PV of Cash Flows		\$123,732.7	Equity to Debt Ratio			93.20%
Terminal Value	1	\$360,235.5	Cost of Equity			13.3%
Total Enterprise Value		\$483,968.2	Market Risk Premium			9.7%
(-) Net Debt		(\$27,787.2)	Risk Free Rate			3.7%
Total Equity Value		\$456,181.0	Beta			1.210
Diluted Shares Outstanding		5,185.0	Cost of Debt			3.79%
Intrinsic Share Price		\$87.98	WACC			12.7%
<u>1) Gordon Growth Model</u>		<u>Return Analysis</u>				
Terminal Growth Rate	7.0%	Exit EV/EBITDA Multiple	Today's Share Price			\$96.69
Discount Rate	12.7%	EBITDA in Last Year	Intrinsic Value			\$87.98
Terminal Value	\$360,235.5	Terminal Value	Discount/Premium			(9.0%)

Appendix

Bull Case Operating Model



Operating Model									
	Historical			Projected					
	2020	2021	2022	2023	2024	2025	2026	2027	
Total Revenue	\$47,672.2	\$57,280.5	\$73,692.0	\$77,376.6	\$88,983.1	\$106,779.7	\$138,813.6	\$187,398.4	
<i>Growth Rate</i>	—	20.2%	28.7%	5.0%	15.0%	20.0%	30.0%	35.0%	
<7nm Chips	\$19,545.6	\$28,640.3	\$39,056.8	\$43,330.9	\$52,500.0	\$67,271.2	\$88,840.7	\$138,674.8	
<i>Growth Rate</i>	—	46.5%	36.4%	10.94%	21.16%	28.14%	32.06%	56.09%	
% of Total Revenue	41.0%	50.0%	53.0%	56.0%	59.0%	63.0%	64.0%	74.0%	
>7nm Chips	\$28,126.6	\$28,640.3	\$34,635.2	\$34,819.5	\$38,262.7	\$42,711.9	\$49,972.9	\$58,093.5	
<i>Growth Rate</i>	—	1.8%	20.9%	0.5%	9.9%	11.6%	17.0%	16.3%	
% of Total Revenue	59.0%	50.0%	47.0%	45.0%	43.0%	40.0%	36.0%	31.0%	
(-) COGS	(\$22,358.8)	(\$27,708.2)	(\$29,801.6)	(\$30,950.6)	(\$35,593.2)	(\$42,711.9)	(\$55,525.4)	(\$74,959.4)	
<i>% of Revenue</i>	46.9%	48.4%	40.4%	40.0%	40.0%	40.0%	40.0%	40.0%	
Gross Profit	\$25,313.4	\$29,572.3	\$43,890.4	\$46,426.0	\$53,389.9	\$64,067.8	\$83,288.2	\$112,439.0	
<i>Margin</i>	53.1%	51.6%	59.6%	60.0%	60.0%	60.0%	60.0%	60.0%	
<i>Growth Rate</i>	—	16.8%	48.4%	57.0%	15.0%	20.0%	30.0%	35.0%	
