



Investment Report

Monday, November 15, 2021

Taiwan Semiconductor Manufacturing Co Ltd (TSM)

Sector: Information Technology

Industry: Semiconductors & Semiconductor Equipment

Sub-Industry: Semiconductors

Outperform

\$118.12

Current Price

\$140

Target Price

18%

Upside/Downside

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Company Overview

Taiwan Semiconductor Manufacturing Co. (TSM) is the largest dedicated contract semiconductor manufacturer in the world, with roughly 50% market share. The company handles manufacturing of semiconductors and integrated devices for companies that don't have their own manufacturing facilities ("fabless" or "fab lite" producers). TSM produces more than 10,760 products using more than 270 technologies for about 500 customers. TSM's fabless customers include AMD, Broadcom, NVIDIA, QUALCOMM, Hisilicon Tech, and Intel.

Most of TSM's manufacturing capacity is in Taiwan, but it also has factories in Taiwan, China, and the US. US customers accounts for roughly 60% of revenue, followed by China (20%) and Taiwan (10%).

TSM's revenue is closely tied to its 10 largest customers, who account for more than 70% of net revenues to the firm. The company's single largest customer (Apple Inc) accounts for more than 25% of revenue.

TSM is investing heavily (Capex \$24 billion LTM) to install and expand capacity, particularly for 5nm and 3nm nodes and advances packaging and mask operations.

Investment Thesis

TSM is an industry leader dominating semiconductor fabrication (50% market share) in a time where everything from computers to dish washers are requiring smaller and smaller chips. TSM presents an impressive value creation play with and ROIC/WACC ratio of 1.35 with very high revenue growth and a focus on capacity expansion. TSM is on track for 20% revenue growth in 2022 with a wide competitive moat as one of only three companies that can produce wafers under 10 nanometers.

TSM also provides proxy exposure to all fabless semiconductor majors and broad electronics companies like Apple (25% of revenue) and Sony. This hedges security selection risk for our other semiconductor names. On the note of diversification, TSM is quasi-diversified by country with only 60% of revenues denoted in USD.

Our bullish stance on TSM is framed by our macro view of increasing semiconductor demand from structural sources including electric vehicles, autonomous driving, cryptocurrency mining, metaverse/virtual reality, decentralized energy systems, and the ongoing improvement of computing infrastructure globally.

TSM is a first mover on sustainability practices and has proven their dedication to reduction in energy consumption and waste production by saving 200 GW of electricity in 2020 despite increasing production of the extremely energy intensive 5nm chip. They have passed these energy conservation requirements to their top 7 suppliers as well in an effort to develop a sustainable supply chain.

If demand for semiconductors does slow down in the near-term, we believe TSM will prove resilient compared to its peers and this reduction in demand will reflect in capex but have limited effect on top-line growth.



Sustainability Data

Consensus ESG Scores

ISS Quality Score	Not Reported
CDP Climate Score	7
MSCI Rating	AAA
Sustainability Risk	Low
Sustainalytics Risk Score	14.41
Percentile Ranking	8.03

Disclosure Scores

ESG Disclosure	67
Env. Disclosure	65
Soc. Disclosure	72

Policy Checklist

Renewable Electricity Policy	No
Energy Efficiency Policy	Yes
Emission Reduction Policy	Yes
Env. Supply Chain Mgmt Policy	Yes
Env. Quality Mgmt Policy	Yes
Green Building Policy	Yes
Sustainable Packaging Policy	No
Waste Reduction Policy	Yes
Water Policy	Yes
Biodiversity Policy	No
Climate Change Policy	Yes

Corporate Citizenship

UN Global Compact Signatory	No
SDGs Target Policy	Yes
Business Ethics Policy	Yes
Employee CSR Training	No
Equal Opportunity Policy	Yes

Metrics Explained

ISS Quality Score: Overall score assigned by Institutional Shareholder Services (ISS) to the company's governance practices. The score ranges from 1 (best) to 10 (worst).

CDP Climate Score: Reflects the level of company commitment to climate change mitigation, adaptation, and transparency. The score ranges from 1 (worst) to 8 (best).

MSCI Rating: Measures a company's resilience to long-term, financially relevant ESG risks. Ranges from C (worst) to AAA (best).

Sustainability Risk: A company's exposure to sustainability risks is assigned to one of five categories: Negligible, Low, Medium, High, Severe.

Sustainalytics Risk Score: Applies the concept of risk decomposition to derive the company's level of unmanaged sustainability risk. Ranges from 0 (best) to 100 (worst).

Percentile Ranking: Measures a company's sustainability risk relative to a selected universe, measured as a percentile rank with 1% meaning the company has the lowest risk in the universe and 100% meaning the company has the highest risk in the selection universe.

Corporate Inclusion & Equality

Female CEO	No
Female Chairperson	No
Number of Women on Board	2
Board Avg Age	Not Reported
Number of Female Executives	3
Pct of Female Executives	13%
Pct Women in Workforce	38%
Pct Women in Middle/Other Mgt	13%
Pct women in Senior Mgt	11%
Pct Minorities in Workforce	Not Reported



Impressive pricing power

Supported by their recent 10% price hike on more specialized components (specifically chips provided to Apple and MediaTek), TSM is well positioned to pass inflationary risks down the supply chain. Their competitive moat (discussed below) combined with economies of scale allow TSM to remain the low-cost producer while still pricing in rising inflation.

