2330.TW gideon lens

Taiwan Semiconductor Manufacturing Company Limited — Gideon Lens

Security: XTAI:2330 ordinary share **Report date:** 2026-08-30 **Price anchor:** TWD 2,420 raw completed-session close on 2026-08-28 **Operating anchor:** TTM ended 2026-06-30 **Exact horizon:** 2031-06-30, exactly 5.0 years **Mode:** Production ER2 refresh **Primary valuation method:** P/E, locked before returns **Authority:** research only; no trade, ranking, sizing, broker, portfolio-mutation, owner-action, or message authority

Executive verdict

Verdict: PASS.

ER2 gate	Result	Decisive evidence
Management	**PASS**	Long-tenured team, disciplined organic reinvestment, negligible M&A/dilution, quantitative disclosure; succession and overseas returns remain monitors
Moat	**PASS**	Pure-play trust, yield learning, scale, design ecosystem, capacity certainty and process/packaging co-optimization; 2046 test PASS
P/E ≤ 15 on confident EPS at TTM + 5 years	**FAIL**	Base terminal EPS TWD 146.400019 supports TWD 2,196.000289 at 15x, a **-9.26%** cushion versus TWD 2,420

The decision rule is non-compensating: any failed gate produces PASS. TSMC remains a rare manufacturing franchise, but business quality does not rescue an entry price above the framework's confident five-year value. The formal PASS is separate from the diagnostic audited compounder score of **70/100** and separate from CIO actionability, which is also **PASS** because expected net-SGD returns and portfolio fit do not clear.

One-line thesis: TSMC's neutral-foundry moat and management discipline remain exceptional, but at TWD 2,420 the base case earns only 4.86% gross TWD and 4.52% net SGD while Taiwan, customer concentration and AI-capex reflexivity remain asymmetric risks.

What changed from the prior active report

This is a governed refresh against the immutable 2026-07-26 report snapshot selected by the prior-report selector. The price rose from TWD 2,350 to TWD 2,420, or 3.0%. The new official-source and independently reviewed operating build is more conservative than the prior model despite another strong reported quarter.

Item	Prior active report	Current refresh	Change / interpretation
Price	TWD 2,350	TWD 2,420	+3.0%
Formal ER2 verdict	BUY	**PASS**	Valuation gate moved from PASS to FAIL
Management / Moat	PASS / PASS	PASS / PASS	No gate change; monitoring sharpened
P/E-15 cushion	+6.1%	**-9.26%**	Base EPS no longer supports the entry price
Base terminal EPS	TWD 166.18	TWD 146.400019	Lower current-run five-year endpoint
Gross local Bear / Base / Bull IRR	-4.69% / 9.51% / 20.52%	**-10.55% / 4.86% / 14.16%**	Current PE bridge replaces prior EV/NOPAT return method, so compare conclusions, not just point deltas
Probability-weighted gross IRR	9.46%	**2.39%**	Both use expected terminal wealth before CAGR; scenario sets differ
Net-SGD Bear / Base / Bull IRR	-6.86% / 9.13% / 22.27%	**-12.72% / 4.52% / 15.70%**	Higher price, lower operating endpoints and current FX/cost diagnostics
Probability-weighted net-SGD IRR	7.76%	**2.15%**	Expected terminal SGD wealth CAGR

Item	Prior active report	Current refresh	Change / interpretation
CIO status	WATCH	**PASS**	Direct exposure trails current AVEM/EWY/portfolio return context and adds overlap
Audited compounder score	66/100	70/100	Better evidence coverage and quality scoring do not offset a 1/20 return score

The prior BUY should therefore not be carried forward. This refresh uses current-run official evidence, an independently repaired data package, a reviewed one-segment forecast, a locked P/E valuation policy, finite returns, and an independent scoring audit. Freshness of the prior snapshot is disclosed but not a blocker.

Operating case

TSMC has one reportable operating segment: **Foundry**. HPC, Smartphone, IoT, Automotive, Digital Consumer Electronics and Other are revenue platforms inside Foundry; process nodes are technology mix. The report does not invent platform or node profit.

TTM revenue was TWD 4,440.492bn, Foundry Income from operations was TWD 2,491.157bn, parent net income was TWD 2,237.088bn and statutory diluted EPS was TWD 86.270796. Q2 2026 revenue grew 36.0% year on year, operating margin reached 60.3%, HPC was 66% of revenue and 7nm-and-below technologies were 77% of wafer revenue. The balance sheet held TWD 3,518.013bn of cash and marketable securities against TWD 1,031.680bn of interest-bearing debt, or TWD 2,486.333bn net cash.

The reviewed five-year scenarios are deliberately conditional on enterprise continuity:

Scenario	Probability	Terminal revenue	Operating margin	Foundry Income from operations	Parent net income	Diluted shares	EPS
Bear	35%	TWD 4,874.525bn	49.0%	TWD 2,388.517bn	TWD 2,060.741355bn	26.050bn	TWD 79.107154
Base	50%	TWD 7,899.712bn	55.5%	TWD 4,384.340bn	TWD 3,799.080500bn	25.950bn	TWD 146.400019
Bull	15%	TWD 9,422.413bn	59.0%	TWD 5,559.224bn	TWD 4,882.255920bn	25.850bn	TWD 188.868701

Base revenue compounds at 12.21%, led by HPC at 15.32%. That is strong but far below the recent HPC growth rate. The base margin ends only 60 basis points below the unusually strong TTM level: mix, utilization, yield learning and packaging economics must offset N2 start-up and overseas-fab dilution. The red team identifies this 55.5% margin and HPC concentration as the most vulnerable assumptions. A five-point miss in Base HPC CAGR lowers gross Base IRR from 4.86% to about 1.63%. Two quarters of non-growing HPC revenue, operating margin below 50%, and capex/revenue at or above 35% would invalidate the central capacity-conversion premise.

Management earns PASS for high-return organic reinvestment, flat dilution, coherent pure-play strategy and candid disclosure across a hard cycle. The monitoring burden is real: C.C. Wei's combined chairman/CEO role creates succession concentration, the USD 60–64bn 2026 capital budget requires AI demand conversion, and Arizona/Japan/Germany must improve toward group economics.

The moat and 2046 tests pass. Customers pay for neutral stewardship of sensitive designs, high-volume yield, delivery certainty, qualified EDA/IP infrastructure, switching and requalification costs, and co-optimized leading-edge manufacturing and advanced packaging. Mature and specialty nodes are less protected; subsidized competition, customer dual-sourcing, chiplet standards and overseas cost can compress returns. A Taiwan blockade, conflict or severe sanctions event is a separate security-survival discontinuity. Commercial moat survival does not imply the ordinary share survives intact.

Security return underwriting

Valuation preflight locks one method for all scenarios: **P/E**. Reported current P/E is 28.0512x on TWD 86.270796 statutory TTM EPS; normalized current P/E is 28.7990x after excluding the disclosed TWD 2.24 VIS gain. Ten-year valuation evidence supports independently selected 16x / 20x / 24x bear/base/bull exits. EV/NOPAT is rejected because a complete source-bound terminal claim bridge is unavailable. Under P/E, net cash/debt is diagnostic only and is never added after EPS × P/E.

Return bridge	Bear	Base	Bull	Probability-weighted
Probability	35%	50%	15%	100%
Exit P/E	16.0x	20.0x	24.0x	—
Terminal EPS	TWD 79.107154	TWD 146.400019	TWD 188.868701	—
Terminal diluted shares	26.050bn	25.950bn	25.850bn	—
Terminal equity value/share	TWD 1,265.714464	TWD 2,928.000380	TWD 4,532.848824	—
Aggregate terminal equity value	TWD 32,971.861787bn	TWD 75,981.609861bn	TWD 117,174.142100bn	—
Five-year distributions/share	TWD 120	TWD 140	TWD 160	—
Terminal shareholder wealth/share	TWD 1,385.714464	TWD 3,068.000380	TWD 4,692.848824	**TWD 2,722.927576**
Terminal cash / debt diagnostic	TWD 3,518.013bn / TWD 1,031.680bn	same	same	Constant-current diagnostic
Terminal net cash diagnostic	TWD 2,486.333bn	TWD 2,486.333bn	TWD 2,486.333bn	Excluded from P/E value
Gross TWD annualized IRR	**-10.55%**	**4.86%**	**14.16%**	**2.39%**

The gross formula is `(terminal EPS × exit P/E + cumulative distributions) / TWD 2,420`, annualized over exactly 5.0 years. Probability-weighted return is `(TWD 2,722.927576 / TWD 2,420)^(1/5) - 1 = 2.386841%`. It is not the arithmetic average of scenario IRRs.