(-) Operating Expenses	(\$5,144.5)	(\$6,098.5)	(\$7,391.6)	(\$6,577.0)	(\$8,453.4)	(\$12,279.7)	(\$17,351.7)	(\$23,424.8)	
<i>% of Revenue</i>	10.8%	10.6%	10.0%	8.5%	9.5%	11.5%	12.5%	12.5%	
EBIT	\$20,168.9	\$23,473.8	\$36,498.8	\$39,848.9	\$44,936.5	\$51,788.2	\$65,936.5	\$89,014.2	
<i>Margin</i>	42.3%	41.0%	49.5%	51.5%	50.5%	48.5%	47.5%	47.5%	
<i>Growth Rate</i>	—	16.4%	55.5%	9.2%	12.8%	15.2%	27.3%	35.0%	
Other Income	\$636.4	\$451.2	\$745.8	—	—	—	—	—	
<i>Growth Rate</i>		-29.10%	65.29%						
(-) Interest, Tax & MI Expense	(\$2,624.8)	(\$2,550.2)	(\$4,155.5)	(\$4,538.8)	(\$5,118.3)	(\$5,898.7)	(\$7,510.2)	(\$10,138.7)	
<i>Growth Rate</i>		32.14%	30.75%	6.27%	15.92%	20.39%	35.17%	42.41%	
Net Income	\$18,180.5	\$21,374.8	\$33,089.1	\$35,310.2	\$39,818.2	\$45,889.5	\$58,426.3	\$78,875.5	
<i>% of Revenue</i>	38.14%	37.32%	44.90%	45.63%	44.75%	42.98%	42.09%	42.09%	
<i>Growth Rate</i>		17.57%	54.80%	6.71%	12.77%	15.25%	27.32%	35.00%	
(+) Depreciation and Amortization	\$11,582.0	\$14,993.5	\$14,233.0	\$15,442.8	\$16,909.9	\$18,854.5	\$21,211.3	\$23,862.7	
EBITDA	\$31,750.9	\$38,467.3	\$50,731.8	\$55,291.8	\$61,846.3	\$70,642.7	\$87,147.8	\$112,877.0	
<i>Margin</i>	66.6%	67.2%	68.8%	71.5%	69.5%	66.2%	62.8%	60.2%	
<i>Growth Rate</i>	—	21.2%	31.9%	9.0%	11.9%	14.2%	23.4%	29.5%	
(-) Change in NWC	\$16,384.4	\$30,625.4	\$36,087.4	\$37,891.8	\$43,575.5	\$52,290.6	\$67,977.8	\$91,770.1	
(-) Capital Expenditures	(\$18,055.7)	(\$30,281.7)	(\$35,242.1)	(\$38,237.7)	(\$41,870.3)	(\$46,685.3)	(\$52,521.0)	(\$59,086.1)	
(-) Cash Taxes	11.4%	(\$2,624.8)	(\$2,531.5)	(\$4,143.4)	(\$4,538.8)	(\$5,118.3)	(\$5,898.7)	(\$7,510.2)	(\$10,138.7)
Cash Available for Debt Paydown (FCFF)	\$27,454.8	\$36,279.5	\$47,433.7	\$50,407.1	\$58,433.3	\$70,349.3	\$95,094.5	\$135,422.2	
<i>Growth Rate</i>		32.14%	30.75%	6.27%	15.92%	20.39%	35.17%	42.41%	

