

TSMC FY2024 + FY2025 Run-Rate Due Diligence Brief

22 November 2025

Executive takeaways

- TSMC exited FY2024 with NT\$2.89 trillion (US\$88.3B) in revenue (+34% YoY) and 56% gross margin, driving NT\$1.16 trillion (US\$35.3B) in net income (40% net margin) and NT\$1.83 trillion (US\$55.7B) in operating cash flow (FY2024 Form 20-F, Item 5).
- High Performance Computing (HPC) platforms surged to 51% of revenue (+9ppt YoY) while smartphones rebounded to 35%; together they explain >80% of the 2024 top-line growth, confirming that AI accelerators and flagship phones remain the core demand rails (Item 4, “Markets and Customers”).
- Balance sheet quality improved: cash and marketable securities reached roughly US\$64.9B, current ratio was 2.36x, and net cash stood near NT\$1.11 trillion even after NT\$958B of capital expenditures concentrated on 3nm/2nm ramps (Items 5 and 11).
- Geographic mix is still dominated by North America (~69% of revenue), but management is de-risking with Arizona (three fabs), Kumamoto (two JASM fabs) and Dresden (ESMC) — each paired with large government grants (U.S. CHIPS Act up to US\$6.6B + US\$5B loans; Germany up to EUR5B; Japan up to JPY476B) (Item 4 and subsidy disclosures).
- Customer concentration intensified: the top ten customers represented 76% of 2024 revenue, largest customer 22%, second largest 12%; sustaining deep co-development across nodes and advanced packaging (CoWoS, SoIC) is critical to defend share as hyperscalers pursue dual foundry strategies (Risk Factor, Item 3).

Source corpus

- Taiwan Semiconductor Manufacturing Company Limited Form 20-F for the year ended 31 December 2024 (filed 1 April 2025).
- TSMC October 2025 earnings release and conference-call deck (Q3 2025) for forward-looking utilization, capex and packaging commentary.
- ”Semiconductor List.xlsx” (updated Nov 2025) for peer growth, margin, and valuation guardrails.
- U.S. Department of Commerce CHIPS Act fact sheet (April 2024) and ESMC/JASM subsidy announcements for incentive terms referenced in Item 4.

Foundry operating model snapshot

- **Process leadership:** Volume 3nm (N3E) production underway; 2nm (N2) risk production in 2024 with volume slated for 2025, and 1.4nm-class (A14) technology roadmap disclosed for late-decade rollouts (Item 4, Technology).
- **Platform overlays:** HPC covers AI accelerators, CPUs/GPUs, networking ASICs and custom silicon, benefitting from CoWoS/SoIC packaging; smartphones lean on N3E/N4P nodes with

integrated RF and power management; automotive focuses on 28nm and specialty nodes + advanced packaging for ADAS.

- **Manufacturing footprint:** 14 fabs in Taiwan (Hsinchu, Taichung, Tainan), plus TSMC Arizona (Fab 21 Phase 1 and 2 under construction, third fab announced), Japan's JASM (Fab 1 22/28nm ramping 2024, Fab 2 adding 6/5/4nm by 2027), and Germany's ESMC (planned 300mm fab for 28/22/16/12nm nodes by 2027).
- **Supply chain capacity:** 2024 capex split 70% advanced nodes (7nm and below), 20% specialty (28/22/16/12nm, RF, embedded, power), 10% advanced packaging and photomask; CoWoS output targeted to more than double between 2023 and 2026.
- **Customer structure:** Hundreds of fabless/IDM partners, but hyperscaler/system companies designing in-house silicon dominate the growth; TSMC continues to co-invest in design-technology co-optimization (DTCO) and system-technology co-optimization (STCO) to defend this base.