5G

TSM currently leads the market in the development and fabrication of low-energy radio frequency (RF) technology, which allows 5G devices to extend above 7 GHz and as high as 300 GHz. This is where the idea of “broadband” comes from. 5G also acts as a hedge against stagnating smartphone sales because, according to TSM management in their 3Q20 earnings call, 5G phones will have 30-40% more semiconductor content per unit. This represents a 30-40% growth opportunity assuming 0% growth in smartphone sales.

Metaverse

At HC, our macro stance on “metaverse” technology is very bullish. At the nexus of virtual reality, computing power improvements, 5G connectivity, and NFTs lies a community desire for a fully immersive virtual experience. To put headsets on every participant and the computing power to render a cohesive virtual environment will require hundreds of millions of semiconductors. Though there is a competitive dichotomy between AMD and NVIDIA, TSM supplies both fabless chip developers and stands to benefit regardless of who wins contracts.

\$100B in capex, and a dividend.

TSM has pledged to spend \$100 billion on new capacity expansion and R&D in the next three years, broadly outpacing Intel’s \$20 billion guidance and Samsung’s \$116 billion over 10 years. They seem to be keeping their promise by spending \$24 billion LTM (announcement was made on March 31, 2021). TSM has also sustained their dividend during this capex expansion, an unexpected bonus to shareholders.

Supplying the green transformation

We see a severe mispricing by ESG funds when considering the true drivers of the “green revolution”. While most ESG funds are largely overweight wind, solar, and EV names, they are underweight industries like semiconductors and building materials even though these names will be the investment majors behind the transition. Whether it’s electric vehicles, sun tracking arrays, or an updated electric grid, it’s likely a chip built in one of TSM’s foundries will be supporting the devices logic and operations.

Economies of scale benefit the largest player

As mentioned above, TSM is currently the largest semiconductor foundry and has made it clear they plan to stay that way. They stand to maintain their competitive moat through sheer size, which is a compelling value creation model given their ability to consistently undertake high-return projects.



Pertinent Risks

Moore's law falling over

Moore's law states that the number of transistors in a semiconductor doubles once every two years, and this pattern is decaying as cost per doubling rises. This rising cost could damage TSM's margins and offset the benefits of new 5G chips.

Power and climate change exposure in Taiwan

Taiwan is already facing rising temperatures and drought due to climate change, and this is making TSM's energy-intensive operations more and more difficult to maintain. This physical risk is set to persist and will pose a real threat to the firm. Unfortunately, we see this as a systemic issue, not one that is native to TSM or Taiwan.

Chip demand whiplash may leave new capacity underutilized

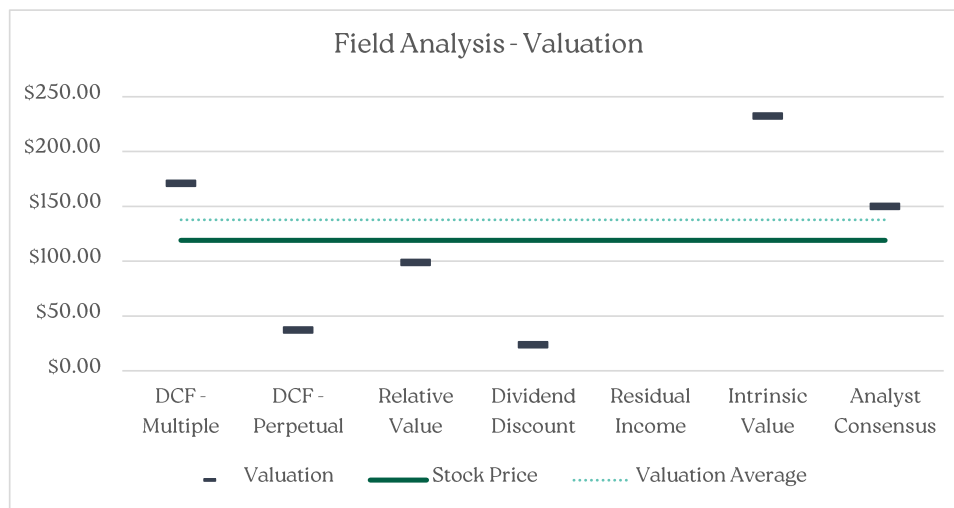
If chip demand slips, the new capacity TSM is building will go unused and defeat the firm's growth trajectory.

Dollar devaluing against Taiwan currency would squeeze margins

Most of TSM's revenues are in USD and nearly all costs of revenue is denoted in TWD. Any devaluation of the USD will have a direct negative effect on the firm's bottom line. As with most international companies, this risk is very closely hedged.

Target Valuation

	DCF EBITDA Multiple	DCF Perpetual Growth	Relative Valuation	Dividend Discount Model	Residual Income	Intrinsic Value	Analyst Consensus
Hoskin Capital	\$170.86	\$37.20	\$98.78	\$23.67	#N/A	\$232.20	\$149.90
Included in Average	Yes	Yes	Yes	No	No	Yes	Yes





Index & References

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