



TSMC: A Crucial Cog in the Digital Revolution

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Semiconductors are the unsung heroes of the modern world. Found in everything from smartphones to washing machines, they are essentially the “brains” of the electronic devices we have come to depend on. Ultimately, it is chip technology that has enabled the digital revolution we have experienced over the last few decades. Without this technology, we would not have the seamless connectivity that underpins the global economy today.

Looking ahead, the semiconductor industry is expected to get significantly bigger as the world becomes more digital and fields like artificial intelligence (AI), cloud computing, and medical technology advance. According to PWC¹, the global semiconductor industry could be worth \$1 trillion by 2030, roughly two thirds larger than its size in 2021. One company that appears well positioned to benefit from this industry growth is Taiwan Semiconductor Manufacturing Company or “TSMC” for short. The world’s largest² chip manufacturer, it’s a critical player in the industry.

A Chip Powerhouse

TSMC is a Taiwanese multinational semiconductor manufacturer that is listed in both Taiwan and the US. It was founded in 1987 by Morris Chang, who revolutionized the industry by creating a pure-play foundry business focused solely on manufacturing chips for other companies.

Today, TSMC manufactures products for just about every chip designer out there – including Nvidia, AMD, Apple, Samsung, Qualcomm, and Broadcom – producing over 60% of the world’s semiconductors (and over 90% of the most advanced ones). So, it plays a pivotal role in the tech ecosystem.

Known for its state-of-the-art manufacturing processes, the company has consistently been at the forefront of advances in semiconductor manufacturing technology over the years, successfully manufacturing 7nm, 5nm, and now 3nm chips. The majority of its chips are manufactured in Taiwan; however, it also has manufacturing facilities in the US, Japan, Germany, and China.

Substantial Growth Over the Last Decade

As the world has become more digital over the last decade and demand for semiconductors has risen, TSMC's revenues and earnings have increased significantly. For 2024, revenue amounted to NT\$2,894 billion, an increase of 243% on the figure in 2015. Net income for 2024 amounted to NT\$1,173 billion, up 282% on the figure in 2015.

Revenue										
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Revenue (NT\$bn)	843	948	977	1,031	1,070	1,339	1,587	2,264	2,162	2,894

Source: LSEG as of April 21, 2025

Net income										
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Net income (NT\$bn)	307	334	343	351	345	518	596	1,016	838	1,173

Source: LSEG as of April 21, 2025

Two factors that have contributed to the strong growth over this timeframe are smartphone innovation and the growth of high-performance computing (HPC). While a mature market, smartphones continue to require increasingly powerful and efficient processors, benefiting TSMC's leading-edge node production. Meanwhile, the explosive growth in artificial intelligence, machine learning, and data analytics has created unprecedented demand for high-performance processors and accelerators. Today, HPC accounts for around 50%³ of the company's revenue.

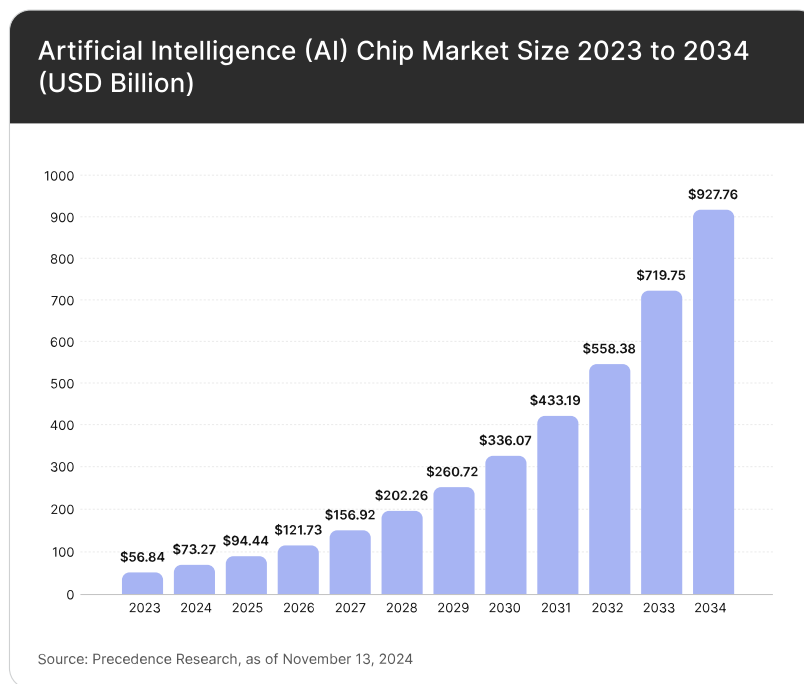
Multiple Long-Term Growth Drivers

Looking ahead, a number of emerging technologies are expected to boost demand for advanced chips, potentially benefiting TSMC. These include:

- **Artificial Intelligence** - AI requires a vast amount of computer processing. Semiconductors, particularly central processing units (CPUs) and graphics processing units (GPUs), provide the necessary processing power to handle computations efficiently.

- **5G Connectivity** - The rollout of 5G networks globally is fueling demand for sophisticated chips. These chips are used in smartphones, network infrastructure, and Internet of Things (IoT) devices.
- **Electric Vehicles (EVs) and Autonomous Vehicles** - The automotive industry is undergoing a major transformation today as a result of the rise of EVs and self-driving technology. These technologies rely on advanced chips for various functions, including battery management, driver-assistance systems, and autonomous driving capabilities.
- **Renewable Energy** - Chips are used across the entire clean energy ecosystem. They can be found in solar panels, wind turbines, battery management systems, smart grids, and sensors and controls.

All of these technologies are heavily reliant on the advanced chips that TSMC manufactures. As these fields continue to expand and evolve, the company should be well-positioned to see sustained and increasing demand for its products.




US Manufacturing Capabilities

While the majority of TSMC's chips are made in Taiwan today, the company has been expanding its manufacturing presence in the US recently in an effort to reduce geopolitical risk.

In May 2020, it announced plans to invest \$12 billion to build an advanced semiconductor manufacturing plant in Arizona⁴. In then announced plans for a second plant in December 2022 and a third plant in April 2024.

More recently, in March this year, TSMC said it would increase its existing US investment by \$100 billion⁵ and build three new fabrication plants, two advanced packaging facilities, and a major R&D team center on US soil. These plants are intended to produce advanced semiconductors including 5nm, 4nm, and 3nm chips.



By increasing our capacity for leading-edge technology in Arizona, we will enable our customers to unleash innovations across mobile, AI and HPC applications for all industry sectors.

Taiwan Semiconductor Manufacturing Company

These recent investments are of strategic importance to both TSMC and the US. For TSMC, it diversifies its manufacturing base, potentially providing a hedge against geopolitical risks. For the US, it should boost domestic semiconductor production, reduce reliance on foreign suppliers, and potentially strengthen national security. It's worth pointing out that US President Donald Trump has said that as a result of the deal, TSMC will avoid industry-wide double-digit tariffs, which is important given that North America accounted for 75%⁶ of the company's revenue in Q4 2024.

2025 Guidance

Note that on TSMC's Q1 2025 earnings call, CEO C.C. Wei said that although there are risks from US tariffs, the company has not seen any change in customer behavior so far. He added that in the near term, he expects the business to be supported by robust demand for AI chips.

In terms of guidance, the company said that it was expecting revenue growth of around 25%⁷ in US dollar terms for 2025. Meanwhile, from 2024 to 2029, management expects annualized revenue growth to approach 20% in US dollar terms.

Well-Positioned for Growth

In summary, TSMC stands at the heart of the global technology industry today. With its distinguished customer base and advanced chip manufacturing capabilities, it could potentially thrive as the world becomes increasingly reliant on advanced computing power.

Of course, geopolitical issues remain a risk. However, with the emergence of transformative technologies like AI, 5G, and autonomous driving – all of which are boosting demand for high-end chips – the company is well positioned for success in the long run.

Footnotes:

¹PWC, State of semiconductor industry, as of November 28, 2024

²JP Morgan, Eye on the Market, Outlook 2025

³Refinitiv Streetevents, Edited Transcript, Q4 2024 Taiwan Semiconductor Manufacturing Co Ltd Earnings Call, as of January 16, 2025

⁴TSMC Arizona, as of April 22, 2025

⁵TSMC, TSMC Intends to Expand Its Investment in the United States to US\$165 Billion to Power the Future of AI, as of March 4, 2025

⁶TSMC, Quarterly Management Report, as of January 16, 2025

⁷TSMC, 2025 First Quarter Earnings Conference, as of April 17, 2025

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