

Company: Taiwan Semiconductor	Ticker: TSM	Price: \$88.11 (02/24)	Industry: Semiconductors
Target Price: \$106.68 Stop Loss: \$70.51 52 Week High/Low: \$59.43/\$111.11	TTM P/E: 13.62x Forward P/E: 15.34x EPS (22 FY): \$6.47x		Beta (5Y): 1.26 Credit Rating: AA- (S&P) Rating Outlook: Stable
			Market Cap: 430.52B Div. Yield: 2.06% ROIC: 28%

Company Background:

Taiwan Semiconductor (TSM) is the largest chipmaker in the world. The semiconductor industry is forecasted to grow to 1.1 trillion by 2030. They are currently 1 of 2 foundries in the world that possess the most advanced technology. TSM manufactures 50% of all semis worldwide. They have an annual capacity of 13 million equivalent wafers in 2021. The company is also currently building two fabs in Arizona after the Chips act was passed. TSM is a pure play foundry which exclusively produces integrated circuits and have no design capabilities. TSM has a stronghold in the industry with Q3 2022 controlling 59% of the industry revenue. TSM is well positioned with a ROIC of 28% and a dividend yield average of 2.5%.

Industry Outlook:

The semiconductor industry is poised for strong growth and will ride tailwinds of social and technological advancements. Companies continue to need and request for the most advanced technological advancements. This stems from the wave of 5G and the need for high powered computing. These areas are the biggest drivers of TSM revenue and will continue to push revenue and growth higher. The industry is cyclical in nature, but TSM is positioned well as they are on the edge of leading technology. Contract manufacturers together account for more than 60% of their total global foundry revenue. TSM largest customer is Apple which accounts for about 1/4 of total revenue. Other customers include MediaTek, AMD, and Qualcomm. Even though some of these companies are competitors, the need for the best chip to produce the most advanced technology makes competitors rely on TSM for business. US customers account for 60% of revenue while China and Taiwan account for roughly 25%. When looking at the industry, we can see sustained need for the most advanced chips as tech companies strive to produce the best products possible. Semiconductors are used in phones, cameras, TV's, refrigerators, healthcare, energy, transportation, and computing software. The need for chips will always be present as many industries and types of companies need chips to obtain the most advanced tech to date. TSM has this technology and will be able to provide semiconductors globally and at range.

Investment Thesis:

Taiwan semiconductor is the world largest chipmaker. No other company competes with them as far as market share and total revenue. TSM also has many technological advancements that push them way ahead of other semiconductor companies. The process of making chips is so advanced and TSM is only 1 of 2 companies that can produce the most advanced chips at scale. The demand for these chips is also at large, as many companies need this technology for their new products. The growth of 5G and high-performance computing have made the demand for these chips excessive. Competitors give TSM business as well because TSM manufactures chips without their name on them. They can sell their chip to any customer who needs to produce and sell them for future tech and product growth.

Investment Risks:

Taiwan semiconductor is at risk with many geopolitical tensions. The stock would trade much higher if investors weren't as concerned over an invasion of Taiwan. The increasing tensions between the US and China also cause uncertainty for the company. There have been sanctions made on China that also scare investors away posing a threat to operations. Another risk to TSM are trade controls. Some trade has been banned and China banned TSM to sell chips to a large part of their past revenue (Huawei). There are also many customer concentrations for TSM. They hold about 70% of their revenue in their top 10 customers. If one customer was to leave them then they will lose a chunk of that revenue. Lastly, the cyclicity of the industry poses a threat as when the economy is bad for semiconductors, revenue will most likely decrease and impact the company as a whole.

3-5 takeaway's from last quarter investor call transcript:

- Strong 2022 growth as technology position enabled the industry megatrends of 5G and HPC
- 5-nanometer nodes contributed 32% of revenue in the fourth quarter, 7-nanometer nodes accounted for 22%
- Every product platform had Y/Y growth. HPC and 5G led this movement, IOT and automotive also increased
- Gross margins increased 8 percentage points to 59.6% stemming from favorable exchange rate, cost improvements, and capacity utilization
- Operating margin increased 8.6% to 49.5%
- Large capex of 32-36B in future, based off of strong demand for the most advanced cutting-edge technology

DCF Valuation:

Taiwan Semiconductor Manufacturing Co., Ltd. (XNYS:TSM)