Appendix

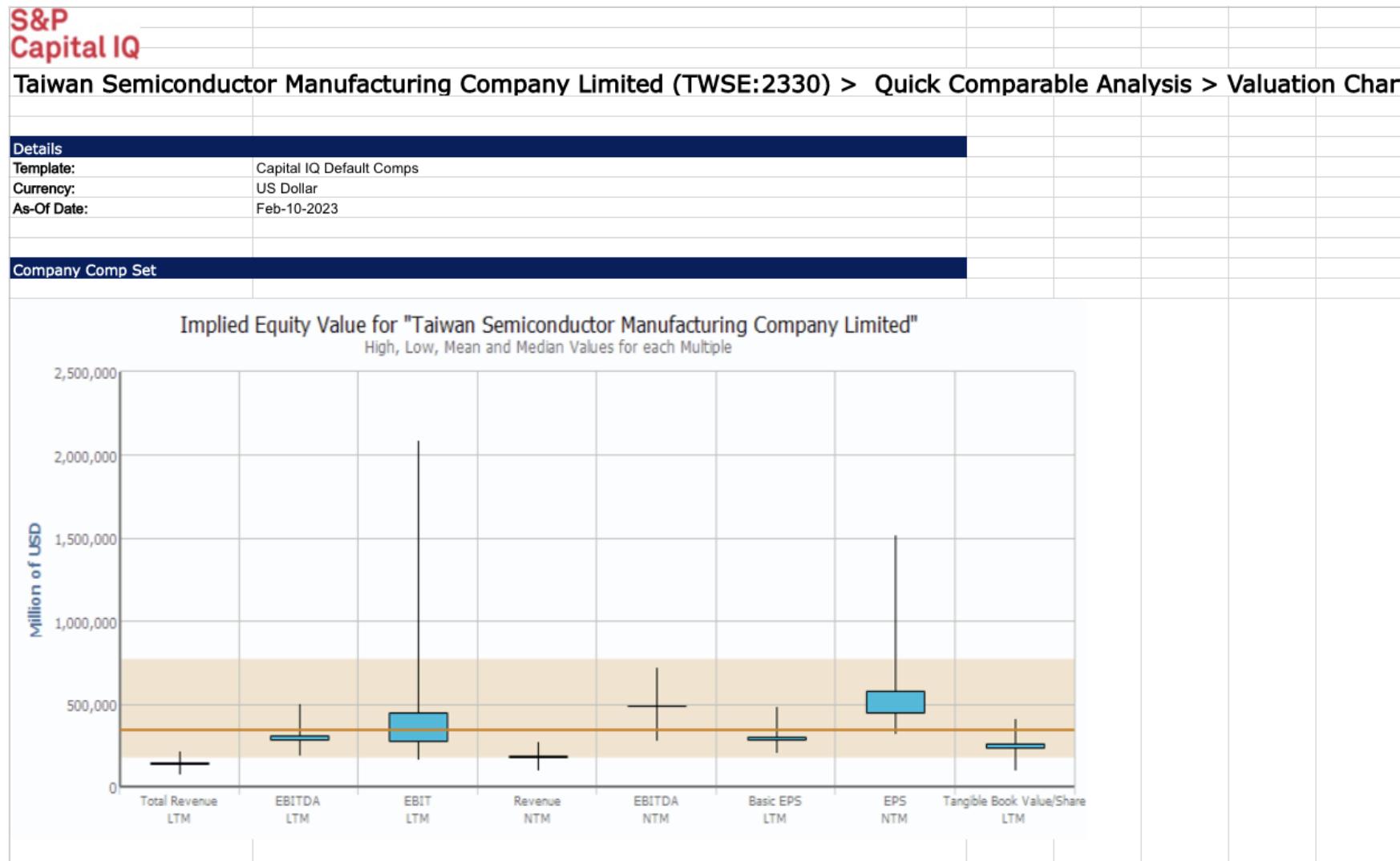


Bull Case DCF

Discounted Cash Flow Analysis						
Free Cash Flow to Firm		\$50,407.1	\$58,433.3	\$70,349.3	\$95,094.5	\$135,422.2
Period		1.0	2.0	3.0	4.0	5.0
Discount Rate		12.7%	12.7%	12.7%	12.7%	12.7%
Discounted Cash Flow		\$44,737.9	\$46,028.7	\$49,182.7	\$59,005.4	\$74,578.0
<u>Enterprise Value Walk</u>		<u>WACC Calculation</u>				
Total PV of Cash Flows		\$273,532.7	Equity to Debt Ratio			93.20%
Terminal Value	1	\$1,406,893.5	Cost of Equity			13.3%
Total Enterprise Value		\$1,680,426.2	Market Risk Premium			9.7%
(-) Net Debt		(\$27,787.2)	Risk Free Rate			3.7%
Total Equity Value		\$1,652,639.0	Beta			1.210
Diluted Shares Outstanding		5,185.0	Cost of Debt			3.79%
Intrinsic Share Price		\$318.73	WACC			12.7%
<u>1) Gordon Growth Model</u>		<u>Return Analysis</u>				
Terminal Growth Rate	7.0%	Exit EV/EBITDA Multiple	Today's Share Price			\$96.69
Discount Rate	12.7%	EBITDA in Last Year	Intrinsic Value			\$318.73
Terminal Value	\$1,406,893.5	Terminal Value	Discount/Premium			229.6%

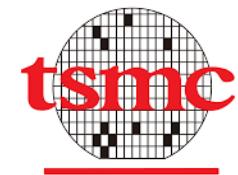
Appendix

Valuation Chart



Appendix

Credit Health Panel



**S&P
Capital IQ**

Taiwan Semiconductor Manufacturing Company Limited (TWSE:2330) > Quick Comparable Analysis > Credit Health Panel

Details

Template:	Capital IQ Default Comps
Currency:	US Dollar
As-Of Date:	Feb-10-2023
1 Top 2 Above Average 3 Below Average 4 Bottom ▲/▼ Score Change	