FY2024 scoreboard

Metric	FY2024 (NT\$B)	FY2024 (US\$b)	YoY
Net revenue	2,894.3	88.3	+33.9%
Gross profit	1,624.9	49.5	+24% (est.)
Income from operations	1,322.0	40.3	+26% (est.)
Net income attributable to shareholders	1,158.4	35.3	+36.0%
Operating cash flow	1,826.0	55.7	n/a
Capital expenditures (PP&E)	958.0	29.2	n/a
Free cash flow	868.0	26.5	n/a
R&D expense	204.2	6.2	+11.9%
Current ratio	2.36x	—	+20 bps
Net cash (cash + equivalents – total debt)	1,110.0	34.4	n/a

Table 1: Consolidated figures from FY2024 Form 20-F (Note 3 conversion rate NT\$32.79 = US\$1).

Key observations:

- Operating margin reached 45.7% despite inventory digestion in consumer end markets, reflecting mix toward HPC wafers and advanced packaging value-add.
- Free cash flow margin was 30%, enabling NT\$732B cash dividends plus the continuation of quarterly capital returns without tapping debt markets.
- Cash comprised roughly 69% of current assets; receivables and inventories remained well below 90 days, underscoring disciplined working-capital control.

Platform	FY2024 mix	YoY delta
High Performance Computing	51%	+9 ppt
Smartphone	34.7%	-3 ppt
Internet of Things	5.7%	-2 ppt
Automotive	4.8%	+1 ppt
Digital Consumer Electronics	1.7%	-1 ppt
Others	2.1%	-4 ppt

Table 2: Item 4 “Markets and Customers” platform disclosure (revenues recognized by customer platform).

Region (customer HQ)	FY2024 mix	Commentary
North America	69%	Driven by hyperscalers, CPU/GPU vendors, networking OEMs.
Asia Pacific (ex-Japan/China)	12%	Android SoC vendors and fabless ASIC houses.
China	11%	Recovering smartphone and datacenter designs on older nodes.
EMEA	6%	Auto and industrial silicon (notably ADAS).
Japan	2%	Automotive/industrial, uplift from JASM partnerships.

Table 3: Geographic breakdown per Item 4 “Markets and Customers”.

Platform and geography mix

Platform revenue split

Geographic revenue split

Takeaways:

- Revenue growth in 2024 was concentrated in North America (NT\$+561B, +38% YoY) and Asia Pacific (+NT\$109B, +63%), reflecting AI compute waves and Android recovery.
- Automotive remains a small base but fastest growing (+33% YoY) as OEMs shift ADAS/EV controllers to in-house ASICs co-developed with TSMC.
- China mix stabilized at low-teens due to export controls and preference for legacy nodes; risk mitigated via specialty capacity in Nanjing and global fabs.

Cash, balance sheet, and liquidity

- **Liquidity:** Cash and equivalents of NT\$2.13 trillion (US\$64.9B); financial assets at amortized cost add another NT\$364B, supporting >NT\$1.7T of readily available liquidity (Item 11).
- **Debt:** Corporate bonds of NT\$928B (US\$28.3B) and long-term loans of <NT\$35B imply net cash >NT\$1.11T; weighted average coupon remains below 1.5% given Taiwan-dollar issuance.
- **Working capital:** Days sales outstanding <40; inventories held at <90 days thanks to flexible fab loading and close demand collaboration with hyperscalers.
- **Capital returns:** Cash dividends totaled NT\$732B (NT\$3.00/share quarterly cadence). Share count remained stable; treasury allocation focuses on dividends rather than buybacks.