The distribution schedules are transparent diagnostics tied to the established TWD 24 annual rate: TWD 24 flat in Bear, TWD 24/26/28/30/32 in Base, and TWD 24/28/32/36/40 in Bull. The constant-current net-cash diagnostic is source-bound and conservative; it is not a forecast claim and is not counted in terminal value.

The red team tests a Base 18x exit, inside the historical band. It reduces Base gross IRR to about 2.78%, but does not change the verdict. Base needs a 40.18x exit P/E at modeled EPS to earn 20%, while the maximum Base entry price for a 20% return is about TWD 1,232.96. Even Bull reaches only 14.16% at the frozen 24x exit.

Net-SGD actionability

The net-SGD overlay uses the same P/E terminal values and 35%/50%/15% weights. Entry FX is the Bank of Taiwan 2026-08-27 SGD spot midpoint of TWD 24.94 per SGD. The diagnostic applies 21% nonresident dividend withholding, 0.3% Taiwan stock sale tax, 0.1425% entry and exit commissions, 0.05% FX friction per conversion, and terminal TWD/SGD rates of 27.50 / 24.94 / 23.00.

Net-SGD bridge	Bear	Base	Bull	Probability-weighted
Terminal SGD wealth/share	SGD 49.244953	SGD 121.256261	SGD 201.603103	**SGD 108.104330**
Entry SGD cost/share	SGD 97.219736	SGD 97.219736	SGD 97.219736	SGD 97.219736
Net-SGD annualized IRR	**-12.72%**	**4.52%**	**15.70%**	**2.15%**

CIO actionability: PASS. Base and probability-weighted net-SGD returns fail the 10% mandate hurdle and the 15% stretch hurdle; Bear loses 12.72% annually. The prior-date completed Pulse snapshot shows AVEM at 6.225% weight with 11.687% modeled Base return, EWY at 4.800% with 14.786%, and whole-portfolio expected return of 12.435%. Direct TSMC would add Taiwan, foundry, semiconductor-cycle and AI-capex overlap while trailing those references. This is a fit conclusion, not a ranking. Proposed sizing is null.

Risks, monitors and conclusion

The decisive risks are AI/HPC demand concentration, customer bargaining and internal silicon, committed capacity against uncertain utilization, overseas-fab dilution, N2/A16/A14 and advanced-packaging execution, mature-node subsidy competition, succession, export controls and Taiwan discontinuity. Exact yields, wafer ASPs, utilization, backlog, platform profit and customer contracts are not disclosed; conclusions are constrained accordingly.

The audited compounder score is **70/100**: Business Quality **69/80** and 20% Return Underwriting **1/20**. The diagnostic classification is “Buy only at lower price,” but it does not override formal ER2 PASS or CIO PASS. The red team concludes `MATERIAL_RESOLVED`: the strongest sensitivities are already represented in Bear or independently bounded by valuation evidence. The commercial moat survives. The equity thesis at TWD 2,420 does not.

No trade execution is authorized. No portfolio mutation, ranking, sizing, broker instruction, owner action or outbound message is authorized.

Appendix A - Company Primer

Taiwan Semiconductor Manufacturing Company Limited — Company Primer

Security: XTAI:2330 ordinary share (ISIN TW0002330008) **ER2 report / run:** ER2-2330-TW-20260830T000151+0800 / pulse-cio-20260830T000151+0800 **Evidence cutoff:** 2026-08-30 SGT **Latest complete quarter:** Q2 FY2026 ended 2026-06-30 **Currency:** TWD; figures are TWD millions unless stated otherwise **Valuation price anchor supplied to the wider ER2:** TWD 2,420 at the 2026-08-28 TWSE close **Scope:** Production refresh; qualitative orientation, not a trade, ranking, or sizing recommendation

1. Business overview: the manufacturing layer behind other companies' chips

Taiwan Semiconductor Manufacturing Company, or TSMC, is the world's leading pure-play semiconductor foundry. A foundry does not generally decide what a customer's chip should do. The customer — typically a fabless chip designer, an integrated device manufacturer, or a systems company designing its own silicon — supplies a circuit design. TSMC converts that design into physical chips using extraordinarily complex manufacturing processes, then supplies related mask, design-enablement, advanced-packaging, testing, engineering, and logistics services. The product ultimately sold by TSMC is therefore not a branded processor; it is reliable access to technology, capacity, yield, and an ecosystem that lets customers turn designs into volume production. TSMC reported manufacturing 12,682 products using 305 process technologies for 534 customers in 2025. [AR pp. 8-18, 100-116]

The strategic significance of the "pure-play" model is easy to miss. TSMC has committed not to design or market competing chips under its own name. This separates it from integrated competitors that both manufacture and sell semiconductor products. Customers entrust TSMC with sensitive designs and multi-year road maps; a structurally non-competing manufacturer reduces a source of channel conflict. TSMC describes technology leadership, manufacturing excellence, and customer trust as the fundamentals of the business. Those are not three independent slogans: process technology attracts ambitious designs; manufacturing performance turns those designs into usable yield and delivery; trust encourages customers to share future road maps early enough for TSMC to build capacity. [AR pp. 16-25]

Customers do not buy through a retail channel. Engagement is direct and engineering-intensive. A design can require process-design kits, electronic-design-automation flows, silicon-proven intellectual property, simulation and verification tools, mask creation, trial wafers, qualification, volume ramp, packaging, testing, and continuous yield analysis. TSMC's Open Innovation Platform connects customers with EDA, IP, design-service, cloud, memory, substrate, test, and packaging partners. The 2025 annual report lists 13 EDA partners, seven cloud partners, 37 IP partners, 29 design-center partners, eight value-chain aggregators, and 23 partners with 3D-integration expertise. These relationships reduce design friction and raise the odds of first-time silicon success, but they also make switching a leading-edge product late in development costly and risky. [AR pp. 103-116]

For accounting purposes TSMC has **one operating and reportable segment: Foundry**. Management's platform labels — high-performance computing, smartphone, IoT, automotive, digital consumer electronics, and other — are revenue dimensions inside that one segment, not separate accounting businesses. Node categories such as 2nm, 3nm, and 5nm are also technology mix, not segments. The ER2 must therefore project one Foundry segment and must not invent platform- or node-level operating profit. [QF-P2/P-Taxonomy; AR Form 20-F Note 38]

2. Revenue architecture: one segment, several economic lenses

The cleanest financial architecture is consolidated Foundry revenue and Foundry income from operations. FY2025 revenue was TWD 3,809,054 million and income from operations was TWD 1,936,092 million, a 50.8% operating margin. For the twelve months ended 2026-06-30, revenue was TWD 4,440,492 million and operating income was TWD 2,491,157 million, a 56.1% margin. Those values come from the reconciled quantitative foundation and official TSMC controls. [QF-P2/P3/P4]

Management's platform mix explains who is consuming the capacity. In FY2025, HPC represented 58% of revenue, smartphones 29%, IoT 5%, automotive 5%, digital consumer electronics 1%, and other 2%. By Q2 2026, HPC had risen to 66%, smartphone had fallen to 22%, and the remaining categories were 5%, 4%, 1%, and 2%. The mix shift is central to the current story: AI accelerators, custom AI ASICs, CPUs, networking silicon, and high-bandwidth-memory-connected systems have pushed HPC far above the historical smartphone anchor. [QF-P1; Q2MR p. 2]

Revenue lens	FY2025	Q2 FY2026	Interpretation
HPC	58%	66%	AI accelerators, server CPUs, networking, PCs, game consoles and related compute
Smartphone	29%	22%	Application processors, modems and companion chips
IoT	5%	5%	Connected and edge-compute devices, often using specialty and low-power processes
Automotive	5%	4%	Compute, connectivity, sensors, power and control silicon with long qualification cycles
Digital consumer electronics	1%	1%	Consumer devices outside the other defined platforms
Other	2%	2%	Remaining foundry applications