Company Comp Set

Company Name	Overall	Operational	Solvency	Liquidity	LTM Period Ending	Financials Updated	S&P Issuer Credit Rating Foreign Currency LT Rating	CreditModel Score	Market Signal Probability of Default %	Country/Region	Primary Industry Classification
Novatek Microelectronics Corp. (TWSE:3034)	1	1	1	2	Sep-30-2022	Nov-03-2022	-	bbb	1.6459%	Taiwan	Semiconductors
Raydium Semiconductor Corporation (TWSE:3592)	2	1	1	2	Sep-30-2022	Nov-22-2022	-	bb+	7.1933%	Taiwan	Semiconductors
Vanguard International Semiconductor Corporation (TPEX:5347)	2	3	3	1	Sep-30-2022	Nov-03-2022	BBB-	bb+	1.9345%	Taiwan	Semiconductors
United Microelectronics Corporation (TWSE:2303)	2	4	2	2	Dec-31-2022	Jan-19-2023	-	bbb+	1.1051%	Taiwan	Semiconductors
MediaTek Inc. (TWSE:2454)	3	2	2	3	Dec-31-2022	Feb-05-2023	-	a-	1.0944%	Taiwan	Semiconductors
SK hynix Inc. (KOSE:A000660)	3	2	3	3	Sep-30-2022	Nov-17-2022	BBB-	a-	1.2238%	South Korea	Semiconductors
Realtek Semiconductor Corp. (TWSE:2379)	3	3	2	4	Sep-30-2022	Nov-15-2022	-	bbb-	1.4898%	Taiwan	Semiconductors
ASE Technology Holding Co., Ltd. (TWSE:3711)	4	3	4	4	Sep-30-2022	Nov-08-2022	-	bbb+	1.1399%	Taiwan	Semiconductors
China Electronics Huada Technology Company Limited (SEHK:85)	4	4	4	3	Jun-30-2022	Sep-30-2022	-	b	2.4788%	Hong Kong	Semiconductors
Intel Corporation (NasdaqGS:INTC)	4	4	4	4	Dec-31-2022	Jan-28-2023	A	bbb-	1.9963%	United States	Semiconductors
Taiwan Semiconductor Manufacturing Company Limited	1	2	3	1	Dec-31-2022	Jan-29-2023	AA-	aa	0.2758%	Taiwan	Semiconductors

Appendix

Shareholder Overview



	12 months Dec-31-2018A	12 months Dec-31-2019A	12 months Dec-31-2020A	12 months Dec-31-2021A	12 months Dec-31-2022A	12 months† Dec-31-2023	12 months Dec-31-2024E	12 months Dec-31-2025E
For the Fiscal Period Ending	USD							
Total Revenue	33,679.70	34,937.20	43,729.30	51,832.30	73,920.60	75,157.85	90,313.28	100,529.43
Growth Over Prior Year	5.50%	3.70%	25.20%	18.50%	42.60%	1.67%	20.16%	11.31%
Gross Profit	16,345.00	16,198.70	23,219.80	26,759.50	44,026.50	-	-	-
Margin %	48.50%	46.40%	53.10%	51.60%	59.60%	54.20%	54.21%	54.12%
EBITDA	22,117.10	21,461.00	29,124.90	34,799.50	50,658.80	51,059.81	62,957.83	72,081.46
Margin %	65.70%	61.40%	66.60%	67.10%	68.50%	67.94%	69.71%	71.70%
EBIT	12,657.50	12,301.60	18,500.80	21,232.10	36,637.80	32,409.14	39,295.73	45,264.78
Margin %	37.60%	35.20%	42.30%	41.00%	49.60%	43.12%	43.51%	45.03%
Earnings from Cont. Ops.	11,856.10	11,559.70	16,685.40	19,495.60	33,203.80	-	-	-
Margin %	35.20%	33.10%	38.20%	37.60%	44.90%	-	-	-
Net Income	11,854.40	11,557.10	16,676.80	19,478.20	33,191.70	28,420.35	34,542.73	39,815.17
Margin %	35.20%	33.10%	38.10%	37.60%	44.90%	37.81%	38.25%	39.61%
Diluted EPS Excl. Extra Item	0.46	0.45	0.64	0.75	1.28	1.1	1.33	1.55
Growth Over Prior Year	5.30%	-2.50%	44.30%	16.80%	70.40%	-14.16%	21.41%	16.13%

Appendix

Historical Ratio Overview

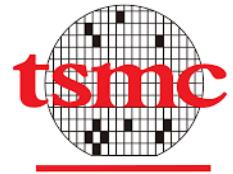
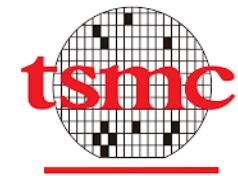