Capacity, capex, and subsidy tracker

- **Arizona (Fab 21):** Agreements with the U.S. Department of Commerce provide up to US\$6.6B in direct CHIPS funding and up to US\$5B in federal loans. Fab 1 (N4/N5) targets volume in 2025, Fab 2 (N3/N2) scheduled for 2027, and Fab 3 (announced April 2024) will support 2nm and 1.4nm nodes later in the decade.
- **Japan (JASM):** Kumamoto Fab 1 (22/28nm specialty) starts shipments in 1H24; Fab 2 (with Sony, Denso, Toyota) will add 12/16nm and 6/5nm capacity by 2027. Japanese government subsidies up to JPY476B cover both phases.
- **Germany (ESMC):** December 2024 agreement grants up to EUR5B to build a 300mm fab in Dresden with Bosch, Infineon, and NXP participation; focus on 28/22/16/12nm automotive and industrial nodes, first production targeted for 2027.
- **Advanced packaging:** CoWoS output expected to triple by 2026 with new modules in Zhunan and planned Arizona packaging; SoIC capacity expanded for backside power and high-bandwidth memory stacking demanded by AI accelerators.
- **Capex outlook:** 2025 spend guided at US\$28–32B, again weighted >70% toward advanced nodes, as TSMC accelerates N2 and A14 while bringing backside power (N2P) into risk production.

Risks and watch items

- **Customer concentration:** Top-10 customers = 76% of revenue; largest (likely Apple) = 22%, second largest (major GPU vendor) = 12%. Any insourcing or dual-sourcing move could quickly pressure utilization.
- **Geopolitical exposure:** Majority of fabs remain in Taiwan; R.O.C. geopolitical tension, energy policy, or natural disasters could disrupt output despite geographic diversification.
- **Subsidy compliance:** CHIPS, Japanese, and German grants contain “guardrails” restricting expansion in countries of concern and joint R&D. Breaches could trigger clawbacks or delayed disbursements.
- **Talent and supply chain:** Rapid global expansion (U.S., Japan, Germany) requires localized labor, procurement, and IT systems. Cultural integration issues have already been cited as ramp risks.
- **Advanced packaging bottlenecks:** CoWoS/SoIC demand outstrips supply; any delay in equipment deliveries (e.g., high-density RDL tools) limits AI wafer monetization.

Scenario outlook (management-style)

Action items and monitoring

- **Track CoWoS/SoIC loadings:** Validate that planned packaging expansions in Zhunan and Arizona keep pace with AI accelerator order books; bottlenecks flow directly into HPC revenue.

Scenario	Key assumptions	FY2025 revenue (US\$B)	FY2025 EPS (NT\$)
Bear	AI wafer pull-ins pause; smartphone units flat; N3/N2 ramps slip one quarter; utilization averages mid-70%.	80	32
Base	HPC demand remains robust, N3 ramps to >80% utilization, smartphones grow mid-single digits, IoT/auto steady.	92	38
Bull	Third-wave AI accelerators saturate CoWoS, N2 risk production monetizes late 2025, automotive silicon doubles via ESMC/JASM support.	100	43

Table 4: Revenue outcomes translated from management commentary and peer demand signals (Semiconductor List.xlsx consensus FY1/FY2). EPS approximations assume 25.9B shares outstanding and 37% payout ratio.

- **Monitor subsidy milestones:** Confirm drawdown schedules, compliance guardrails, and capex reimbursements for CHIPS/JASM/ESMC programs each quarter.
- **Watch customer diversification:** Request disclosure on the share of revenue from system companies vs. fabless customers; monitor any rise in dual-sourcing to Samsung/Intel Foundry.
- **Follow capex discipline:** Compare announced 2025 capex bands with actual cash outflows; ensure returns justify expanded global footprint amid potential demand volatility.
- **Update peer comps quarterly:** Refresh "Semiconductor List.xlsx" for valuation spreads vs. NVIDIA, AMD, Broadcom, and Samsung Foundry initiatives.

Appendix: data notes

- USD conversions follow Note 3 (NT\$32.79 = US\$1). NT\$ figures expressed in billions unless otherwise noted.
- Free cash flow defined as net cash provided by operating activities minus purchases of property, plant and equipment (cash flow statement, Item 5).
- Platform/region percentages reflect revenue recognized by customer headquarters and platform classification, not necessarily the physical shipment destination.
- Scenario EPS uses diluted weighted-average shares from 2024 (25.9B) and assumes a normalized tax rate of 10.5% consistent with 2024 effective tax disclosure.