Technology mix shows how much value has migrated to advanced nodes. Advanced technologies, defined by TSMC as 7nm and smaller, were 74% of 2025 wafer revenue and 77% in Q2 2026. In Q2, 2nm contributed 3%, 3nm 30%, 5nm 33%, and 7nm 11%. The rest came from 16/20nm, 28nm, 40/45nm, 65nm, 90nm-0.13µm, and ≥0.15µm processes. Smaller geometries are not inherently better for every chip: power management, sensors, embedded memory, radio-frequency, display drivers, and automotive functions may favor mature or specialty processes. TSMC's breadth matters because a leading-edge system often requires several companion chips made on older nodes. [Q2MR p. 2; AR pp. 18-25]

Revenue geography is based mainly on customer headquarters rather than the location where the wafer is fabricated or ultimately consumed. North America was 75% of FY2025 revenue and 78% in Q2 2026; Asia Pacific excluding China and Japan was 8% in Q2, China 6%, Japan 4%, and Europe/Middle East/Africa 4%. This is economically meaningful — the company is strongly tied to North American chip and systems companies — but it should not be mistaken for a map of end users or factories. [AR p. 22; Q2MR p. 2]

3. How a wafer dollar becomes operating profit

TSMC's unit economics combine very high fixed costs with attractive incremental economics when demand, mix, pricing, and yield cooperate. A fab must be built and equipped before meaningful revenue arrives. The company then incurs depreciation, utilities, materials, direct labor, maintenance, and process-support costs as it runs wafers. At the consolidated level, Q2 2026 revenue of TWD 1,270.38 billion produced gross profit of TWD 860.31 billion, or a 67.7% gross margin. Operating expenses were TWD 98.98 billion, only 7.8% of revenue, including TWD 73.14 billion of R&D and TWD 25.84 billion of SG&A. Other operating income was TWD 5.27 billion, leaving operating income of TWD 766.60 billion and a 60.3% operating margin. [Q2MR pp. 1-3]

The primary gross-margin drivers are utilization, wafer pricing and product mix, process yield and cost improvement, foreign exchange, and the economics of overseas production. High utilization spreads depreciation and fab overhead over more wafers. Leading-edge ramps can initially carry low yields, high depreciation, start-up expense, and learning costs, then improve as engineering teams reduce defects and cycle time. New-node and advanced-packaging value can support higher revenue per wafer or per system, while customer-specific pricing is intended to reflect technology value and the need for a sustainable return. Mature nodes tend to face more conventional capacity competition and, in 2026, increased capacity in China. In Q2 2026, management attributed the sequential gross-margin gain chiefly to cost improvement and higher utilization, partly offset by overseas-fab dilution. [Q2MR p. 2; AR pp. 18-25]

Operating leverage is unusually powerful because R&D and selling/general functions grow more slowly than a strong revenue ramp. Q2 operating expenses increased 17.1% year over year while revenue increased 36.0%; opex fell from 9.1% to 7.8% of revenue. This does not mean R&D is dispensable. R&D is one of the mechanisms that creates future node leadership and qualified design flows. The annual report says 2025 R&D was 6.5% of revenue and that TSMC aims to make advanced processes available for volume production ahead of competitors. The resulting model is a recurring cycle: current cash flow funds R&D and fabrication assets; those assets enable future customer designs; successful ramps replenish the cash needed for the next node. [Q2MR pp. 1-3; AR pp. 98-110]

Cash generation must be judged after capital expenditure. TTM operating cash flow was TWD 2,634,679 million, capital expenditure TWD 1,491,123 million, and free cash flow TWD 1,143,556 million. Q2 alone generated TWD 783.36 billion of operating cash flow but required TWD 496.00 billion of capex. The business can produce abundant cash while simultaneously

consuming amounts that would overwhelm most companies. Its TWD 2,486,333 million net-cash position at June 2026 gives it unusual capacity to fund the cycle, but cash is not evidence that every new fab will earn the Taiwan-level return. [QF-P4/P6; Q2MR pp. 4-6]

4. Technology portfolio: node leadership and a broad specialty base

TSMC's leading-edge roadmap is the most visible moat mechanism. N2 entered high-volume manufacturing in Q4 2025 and contributed 3% of wafer revenue by Q2 2026. Inventory days rose to 87 from 80 sequentially, which management attributed primarily to the N2 ramp — a useful reminder that ramp inventory and working capital rise before all output becomes saleable revenue. N2P and A16 were scheduled for volume production in the second half of 2026. A16 combines a nanosheet transistor structure with a backside power rail aimed at designs with demanding signal routing and power-delivery requirements. A14, the next full node described in the 2025 annual report, was progressing toward volume production in 2028. TSMC also announced A13 at its April 2026 North America technology symposium; this primer treats that announcement as roadmap context, not as proven production economics. [AR pp. 8-10, 98-110; Q2MR pp. 4 and 6]

The company does more than shrink transistors. Design-technology co-optimization changes chip design and process rules together; system-technology co-optimization considers logic, memory, interconnect, power delivery, cooling, and packaging at system level. These capabilities matter because conventional transistor scaling alone no longer delivers every desired improvement in power, performance, area, and cost. The Open Innovation Platform supplies customers with validated design flows, IP, and partner interfaces. By 2025 TSMC said it had provided more than 58,000 technology files and about 4,000 process-design kits. This installed design infrastructure is a practical switching cost: customers can qualify an alternative foundry, but doing so may require redesigned libraries, interfaces, physical layout, verification, and a new learning curve. [AR pp. 20-25, 103-116]

Specialty technologies provide breadth and lifecycle durability. Radio-frequency, embedded nonvolatile memory, power management, image sensors, display, ultra-low-power logic, and automotive processes can live on mature geometries while still requiring difficult integration and reliability. These products generally lack the headline pricing of the newest node, but they diversify the manufacturing base and can remain in production for many years. The risk is that mature-node economics face more capacity competition and more substitutable supply than frontier logic. [AR pp. 18-25, 98-110]

5. Advanced packaging: the foundry boundary expands to the system

AI compute increasingly depends on integrating very large logic dies, chiplets, and stacks of high-bandwidth memory. That turns advanced packaging from an outsourced final step into part of system performance. TSMC's 3DFabric family spans front-end 3D stacking and back-end packaging. SoIC provides dense die-to-die vertical connections; CoWoS connects one or more compute dies with HBM through an interposer and substrate; InFO serves integrated mobile and other applications; and COUPE targets silicon-photonics integration for high-speed, lower-power links. [AR pp. 100-110]

CoWoS is especially important for AI accelerators because compute throughput is constrained by memory bandwidth, package size, interconnect density, and power delivery as much as by transistor count. TSMC said CoWoS demand had grown strongly since 2023, that 3.5-reticle CoWoS-L was in production, and that 5.5-reticle CoWoS-L qualification was targeted for 2026. It also reported 3nm SoIC stacking entering volume production in 2025. These offerings can deepen customer dependence on TSMC's system integration and pull through leading-edge wafer demand. [AR pp. 100-110]

The investment case must also respect the constraints. Packaging requires separate tools, substrates, HBM from memory suppliers, testing, and yield management across several components. A shortage in one link can limit completed-system shipments even if front-end wafer capacity is available. Advanced packaging adds revenue and strategic importance, but no separately disclosed platform or packaging segment profit exists; the ER2 must not assign a fabricated margin. [QF-P2/P-Taxonomy; AR pp. 100-116]

6. Competitive landscape

TSMC competes on a bundle: process performance, power, density, yield, capacity scale, delivery reliability, design enablement, IP and EDA readiness, packaging breadth, geographic options, security of customer information, and total cost. At the leading edge, the relevant alternatives include Samsung Foundry and Intel Foundry. In mature and specialty technologies, GlobalFoundries, UMC, SMIC, Samsung, and other regional foundries compete for more portions of the market. Integrated device manufacturers can also internalize manufacturing. The companies are not interchangeable: node names do not guarantee equivalent density, performance, yield, design rules, capacity, or economics.