	Historical Period					Projection Period					
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
Revenue	\$ 32,977	\$ 33,697	\$ 35,774	\$ 47,694	\$ 57,225	\$ 75,823	\$ 92,504	\$ 106,379	\$ 119,145	\$ 133,442	
% growth	11.9%	2.2%	6.2%	33.3%	20.0%	32.5%	22.0%	15.0%	12.0%	12.0%	
Cost of Revenue	\$ 16,283	\$ 17,429	\$ 19,301	\$ 22,369	\$ 27,681	\$ 37,153	\$ 45,327	\$ 52,126	\$ 58,381	\$ 65,387	
% margin	49%	52%	54%	47%	48%	49%	49%	49%	49%	49%	
Gross Margin	\$ 16,695	\$ 16,269	\$ 16,473	\$ 25,326	\$ 29,544	\$ 38,670	\$ 47,177	\$ 54,254	\$ 60,764	\$ 68,056	
gross margin %	50.6%	48.3%	46.0%	53.1%	51.6%	51.0%	51.0%	51.0%	51.0%	51.0%	
Operating Expenses	\$ 3,640	\$ 3,664	\$ 3,995	\$ 5,166	\$ 6,100	\$ 8,276	\$ 10,096	\$ 11,611	\$ 13,004	\$ 14,564	
% margin	11.0%	10.9%	11.2%	10.8%	10.7%	10.9%	10.9%	10.9%	10.9%	10.9%	
EBIT	\$ 13,054	\$ 12,605	\$ 12,477	\$ 20,160	\$ 23,443	\$ 30,394	\$ 37,081	\$ 42,643	\$ 47,760	\$ 53,491	
% margin	39.6%	37.4%	34.9%	42.3%	41.0%	40.1%	40.1%	40.1%	40.1%	40.1%	
Taxes	\$ 1,725	\$ 1,125	\$ 1,198	\$ 2,626	\$ 2,529	\$ 3,039	\$ 3,708	\$ 4,264	\$ 4,776	\$ 5,349	
Tax rate	13.2%	8.9%	9.6%	13.0%	10.8%	10.0%	10.0%	10.0%	10.0%	10.0%	
NOPAT	\$ 11,330	\$ 11,480	\$ 11,279	\$ 17,534	\$ 20,914	\$ 27,355	\$ 33,373	\$ 38,379	\$ 42,984	\$ 48,142	
Plus: D&A	\$ 8,777	\$ 9,557	\$ 9,592	\$ 11,814	\$ 15,227	\$ 19,714	\$ 24,051	\$ 27,659	\$ 30,978	\$ 34,695	
% margin	26.61%	28.36%	26.81%	24.77%	26.61%	26.00%	26.00%	26.00%	26.00%	26.00%	
Less: CapEx	\$ 11,153	\$ 10,310	\$ 15,394	\$ 18,064	\$ 30,283	\$ 40,124	\$ 37,002	\$ 42,552	\$ 41,701	\$ 46,705	
% margin	33.8%	30.6%	43.0%	37.9%	52.9%	52.9%	40.0%	40.0%	35.0%	35.0%	
Less: Increase in NWC	\$ 138	\$ 2,682	\$ (7,668)	\$ (918)	\$ (49)	\$ -	\$ -	\$ -	\$ -	\$ -	
% margin	0.4%	8.0%	-21.4%	-1.9%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
Free Cash Flow	\$ 8,815	\$ 8,045	\$ 13,144	\$ 12,202	\$ 5,908	\$ 6,944	\$ 20,422	\$ 23,485	\$ 32,261	\$ 36,132	
FCF Yield	27%	24%	37%	26%	10%	9%	22%	22%	27%	27%	

Implied Perpetuity Growth Rate

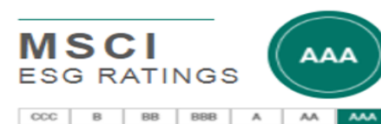
Terminal Year FCF	\$ 36,132.33
WACC	9.0%
Terminal Value	\$ 679,944.72
PGR	3.5%

Implied Equity Value and Share Price

PV of Cash Flows	\$ 88,033.0
PV Terminal Value	\$ 441,917.4
Enterprise Value	\$ 529,950.4
Plus: Cash and Cash Equivalents	51,383.3
Less: Total Debt	28,090.8
Implied Equity Value	\$ 553,243.0
Fully Diluted Shares Outstanding	5,186
Implied Share Price	\$ 106.68
Current Stock Price	\$ 90.09
Margin of Safety	15.55%

Total Return (%) & ESG:

	TSM	Nasdaq	SPY
YTD	18.63%	7.25%	3.95%
5 Years	104.21%	50.38%	40.04%



TSMC is a leader among 73 companies in the semiconductors & semiconductor equipment industry.

ESG Rating distribution

Universe: MSCI ACWI Index constituents semiconductors & semiconductor equipment, n=73.