	Chart Selected Items	Add Data Items													
	12 months Dec-31-2017		12 months Dec-31-2018		12 months Dec-31-2019		12 months Dec-31-2020	12 months Dec-31-2021	12 months Dec-31-2022						
For the Fiscal Period Ending															
Profitability															
Return on Assets %		12.5%		11.9%		10.8%		14.1%		12.5%		16.1%			
Return on Capital %		14.6%		13.6%		12.9%		17.7%		15.8%		20.7%			
Return on Equity %		24.2%		23.0%		21.6%		29.6%		29.8%		39.6%			
Return on Common Equity %		24.2%		23.0%		21.6%		29.6%		29.8%		39.8%			
Margin Analysis															
Gross Margin %		50.6%		48.5%		46.4%		53.1%		51.6%		59.6%			
SG&A Margin %		2.8%		2.5%		2.6%		2.7%		2.8%		2.8%			
EBITDA Margin %		65.9%		65.7%		61.4%		66.6%		67.1%		68.5%			
EBITA Margin %		39.8%		37.7%		35.4%		42.6%		41.2%		49.7%			
EBIT Margin %		39.6%		37.6%		35.2%		42.3%		41.0%		49.6%			
Earnings from Cont. Ops Margin %		35.3%		35.2%		33.1%		38.2%		37.6%		44.9%			
Net Income Margin %		35.3%		35.2%		33.1%		38.1%		37.6%		44.9%			
Net Income Avail. for Common Margin %		35.3%		35.2%		33.1%		38.1%		37.6%		44.9%			
Normalized Net Income Margin %		25.4%		24.4%		23.0%		27.2%		26.1%		31.6%			
Levered Free Cash Flow Margin %		16.1%		13.7%		25.5%		14.9%	(3.5%)	12.5%					
Unlevered Free Cash Flow Margin %		16.3%		13.9%		25.7%		15.0%	(3.3%)	12.8%					
Asset Turnover															
Total Asset Turnover		0.5x		0.5x		0.5x		0.5x		0.5x		0.5x			
Fixed Asset Turnover		0.9x		1.0x		0.9x		0.9x		0.9x		1.0x			
Accounts Receivable Turnover		7.8x		8.2x		8.0x		9.4x		9.2x		10.5x			
Inventory Turnover		7.9x		6.0x		6.2x		5.7x		4.6x		4.4x			
Short Term Liquidity															
Current Ratio		2.2x		2.7x		1.4x		1.7x		2.2x		2.2x			
Quick Ratio		2.0x		2.4x		1.2x		1.5x		1.9x		1.9x			
Cash from Ops. to Curr. Liab.		1.5x		1.6x		1.0x		1.3x		1.5x		1.7x			
Avg. Days Sales Out.		47.0		44.5		45.9		39.1		39.6		34.6			
Avg. Days Inventory Out.		46.3		60.9		59.2		64.2		78.5		82.6			
Avg. Days Payable Out.		20.6		21.0		24.6		21.8		19.9		20.4			
Avg. Cash Conversion Cycle		72.7		84.4		80.5		81.4		98.2		96.9			
Long Term Solvency															
Total Debt/Equity		14.3%		10.9%		11.9%		20.1%		34.8%		30.1%			
Total Debt/Capital		12.5%		9.8%		10.7%		16.8%		25.8%		23.1%			
LT Debt/Equity		6.1%		3.4%		2.5%		15.1%		29.2%		29.3%			
LT Debt/Capital		5.4%		3.1%		2.2%		12.5%		21.7%		22.6%			
Total Liabilities/Total Assets		25.0%		20.5%		28.7%		33.5%		41.7%		40.4%			
EBIT / Interest Exp.		116.1x		127.0x		115.9x		272.2x		120.1x		95.5x			
EBITDA / Interest Exp.		193.5x		222.0x		203.0x		NM		197.3x		132.3x			
(EBITDA-CAPEX) / Interest Exp.		94.3x		118.6x		61.4x		186.1x		42.3x		40.2x			
Total Debt/EBITDA		0.3x		0.3x		0.3x		0.4x		0.7x		0.6x			
Net Debt/EBITDA		NM		NM		NM		NM		NM		NM			
Total Debt/(EBITDA-CAPEX)		0.7x		0.5x		1.0x		1.0x		3.3x		1.9x			
Net Debt/(EBITDA-CAPEX)		NM		NM		NM		NM		NM		NM			
Altman Z Score		8.84		10.97		8.22		8.53		7.98		6.22			
Growth Over Prior Year															
Total Revenue		3.1%		5.5%		3.7%		25.2%		18.5%		42.6%			
Gross Profit		4.2%		1.2%	(0.9%)			43.3%		15.2%		64.5%			
EBITDA		7.4%		5.1%	(3.0%)			35.7%		19.5%		45.6%			
EBITA		2.3%		0.1%	(2.8%)			50.6%		14.7%		72.1%			
EBIT		2.2%		0.2%	(2.8%)			50.4%		14.6%		72.6%			