TSMC's own "Foundry 2.0" definition includes foundry manufacturing plus packaging, testing, mask-making, and related services, as well as the non-memory manufacturing of integrated device makers. On this wider, issuer-defined basis, TSMC estimated a US$305 billion market in 2025 and a 40% share, up from 34% in 2024. This is useful directional context but not an independent market-share audit; the definition deliberately expands beyond the conventional pure-play foundry market. [AR pp. 18-24]

The durable advantage is less a single-node lead than a reinforcement loop. A large customer base and early road-map discussions support capacity planning. Large R&D and capex budgets support process and manufacturing improvement. Strong yield and scale attract high-volume designs. Those designs generate manufacturing learning and cash. The partner ecosystem lowers design risk. The promise not to compete with customers supports trust. A rival can contest one element, but matching the complete loop is harder. Conversely, if TSMC were to lose yield leadership, miss a node, constrain packaging capacity, or mishandle customer trust, the loop could weaken quickly because customers have strong incentives to create second sources where technically and economically possible. [AR pp. 16-25, 98-116, 142-153]

7. Capital cycle and capacity discipline

Semiconductor demand is cyclical, but leading-edge capacity decisions must be made years in advance. TSMC says it plans capacity with customers and customers' customers, anchored to structural demand rather than one quarter's orders. In 2025 it shipped 15.0 million 12-inch-equivalent wafers, up from 12.9 million in 2024; it expected 16-17 million in 2026. Q2 2026 shipments were 4.336 million 12-inch-equivalent wafers, up 16.6% year over year. [AR pp. 8-10; Q2 presentation p. 4]

This model creates both operating leverage and forecast risk. If demand arrives, installed capacity can produce very high incremental profit. If customers delay products, reduce orders, digest inventory, or switch sourcing, depreciation continues. The present AI expansion also raises the risk of synchronized investment across the supply chain. TSMC's net cash, customer engagement, and broad platform base reduce funding risk, but they do not eliminate the possibility of underutilized assets or lower pricing after a capacity build. Mature-node capacity growth in China is a distinct pressure, while frontier nodes face execution and yield risk rather than simple commodity oversupply. [AR pp. 18-25, 142-153]

8. Geographic diversification and geopolitics

Taiwan remains the center of TSMC's leading-edge manufacturing and advanced packaging. The company is building multiple N2 phases in Hsinchu and Kaohsiung and expanding advanced-packaging capacity in Taiwan. This concentration creates exceptional cluster economics — dense suppliers, skilled engineers, operational experience, and rapid problem-solving — but it also leaves investors exposed to cross-Strait conflict, blockade, earthquake, water, power, and policy risk. These are not risks that a probability estimate can make disappear. [AR pp. 8-18, 132-153]

The overseas strategy offers partial geographic flexibility. Arizona Fab 1 began 4nm volume production in Q4 2024; Fab 2 was being accelerated toward high-volume manufacturing in the second half of 2027 for 3nm and more advanced technologies; Fab 3 construction began in 2025. TSMC also described plans for three additional U.S. fabs, two advanced-packaging facilities, and a major R&D center, subject to execution and support. JASM's first Kumamoto fab began production at the end of 2024; the second fab plan expanded toward technologies including 3nm. Dresden is aimed at 28/22nm planar and 16/12nm FinFET technologies for automotive and industrial customers. [AR pp. 8-18]

Diversification is not a free hedge. Overseas fabs have higher costs and diluted Q2 gross margin. Local supply chains and talent pools must be developed, and process consistency must be maintained across sites. Government subsidies may offset part of the economics but add policy and compliance dependencies. A geographically distributed network can reduce some single-site operational risks and satisfy customer demand for local supply; it cannot rapidly duplicate Taiwan's full ecosystem or eliminate the geopolitical exposure of Taiwan-resident leading-edge and packaging capacity. [Q2MR p. 2; AR pp. 132-153]

Export controls and trade fragmentation matter on both sides of the income statement. Rules can restrict TSMC's ability to serve certain customers or ship particular technologies, and on-shoring policies can raise costs. The 2025 annual report explicitly describes de-globalization, tariffs, export restrictions, and protectionism as drivers of higher operating costs, compliance complexity, supply-chain inefficiency, and lost opportunities. It also notes that customer-directed export controls could reduce or prevent sales. [AR pp. 132-153]

9. Customer concentration and purchasing power

TSMC serves hundreds of customers, but revenue is concentrated. The ten largest customers generated approximately 70%, 76%, and 78% of revenue in 2023, 2024, and 2025. The largest customer represented 25%, 22%, and 19%; the second largest represented 11%, 12%, and 17%. In FY2025 the two customers above the 10% disclosure threshold contributed TWD

726,974 million and TWD 645,179 million, respectively. TSMC does not name them in the disclosure. [AR pp. 114-116, 147-148]

Concentration cuts two ways. Very large customers can fill leading-edge fabs, share product road maps, and justify accelerated technology investment. A customer's migration to a new node can create a steep, profitable ramp. Yet customer bargaining power, product cycles, inventory decisions, insourcing, dual-sourcing, and regulatory restrictions can cause large revenue swings. The rise of systems companies designing proprietary AI silicon broadens the direct customer opportunity, but can also concentrate demand in a small group capable of funding advanced designs. The correct conclusion is therefore nuanced: TSMC has broad product diversity, but not low customer concentration. [AR pp. 114-116, 147-148]

10. Management, governance, and culture

Chairman and CEO C.C. Wei combines the two roles. The annual report argues that the combined role improves alignment and execution in a fast-moving industry; seven of ten directors were independent, providing board oversight. Combining the roles increases key-person and governance concentration, so investors should monitor succession, board challenge, capital allocation, and the depth of the operating team rather than treating board independence as a complete offset. [AR pp. 26-52]

TSMC's stated core values are integrity, commitment, innovation, and customer trust. The operating culture is associated with disciplined capital allocation, continuous improvement, yield learning, and intense customer service. In 2025 the company employed 90,557 people and had formal town halls, labor-management meetings, employee surveys, whistleblower channels, and a "culture refresh" program that had conducted more than 500 workshops globally. Management and critical-talent compensation includes restricted stock and a long-term incentive program, with performance links to shareholder return and ESG outcomes. [AR pp. 38-52, 118-131]

Culture is an asset only if it transfers internationally. Arizona, Japan, and Germany must reproduce manufacturing discipline while hiring locally and adapting to different labor markets. The annual report acknowledges challenges from cultural differences, geographic distance, employment practices, and talent recruitment. The overseas expansion is therefore not just a construction problem; it is a test of whether tacit process knowledge, escalation norms, and continuous-improvement behavior can scale across regions. [AR pp. 118-153]

11. Moat mechanisms and their limits

The moat rests on six connected mechanisms:

- **Technology cadence.** Repeated delivery of advanced nodes and enhancements lets customers plan multi-generation products around TSMC.
- **Manufacturing learning.** High volume produces defect, yield, cycle-time, and reliability data that can improve process economics.
- **Scale and capital access.** Strong cash generation and net cash support investments across logic, specialty, and packaging.
- **Design ecosystem.** PDKs, IP, EDA flows, partner certifications, and engineering support lower tape-out risk and embed TSMC in customer development.
- **Pure-play trust.** The commitment not to sell competing chips encourages customers to share sensitive designs and road maps.
- **Breadth and integration.** Leading-edge logic, specialty technologies, and 3DFabric packaging allow system-level co-optimization and a larger share of customer value.

None is permanent. Technology transitions can fail; yield can disappoint; competitors can improve; customers can redesign for alternate manufacturing; government support can accelerate rival capacity; and the economics of an overseas footprint can lower returns. The moat should be underwritten as a renewable capability that requires sustained R&D, capex, execution, and trust — not as an unchanging market-share entitlement.

