Semiconductors

TSMC: Surging AI demands propelled strong results and guidance

OUTPERFORM (Maintain)

China Semiconductors Sector

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TSMC (TSM US, NR) reported a very solid 4Q24 result. Revenue was US$26.8bn (up 36.5% YoY/14.1% QoQ), beating BBG consensus/guidance by 3.9%/1.3%, driven by strong 3nm/5nm sales. GPM expanded to 59.0%, surpassing BBG consensus/guidance of 58.5%/ 58.0%, due to higher utilization and productivity gains, partially offset by dilution of 3nm ramp-up. By technology nodes, 3nm accounted for 26% of revenue in 4Q (vs. 20%/15% in 3Q24/4Q23). By application, HPC remains the largest segment with over 50% contribution, reflecting robust AI demand. FY24 revenue grew 30% YoY to US$90.1bn, with GPM at 56.1%, up 1.7ppts YoY.

1Q25 revenue is guided in the range of US$25bn-US$25.8bn. Mid-point implies 35% YoY growth and a 6% QoQ decline. Mgmt. explained the 6% sequential decline will be 1) impact by smartphone seasonality but 2) partially offset by strong AI demand growth.

The outlook for 2025 remains very promising, driven by strong AI growth and mild recovery of non-AI markets (low single-digit growth in smartphone unit, but higher silicon content growth). Management expects revenue to grow mid-20% this year. Looking forward, TSMC project a 20% revenue CAGR in the long term. **We remain confident in the performance of AI supply chain, which is our top pick investment thesis for 2025.**

- **Mgmt. confirms no CoWoS order cut, reaffirms bullish AI growth outlook.** Concerns about a rumoured CoWoS order cut were addressed directly on the earnings call, with mgmt. reiterating that the company is working hard to ramp up CoWoS capacity to meet customers' demand. TSMC projects the **AI accelerator revenue to grow mid-40% CAGR over next five years**. **It expects AI revenue exposure to double this year** (vs. ~mid-teens% in 2024).
- **4Q GPM hits 59%, nearing 2022 peak; LT outlook maintains at 53%**. 4Q GPM rose 1.2ppts QoQ and 6.0ppts YoY on higher utilization rate of advanced node capacity (7nm or below), which contributed to 69% of total wafer revenue in 2024 (vs. 58% in 2023). 1Q25 GPM is guided 1ppt lower QoQ, due to 1) ramp-up costs associated with N2, 2) dilution from overseas fabs (2-3ppts annually for the next five years as fabs in the US and Japan ramp up) and 3) inflation costs impact (e.g., higher utility costs).
- **Capex to grow 27%-40% in 2025, benefitting SPE.** TSMC raised its capex plan for FY25 to US$38-42bn (28-41% YoY growth) after spending US$29.8bn (flattish YoY) in FY24. FY25 capex guidance is higher than Bloomberg consensus estimate of US$35bn, and ~70% will be allocated for advanced process technology.
- **Geopolitical risks are manageable.** TSMC is applying for special permits to continue supporting affected customers in China, esp. in non-AI sectors like automotive and crypto mining.
- **Semi industry growth outlook for 2025-2026: "**Foundry 2.0" (including sectors like packaging, testing, mask making, etc) is expected to grow by 10% in 2025, and the mgmt. believes that it is a reasonable proxy for overall semi market growth.
- **CPO and Silicon Photonics adoption:** Initial results from customers are positive, but mass production may still be 1-1.5 years away.

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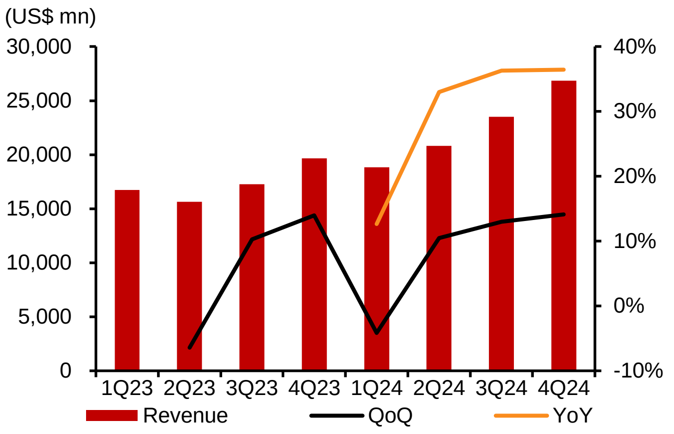
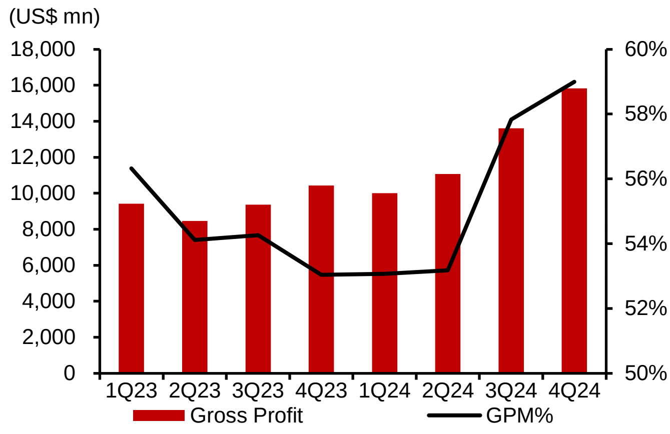
Figure 1: TSMC's revenue and growth



Source: Company data

Figure 2: TSMC's gross profit and GPM%



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