Appendix

Historical Multiples Overview



		Dec-31-2019	Dec-31-2020	Dec-30-2021	Dec-30-2022	Mar-03-2023
For Year Ending						
TEV/LTM Total Revenue	Average	6.13x	8.01x	10.67x	7.33x	5.66x
	High	8.16x	10.35x	12.70x	11.08x	5.94x
	Low	4.85x	5.64x	9.64x	4.33x	5.27x
	Close	7.81x	10.35x	10.30x	5.31x	5.61x
TEV/NTM Total Revenues	Average	5.60x	7.21x	9.19x	5.89x	-
	High	7.00x	9.34x	11.14x	9.17x	-
	Low	4.55x	4.75x	8.19x	3.70x	-
	Close	6.65x	9.34x	8.59x	4.57x	-
TEV/LTM EBITDA	Average	9.49x	12.77x	15.68x	10.78x	8.20x
	High	13.00x	15.96x	18.85x	16.17x	8.58x
	Low	7.33x	9.10x	13.99x	6.31x	7.61x
	Close	12.44x	15.96x	15.04x	7.74x	8.13x
TEV/NTM EBITDA	Average	8.63x	10.86x	13.53x	8.66x	-
	High	11.01x	13.64x	16.19x	13.45x	-
	Low	6.72x	7.56x	12.04x	5.44x	-
	Close	10.54x	13.64x	12.59x	6.70x	-
TEV/LTM EBIT	Average	17.16x	20.79x	25.29x	16.90x	11.46x
	High	23.50x	24.75x	29.82x	26.57x	12.14x
	Low	12.68x	15.88x	23.04x	9.12x	10.56x
	Close	22.49x	24.75x	24.72x	11.16x	11.24x
TEV/NTM EBIT	Average	15.35x	18.72x	22.51x	13.16x	-
	High	18.67x	23.13x	26.86x	22.09x	-
	Low	12.23x	12.47x	19.80x	8.11x	-
	Close	17.72x	22.86x	20.72x	10.07x	-
P/LTM EPS	Average	20.00x	23.39x	28.73x	19.48x	13.43x
	High	26.24x	27.58x	33.70x	30.25x	14.28x
	Low	15.31x	18.37x	26.17x	10.90x	12.41x
	Close	25.17x	27.50x	28.19x	13.18x	13.16x
P/NTM EPS	Average	18.41x	21.51x	25.41x	15.18x	-
	High	21.56x	26.14x	30.24x	24.91x	-
	Low	14.88x	14.60x	22.50x	9.64x	-
	Close	20.56x	25.87x	23.52x	11.87x	-
P/LTM Normalized EPS	Average	28.80x	33.63x	40.71x	27.84x	19.08x
	High	38.17x	39.62x	47.78x	42.89x	20.27x
	Low	21.55x	26.17x	36.96x	15.49x	17.65x
	Close	36.62x	39.62x	39.96x	18.70x	18.70x
P/BV	Average	4.14x	5.79x	7.93x	5.71x	4.57x
	High	5.64x	7.69x	9.43x	8.24x	4.80x
	Low	3.41x	3.97x	7.19x	3.51x	4.26x
	Close	5.41x	7.69x	7.68x	4.25x	4.54x
P/Tangible BV	Average	4.18x	5.87x	8.00x	5.76x	4.58x
	High	5.70x	7.80x	9.43x	8.35x	4.80x
	Low	3.45x	4.02x	7.28x	3.51x	4.28x
	Close	5.47x	7.80x	7.78x	4.29x	4.58x
P/NTM CFPS	Average	10.03x	12.75x	14.65x	9.76x	-
	High	12.73x	15.74x	17.88x	14.92x	-
	Low	7.78x	9.22x	12.45x	6.61x	-

Geopolitical Risk Mitigation