12. AI impact: powerful demand driver, larger bottleneck surface

AI is currently both a revenue accelerator and a stress test. HPC reached 66% of Q2 2026 revenue, and TSMC guided 2026 revenue to grow slightly above 40% in U.S.-dollar terms. Management attributes demand to consumer, enterprise, and

sovereign AI, as well as rising computation across devices. AI accelerators and custom ASICs tend to consume advanced logic, large dies or chiplets, sophisticated packaging, HBM integration, and networking silicon. This gives TSMC several monetization points rather than only wafer starts. [Q2 presentation pp. 9-10; AR pp. 8-25]

The risk is that AI demand is capital-intensive and concentrated. Forecasts can double-count end demand across chip designers, cloud customers, power infrastructure, and suppliers. A small number of customers can change accelerator architectures or defer deployments. Packaging, HBM, substrates, power, and data-center construction can become bottlenecks. Customers may seek second sources or design more functions internally. At the same time, AI improves TSMC's own manufacturing: the company describes AI-enabled dispatching, automated defect detection, statistical process control, and operational analytics. The balanced view is that AI expands TSMC's addressable value and reinforces the need for advanced process and packaging, while also increasing concentration, capacity-timing, and execution risk. [AR pp. 108-116, 132-153]

13. Key risks to carry into the underwriting

- **Taiwan geopolitical tail risk:** a conflict, blockade, sanctions escalation, or severe cross-Strait disruption could overwhelm ordinary diversification assumptions.
- **Technology or yield miss:** a delayed node, inferior power/performance/cost, quality problem, or slow yield ramp could shift important designs and impair utilization.
- **AI-cycle reversal:** the current HPC mix and capacity plan are increasingly exposed to a concentrated AI investment cycle.
- **Customer concentration:** two customers represented 36% of FY2025 revenue, while the top ten represented 78%.
- **Overseas-fab economics:** higher labor, construction, supply-chain, and start-up costs can dilute margins even if diversification succeeds operationally.
- **Capital intensity and cyclicality:** depreciation and fixed fab costs continue when demand pauses; free cash flow can fall despite healthy accounting profit.
- **Advanced-packaging constraints:** substrates, HBM, tools, yield, testing, or customer qualification can cap completed-system output.
- **Mature-node competition:** increased capacity, particularly in China, can pressure utilization and price in less differentiated processes.
- **Export controls and fragmentation:** regulations can block customers, technologies, equipment, or materials and force inefficient localization.
- **Supply concentration:** key tools, wafers, gases, chemicals, photoresist, energy, and water can be single-source or regionally constrained.
- **Talent and cultural transfer:** global expansion requires scarce engineers and the reproduction of Taiwan's operating discipline across new labor environments.
- **Environmental constraints:** leading-edge manufacturing is energy-, water-, and materials-intensive; renewable-energy scarcity and emissions rules can raise cost or limit expansion.
- **Cybersecurity and intellectual property:** customer designs and process know-how are strategic targets; an incident could interrupt production and damage trust.
- **Foreign-exchange translation:** much revenue is linked to U.S.-dollar customer economics while costs and reporting are substantially in TWD; currency moves affect margin.

14. What to monitor

The most informative operating markers are advanced-node mix and ramp yield, Q2's initial 2nm contribution and subsequent N2/A16 progress, HPC versus smartphone mix, wafer shipments and utilization, gross-margin bridges including overseas dilution, capex versus operating cash flow, advanced-packaging qualification and capacity, customer concentration, inventory days, Arizona/Japan/Germany milestones, and the pace at which revenue growth converts to free cash flow. For the Production ER2, every financial projection should remain at the single Foundry-segment level and use the sealed statutory

bridge; platform and node assumptions may explain growth but cannot create unsupported P&L lines.

Source register and evidence discipline

- **[QF]** `C:\Users\Admin\OneDrive\GPT\ER 2.0\Taiwan Semiconductor Manufacturing Company\quant_foundation.md`, reconciled 2026-08-30 quantitative foundation. It is the controlling source for every financial figure in this primer. QF reconciliation: 8/8 passed. Sealed quote SHA256: `238ea5f54f89680f2743513b4a5e30c0fdcc453df20745f473879666a6492453`. Sealed statutory-bridge SHA256: `1d6c522fb7d1ec7f58c87043e87893756ca524834bf95fd2d36e4bc35e9374e1`.
- **[QFR]** `C:\Users\Admin\OneDrive\GPT\ER 2.0\Taiwan Semiconductor Manufacturing Company\quant_foundation_review.md`, independent 9/9 review cleared for Wave 1.
- **[AR]** TSMC, *2025 Annual Report*, filed/published in 2026 and live-fetched for this run: <https://investor.tsmc.com/sites/ir/annual-report/2025/2025%20TSMC%20Annual%20Report.E.pdf>.
- **[20-F]** TSMC, *2025 Form 20-F*, particularly Note 38 for the single Foundry operating segment: <https://investor.tsmc.com/sites/ir/sec-filings/2025_20F%20Report.pdf>.
- **[Q2MR]** TSMC, Q2 2026 Management Report, official quarterly-results publication dated 2026-07-16: <https://investor.tsmc.com/english/quarterly-results/2026/q2>.
- **[Q2 presentation]** TSMC, Q2 2026 Earnings Conference presentation and outlook, official quarterly-results publication dated 2026-07-16: <https://investor.tsmc.com/english/quarterly-results/2026/q2>.
- **[Competitor context]** GlobalFoundries' live official technology-platform catalogue was checked to confirm the distinct mature/specialty competitive axis: <https://gf.com/technology-platforms/>. No competitor-provided financial number enters this primer.

All official TSMC documents above were fetched live in the current run and archived under `C:\Users\Admin\OneDrive\GPT\ER 2.0\Taiwan Semiconductor Manufacturing Company\raw\pulse-cio-20260830T000151+0800\qf_live`. The pre-existing `data_package.md` was deliberately **not consumed**, because Agent D was rebuilding it concurrently. No warehouse cache or prior ER2 report was used as evidence. Where TSMC supplies an issuer-defined market estimate, this primer labels it as such; unsupported platform/node profit remains unavailable rather than inferred.

Appendix M - Management Assessment

Taiwan Semiconductor Manufacturing Company Limited — Management Assessment

Production ER2 / Management Agent M Security: XTAI:2330 ordinary share / TWD **Report ID:** `ER2-2330-TW-20260830T000151+0800` **Assessment date:** 2026-08-30 **Primary conclusion: Management gate PASS**, with close monitoring of overseas-capital returns, AI capacity discipline, and succession below the chairman/CEO.

Executive assessment

TSMC is run by a long-tenured operating team whose record is unusually measurable: under C.C. Wei's CEO tenure, the company preserved its pure-play foundry neutrality, increased revenue from TWD1.587 trillion in FY2021 to TWD3.809 trillion in FY2025, lifted operating income from TWD650 billion to TWD1.936 trillion, and kept diluted shares essentially flat near 25.93 billion. Management did this through an industry downturn in 2023, a rapid AI-led reacceleration, repeated leading-edge transitions, and a major geographic expansion. FY2025 ROIC was 52.3% under the ER2 definition, while the business held net cash rather than relying on acquisition leverage. Those outcomes are strong evidence of stewardship rather than merely favorable rhetoric.

The team also clears the truth-telling test. Across eight live-fetched calls from Q3 2024 through Q2 2026, management routinely gave numerical revenue, gross-margin, operating-margin, capital-spending, node-ramp, and overseas-fab-dilution anchors. Actual revenue was at or above guidance in every checked quarter, usually accompanied by an explicit bridge. C.C. Wei acknowledged that aggregating aggressive customer forecasts can overstate true demand and described the company's top-down, bottom-up and customer-customer checks. Wendell Huang quantified rather than obscured the costs of N2 start-up and offshore fabs. That candor does not guarantee that the current AI capital cycle is correctly sized, but it makes the risk governable.

The reservations are bounded but real. Wei combines chairman and CEO roles and, at age 71-75 in the FY2025 annual report, creates succession concentration. The 2026 capital budget rose from USD52-56 billion to USD60-64 billion, while the Arizona commitment expanded by USD100 billion. Both can erode per-share economics if AI demand or subsidies disappoint. Seven of ten directors are independent, but demonstrated succession depth remains essential. The record earns PASS because capital deployment produced high returns through a hard cycle, controls are clean, and dilution and M&A were restrained.

1. Who is running the company

Role	Leader	Tenure and relevant background	Stewardship relevance
Chairman and CEO	C.C. Wei	Joined TSMC in 1998; CEO from June 2018; chairman and CEO from June 2024; previously co-CEO, COO, business-development and operations leader	Owns the pure-play strategy, leading-edge roadmap, AI capacity decisions and global expansion
Senior VP and CFO / spokesperson	Wendell Huang	Joined TSMC in May 1999; CFO from September 2019; previously deputy CFO and senior finance director; earlier corporate-finance roles at ING Barings, Chase and Bankers Trust	Owns capital budget, balance sheet, dividend framing, margin bridges and external financial disclosure
EVP and co-COO, operations	Y.P. Chyn	Joined in 1987; co-COO from March 2024; formerly led operations, overseas operations and product development	Provides manufacturing continuity and execution depth
EVP and co-COO, R&D	Y.J. Mii	Joined in 1994; co-COO from March 2024; formerly head of R&D and technology development	Provides technology-roadmap and succession depth
Deputy co-COO / CISO	Cliff Hou	Joined in 1997; long experience in technology development, design platform and global R&D	Integrates engineering ecosystem and operating risk
Deputy co-COO, sales / business development	Kevin Zhang	Joined in 2016 after senior Intel technology/manufacturing experience	Connects customer road maps to capacity decisions

Role	Leader	Tenure and relevant background	Stewardship relevance
General counsel / governance officer	Sylvia Fang	Joined in 1995; senior VP, general counsel and designated corporate-governance officer	Independent-process and compliance counterweight inside management

This is not a recently assembled team. The CEO, CFO, two co-COOs and general counsel have deep TSMC tenure. The 2024 co-COO appointments, four technical promotions in February 2026, and the compensation committee's 2025 succession discussion demonstrate bench-building.

Board oversight is credible but not perfect. The ten-member board has seven independent directors. Sir Peter Bonfield chairs the Audit and Risk Committee, whose seven voting members are all independent; Michael Splinter chairs the Compensation and People Development Committee; and Chuan Lin chairs the Nominating, Corporate Governance and Sustainability Committee. All committee members attended all disclosed 2025 meetings. No formal “lead independent director” title was identified for TSMC, so Bonfield's audit chair and Lin's nominating chair are the practical accountability centers. Wei's combined chair/CEO role is the largest structural weakness. TSMC argues that combination improves speed and alignment, but it also places agenda-setting and executive authority in one person.

2. Tenure, decisions and track record

Wei has been CEO long enough to own the strategy and its consequences. Three decisions dominate his record.

First, management continued high-intensity investment in advanced processes and packaging instead of harvesting a temporary monopoly rent. Five-year capex totaled TWD5.117 trillion and R&D TWD0.921 trillion. Advanced technologies rose to 74% of FY2025 wafer revenue and 77% in Q2 2026; N2 entered high-volume manufacturing in Q4 2025 and reached 3% of Q2 wafer revenue. Revenue grew 140% from FY2021 to FY2025 and operating income almost tripled, while FY2025 operating margin reached 50.8%. This is evidence that the investment converted to profit rather than only capacity.

Second, Wei preserved pure-play neutrality while extending “Foundry 2.0” into advanced packaging and system integration. TSMC has not responded to customer success by designing competing merchant chips. That restraint is culturally important: customers can share multi-year product road maps with a supplier that is not also a product rival. HPC rose to 66% of Q2 2026 revenue, but management continues to support smartphone, automotive, IoT and specialty technologies. The strategic extension is coherent with customer trust rather than a pivot away from it.

Third, management undertook geographic diversification through Arizona, Japan and Germany while keeping Taiwan at the center of advanced investment. This is strategically defensible because customers seek geographic flexibility and governments provide support. It is not yet a fully proven financial success. Management has disclosed that offshore fabs initially dilute consolidated gross margin by roughly 2-3 percentage points, potentially 3-4 points later as more sites ramp. Arizona's first fab ramped later than the earliest plan, and local labor, supply-chain and scale disadvantages remain. The correct grade here is “promising, transparently costly, not yet seasoned,” not victory.

The clearest counterexample to flawless execution is the 2023 semiconductor correction. Revenue declined 4.5%, operating margin fell from 49.5% to 42.6%, and free cash flow fell to TWD292 billion. Management did not attempt a leveraged acquisition or sustain peak spending mechanically: capex fell from TWD1.090 trillion in 2022 to TWD950 billion in 2023 and remained near TWD956 billion in 2024 before rising with advanced-node demand in 2025. It kept R&D rising from TWD163 billion to TWD182 billion, preserving the technology cadence. That mix—flexing capacity spend while protecting development—was the right response to a hard cycle.

3. Capital allocation behavior

TWD billions	FY2021	FY2022	FY2023	FY2024	FY2025
Capital expenditure	849.4	1,089.6	949.8	956.0	1,272.4
R&D expense	124.7	163.3	182.4	204.2	246.4
Dividends paid	265.8	285.2	291.7	363.1	466.8
Share repurchases	0.0	0.9	0.0	3.1	0.0
Acquisition cash outflow	0.0	0.0	0.0	0.0	0.0

The pattern matches the stated strategy: technology and capacity first, a steadily rising cash dividend second, and neither empire-building M&A nor valuation-insensitive buybacks. Buybacks have been immaterial and appear related to employee-share administration rather than a recurring capital-return program. That is reasonable for an enterprise whose

economic moat must be renewed with engineering and fabrication assets, provided management continues to demand a sustainable return from pricing.

Shareholder distributions are conservative but improving. TSMC paid about TWD467 billion and TWD18 per share for 2025; management stated that shareholders will receive TWD24 per share in 2026, up 33%, and expects another increase in 2027. Dividends are the principal cash return. Management has not stretched the balance sheet to maximize them: at June 2026, cash and marketable securities exceeded interest-bearing debt by TWD2.486 trillion. This protects the technology plan and is appropriate given geopolitical and cyclical tail risks.

The new load-bearing question is capacity discipline. In six months, the 2026 capital budget moved from USD52-56 billion to USD60-64 billion. Wei explained that the company evaluates both customers and their cloud-provider customers, checks data-center construction, and discounts aggregate forecasts because each customer is individually aggressive. This is a sophisticated process, but it cannot eliminate correlated optimism across the AI ecosystem. The PASS therefore depends on future evidence that N2, A16, A14 and packaging utilization convert the spending to free cash flow, not merely revenue.

4. Compensation, ownership and dilution

Executive pay is predominantly variable and governed by the independent Compensation and People Development Committee. The structure includes base salary, quarterly business bonuses, annual profit sharing, three-year restricted stock awards, and—from 2025—an annual long-term incentive plan. Performance measures include revenue growth, gross margin, return on equity, relative TSR against a peer group, individual performance and ESG outcomes. A formal clawback policy has applied since 2023.

Alignment is good, though not ideal. ROE and gross margin matter, but an explicit ROIC or free-cash-flow-per-share metric would better police the current capital cycle. Relative TSR can reward multiple expansion, and revenue growth can reward scale. The committee should preserve a strong return-on-capital modifier as overseas investments mature. It is positive that executive officers cannot determine their own final awards without committee and board approval, although the chairman/CEO recommends award allocation among vice presidents before committee review.

Wei owned 7.217 million ordinary shares directly at the annual-report cut-off, plus 0.700 million held by spouse/minors, approximately 0.03% in aggregate; Huang owned 1.771 million. These percentages are small because TSMC is enormous, but the absolute holdings are meaningful. Corporate shareholding guidelines require the chairman and CEO to hold shares worth 18 times annual base salary, Taiwan officers nine times, and overseas officers three times, reached within three years and maintained while employed. No executive stock options were outstanding as of March 18, 2026; unvested restricted awards are excluded from disclosed direct holdings.

Dilution has been disciplined. Diluted weighted-average shares were 25.930 billion in FY2021 and 25.931 billion in FY2025—effectively flat. The current filing reports equity- and cash-settled share-based-payment expense of about TWD0.54 billion in 2023, TWD1.65 billion in 2024 and TWD1.55 billion in 2025, only about 0.03%, 0.06% and 0.04% of revenue. A complete five-year expense series was not assembled in the current data package, so no unsupported five-year ratio is asserted; the share-count bridge is the controlling anti-dilution evidence.

5. Disclosure quality, guidance credibility and candor

Eight live call records—from Q3 2024 through Q2 2026—show a consistent disclosure template and high numerical density. Each quarter includes current-quarter revenue, gross-margin and operating-margin ranges, exchange-rate assumptions, node and platform mix, balance-sheet and cash-flow data, and specific margin puts and takes. This is stronger than a narrative-only disclosure culture, although TSMC does not disclose backlog, book-to-bill, utilization percentages, customer names, platform profit or node margins.

Call period	Evidence of discipline or candor	Assessment
Q3 2024	Revenue above guidance; gross margin 230 bps above the prior high end; disclosed 2-3 point offshore-fab dilution and electricity-cost pressure	Direct, quantified
Q4 2024	Called 2024 a mixed recovery; separated strong AI from mild non-AI recovery; gave 2025 outlook and capex range	Balanced rather than promotional
Q1 2025	Revenue slightly above midpoint despite earthquake; quantified earthquake and offshore effects; discussed tariff uncertainty	Owned external and operational effects

Call period	Evidence of discipline or candor	Assessment
Q2 2025	Revenue exceeded guidance; retained caution on tariff-sensitive consumer markets even as AI remained robust	Did not erase downside narrative
Q3 2025	Revenue slightly above guidance; said non-AI had only a mild recovery; raised full-year growth toward mid-30s	Prepared raise supported by current results
Q4 2025	Revenue slightly ahead; FY2025 USD revenue growth ended at 35.9%; publicly examined whether AI demand was real before committing USD52-56bn	Strong capital-risk candor
Q1 2026	Revenue slightly above guidance; raised FY2026 growth above 30% while flagging component and macro pressures	Numerical raise with counterweights
Q2 2026	Revenue at high end; raised FY2026 growth slightly above 40% and capex to USD60-64bn; explicitly said summed customer forecasts are not necessarily truth	Candid, but the raised spend increases execution burden

Management generally answers difficult questions directly. On offshore economics, Huang confirmed lower initial profitability and gave multi-year dilution ranges. On pricing, Wei explained that pricing must fund sustainable expansion without damaging customers. On AI-cycle risk, he discussed validation with cloud providers and acknowledged his own nervousness because TSMC bears the capital. On competition, he named Samsung and a government-supported U.S. competitor, then argued that technology, manufacturing quality and customer trust—not subsidies alone—control design wins. The weakness is that certain commercially sensitive metrics remain unavailable, and precise five-year demand guidance is sometimes withheld. Those are reasonable boundaries, not evidence of systematic evasion.

6. Strategic coherence and culture

Management's purpose is stable: remain the trusted technology-and-capacity provider for global logic. R&D has risen every year; capex follows demand and node transitions; packaging extends customer value without merchant-chip competition; and global fabs address resilience. There is no sequence of unrelated pivots.

Culture is a genuine asset because foundry manufacturing depends on thousands of daily yield, quality and cycle-time decisions. TSMC anchors that culture in integrity, commitment, innovation and customer trust. In 2025 it had 90,557 employees, more than 500 “culture refresh” workshops, employee surveys and multiple whistleblower channels. The operating test now is whether those norms transfer to Arizona, Japan and Germany. Cost dilution is already visible; quality, yield, retention and local-leadership depth must eventually match Taiwan. A culture that cannot travel would turn diversification into a permanent return drag.

7. Governance and minority-shareholder risks

TSMC has one ordinary-share voting class; major shareholders have the same voting rights as other shareholders. The National Development Fund held 6.38% and appointed a board representative, but no controlling shareholder or dual-class mechanism was identified. Direct government representation warrants observation given industrial-policy pressure, yet seven independent directors and dispersed ownership materially limit unilateral control.

Related-party items reviewed in 2025 mainly involved equipment sales or facility leases with subsidiaries and affiliates, capital injections to a wholly owned investment subsidiary, and an equipment sale involving a joint venture. The relevant independent director recused himself from the NXP-linked matter. These are industrial-group transactions, not evidence of value extraction, but continued committee scrutiny is required.

The FY2025 Form 20-F marks no error correction or restatement. Management and Deloitte both concluded internal control over financial reporting was effective at December 31, 2025; Deloitte issued an unqualified financial-statement and control opinion, and no material change in controls occurred during 2025. The annual report reports no material regulatory fine above TWD1 million in 2025 and no insider-trading, money-laundering, finance/accounting or antitrust complaints through company reporting channels. Two ethics cases were verified and disciplined. No material clustered insider-selling evidence was found in the current primary-source package; because a complete transaction-level 12-month trading dataset was not assembled, this is a constrained conclusion rather than proof of no sales.

8. Peer stewardship comparison

Leader / company	Directional capital-allocation and communication comparison	Five-year stewardship ranking
C.C. Wei / TSMC	Highest proven return conversion, stable strategy, strongest leading-edge execution, granular margin/capex disclosure	**1st**
Jason Wang / UMC	Credible specialty-node transformation; UMC states market value rose roughly fivefold under the prior co-president tenure; narrower technology ambition and lower capital risk	2nd, but not a leading-edge substitute
Tim Breen / GlobalFoundries	Experienced in operations and finance but CEO only since April 2025; strategy is coherent around essential and specialty semiconductors; insufficient in-seat record for a five-year CEO comparison	Provisional 3rd
Young Hyun Jun / Samsung Electronics DS	Deep memory operating record and direct oversight of Foundry, but DS leadership changed recently and integrated-device economics make foundry capital returns less transparent	Behind TSMC on foundry stewardship proof

This ranking is directional because the businesses differ. TSMC ranks first for converting leading-edge capital into margins and per-share profit while remaining neutral. UMC's specialty strategy does not test frontier-node execution; GlobalFoundries and Samsung have shorter current-role evidence, and Samsung's integrated structure obscures foundry accountability.

9. Management gate verdict

MANAGEMENT GATE: PASS. C.C. Wei and the operating team have a six-plus-year CEO record and multi-decade institutional depth, a coherent pure-play strategy, high-return capital deployment through both downturn and acceleration, essentially flat diluted shares, no material M&A dependence, clean controls and unusually quantitative disclosure. The team has protected per-share value while reinvesting at scale and has been candid about offshore-fab dilution, node-ramp costs, customer-forecast uncertainty and the risk embedded in AI capital spending. We would entrust this team with a decade-long operating mandate, subject to the non-compensating monitoring conditions below.

The PASS would move to **YELLOW** if overseas fabs remain structurally below group returns without a credible improvement path, if the AI/N2/A14 build causes multi-year free-cash-flow compression without utilization support, or if succession below Wei becomes less clear. It would move to **FAIL** if management obscures material capacity underutilization, abandons pure-play customer neutrality, tolerates sustained ROIC destruction, introduces material minority-unfriendly related-party capital allocation, or uses equity issuance to fund unproven expansion.

Required monitoring: (1) annual capex and free-cash-flow conversion versus the USD60-64 billion 2026 budget; (2) quantified Arizona/Japan/Germany yield, utilization and margin progression; (3) N2/A16/A14 schedule and customer qualification; (4) a named and credible chairman/CEO succession path supported by the co-COO bench; (5) continued flat share count and inclusion of return-on-capital discipline in executive incentives; and (6) preservation of numerical disclosure when the cycle weakens.

Source notes and evidence boundaries

- Controlling issuer sources: TSMC FY2025 Annual Report and Form 20-F, both filed/published in April 2026; official Q3 2025-Q2 2026 result packets referenced in the current ER2 data package.
- Current-run financial controls: `data_package.md` SHA-256 `5d286e1379ea7dce91c14f291533dc03cd71a91cd9d07fa8652e479db726247b`; `quant_foundation.md`; `quant_foundation_review.md`; `appendix_A_primer.md`.
- Call review: eight live FMP transcript pulls dated 2024-10-17 through 2026-07-16. The latest four align to TSMC's official sequence. Seven absent datasets were copied to the warehouse without overwrite and hash-matched; Q2 2026 was already present.
- Peer leadership was checked against current official TSMC, UMC, GlobalFoundries and Samsung leadership/IR pages on 2026-08-30.
- Evidence gaps constrain, but do not reverse, the verdict: the current package does not contain a complete five-year SBC-expense series, a transaction-level 12-month insider-selling tape, node-level profitability, or numerical fab utilization. No such figures were fabricated.

Appendix W - Moat and 2046 Durability

Taiwan Semiconductor Manufacturing Company Limited — Moat and 2046 Durability

Production ER2 / Agent W Report ID: ER2-2330-TW-20260830T000151+0800 **Security perimeter:** XTAI:2330 ordinary share, TWD **Economic perimeter:** one issuer-disclosed operating segment, **Foundry Evidence cutoff:** 2026-08-30

This appendix tests a protectable profit pool, not fame, technology headlines, or the survivability of the listed security. TSMC's moat is a renewable manufacturing system: pure-play customer neutrality attracts road maps; road maps support capacity commitments; volume generates yield learning; yield and delivery attract the next designs; cash funds process, packaging, and design-enablement leadership. The evidence supports that loop today. It does not neutralize Taiwan discontinuity risk, guarantee that every node wins, or turn mature-node capacity into a monopoly.

1. Moat taxonomy applied

Network effects — moderate, indirect, and technical. TSMC does not have a consumer network in which each additional user directly raises utility. It has an ecosystem reinforcement effect. In 2025 the Open Innovation Platform included 13 EDA, seven cloud, 37 IP, 29 design-center, eight value-chain-aggregator, and 23 3D-integration partners; TSMC had supplied more than 58,000 technology files and about 4,000 process-design kits. More qualified tools and IP lower customer tape-out risk; more designs justify further partner qualification. The loop is real but contestable because the same EDA and IP vendors support rivals.

Switching and qualification costs — strong at the leading edge, moderate elsewhere. A customer can redesign for another foundry, so lock-in is not contractual permanence. But a process design kit, standard cells, memories, analog IP, physical layout, timing closure, masks, package, reliability qualification, and yield ramp are specific to a manufacturing flow. Switching after tape-out can delay a product cycle and sacrifice known yield. Costs are highest for frontier logic and co-optimized advanced packaging, lower before architectural commitment, and lowest for relatively standardized mature-node products. Chiplets can permit selective second sourcing, but each die/package interface still needs validation.

Scale economies — very strong, but requiring continual reinvestment. FY2025 revenue was TWD3,809.1bn and operating income TWD1,936.1bn; TTM revenue through 2026-06-30 was TWD4,440.5bn and operating income TWD2,491.2bn. Scale spreads R&D, mask sets, process-control infrastructure, and fixed fab overhead; high-volume defects and excursions also produce learning data that a small entrant cannot purchase instantly. The other side is a heavy fixed-cost base. FY2026 capex was raised to USD60-64bn, and unused capacity can destroy rather than create scale economics.

Brand — useful only as trust in execution. The valuable brand is not consumer preference. It is the probability that a high-value design will reach volume with acceptable power, performance, yield, quality, confidentiality, and delivery. A single material data breach, quality failure, or node miss can damage that procurement trust. Brand therefore amplifies measured execution; it cannot replace it.

Regulation and subsidies — not the core moat. Export licenses, local-content rules, U.S./Japan/European subsidies, and trusted-manufacturing preferences can redirect demand and capacity. They may create local advantages or burdens, but are reversible political instruments. TSMC's durability case would be weak if it depended on subsidy protection. Its core economics predate the present subsidy cycle; overseas support partly offsets structurally higher local cost rather than creating the underlying process moat.

IP and process know-how — strong, mostly tacit. Patents matter, but the harder asset is the accumulated recipe, equipment tuning, statistical-process control, defect reduction, cycle-time discipline, and cross-functional response required to run a node at volume. High-volume learning is not fully disclosed numerically and cannot be valued as a standalone intangible. Its existence is evidenced indirectly by repeated ramps, customer breadth, and margin persistence. A competitor can buy similar lithography tools; it cannot buy TSMC's historical lot data and production routines as a turnkey package.

High-trust procurement and pure-play neutrality — strong and distinctive. TSMC generally does not design branded chips that compete with foundry customers. That lowers channel conflict versus an integrated device manufacturer and makes sharing multiyear product road maps less threatening. Trust is not exclusivity: customers rationally seek second sources and negotiate hard. Yet when customers must reveal architecture, volumes, and launch timing years ahead, structural neutrality is a protectable advantage.

2. One-segment moat and protectable profit pools

TSMC has one reportable segment, Foundry. HPC, Smartphone, IoT, Automotive, Digital Consumer Electronics, and Other are demand platforms, not profit-reporting segments; N2/N3/N5 and mature technologies are process families, not accounting segments. No platform or node margin is disclosed. Any claim that a particular platform earns a quantified margin would be fabricated.

Within Foundry, the strongest protectable pool is frontier logic plus advanced packaging. Customers pay for a combined probability of first-time silicon success, power/performance/density, yield, capacity certainty, and system integration. N2 entered high-volume manufacturing in Q4 2025 and reached 3% of Q2 2026 wafer revenue; N3, N5, and N7 together were another 74%. CoWoS, SoIC, InFO, and related 3DFabric services extend differentiation beyond the wafer when AI systems require large logic dies, chiplets, and high-bandwidth memory. Co-optimization increases both value delivered and qualification cost.

The second pool is design enablement. Qualified EDA flows, IP, design rules, cloud tools, partner interfaces, mask services, and engineering support reduce schedule and execution risk. It is less visible in reported revenue than wafer output but makes the manufacturing service more valuable. Its durability is plausibly 10-20 years if TSMC keeps pace with each architecture and packaging transition. The earliest warning is a widening gap between competitor PDK availability and TSMC ecosystem readiness, or major customers publicly validating equivalent alternatives.

The third pool is capacity certainty at scale. TSMC manufactured 12,682 products for 534 customers in 2025 and plans capacity more than five years ahead. Large customers need enough qualified output to launch globally, not merely a working test chip. The advantage is strongest while utilization, yield, and customer demand align. A rival breaks it by showing sustained, commercial, external-customer volume—not a laboratory transistor—at comparable yield, economics, and delivery.

Mature and specialty nodes have a narrower moat. Radio-frequency, embedded memory, image-sensor, power-management, automotive, and reliability-qualified processes can remain sticky for long product lives. However, generic mature logic faces broader alternatives, especially subsidized Chinese capacity. Specialty know-how and qualification can defend pockets; undifferentiated wafer capacity cannot. The blended company moat is therefore weaker than the frontier-plus-packaging core. The absence of node-level profit disclosure prevents quantifying the dilution, but advanced technologies represented 74% of FY2025 and 77% of Q2 2026 wafer revenue, showing that the differentiated core dominates current wafer mix.

3. Observed durability across cycles

The five-year statutory record contains a real downcycle and recovery rather than uninterrupted shortage economics.

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	TTM / latest
Revenue, TWD bn	1,587.4	2,263.9	2,161.7	2,894.3	3,809.1	4,440.5
Operating margin	41.0%	49.5%	42.6%	45.7%	50.8%	56.1%
Gross margin	51.6%	59.6%	54.4%	56.1%	59.9%	67.7% Q2'26
ROIC	37.8%	51.1%	32.3%	40.3%	52.3%	Not computed
Wafer shipments, m 12-inch equivalent	14.2	15.3	12.0	12.9	15.0	4.336 Q2'26

Revenue fell 4.5% and shipments fell about 22% in FY2023, yet operating margin remained 42.6% and ROIC 32.3%. That is stronger evidence than the 2022 shortage peak or 2026 AI boom alone. Margin subsequently expanded as advanced-node and HPC mix rose, utilization improved, and costs were absorbed across higher revenue. The record is only five years in the current package, not the requested full ten; therefore “ten-year margin stability” is not claimed. This is a bounded evidence limitation, not a reason to ignore the observed cycle.

The latest margins also should not be capitalized as permanent. N2 ramp dilution is expected at roughly 3-4 percentage points in second-half 2026; overseas fabs were expected to dilute gross margin by 2-3 points initially and 3-4 points later. Inventory days rose to 87 in Q2 2026 during N2 ramp, and fixed depreciation continues during demand pauses. The moat is evidenced by high through-cycle returns, not by assuming the Q2 2026 peak never reverses.

4. AI disruption stress test

Foundry is physical chokepoint economics, not a prompt-to-output workflow. A foundation model cannot fabricate, qualify, and deliver high-yield wafers. AI may accelerate layout, verification, process control, defect classification, scheduling, and recipe

search. Those tools can reduce parts of the knowledge advantage if broadly available, but they also reward the owner of the largest clean production dataset and the most experiments. TSMC can monetize AI through leading-edge logic, advanced packaging, and networking while using AI internally to improve manufacturing.

The most protected activity is qualified frontier manufacturing integrated with advanced packaging. Its constraints are atoms, tools, materials, tacit knowledge, energy, water, cycle time, and billions of dollars of capacity. The most exposed activity is routine design enablement and mask/support workflow: AI-assisted EDA could automate engineering tasks and open standards could make some chiplets easier to port. That would lower one layer of switching cost but would not eliminate physical qualification, yield, or capacity.

AI also creates adverse concentration. HPC rose from 37% of revenue in FY2021 to 58% in FY2025 and 66% in Q2 2026. A handful of hyperscalers, accelerator designers, and systems companies can change architecture, insource silicon design, reduce deployments, or demand dual sourcing. Insourcing design is not the same as insourcing a competitive foundry: it often creates a new TSMC customer. The damaging path is a customer combining internal design with a technically credible alternative fab/package flow.

Chiplets and open interfaces cut both ways. They let customers mix dies from different suppliers, potentially reducing monolithic-node lock-in. They also make packaging, interconnect, thermal control, test, and known-good-die integration more valuable. TSMC's SoIC/CoWoS stack can deepen the moat if it remains open enough to accept heterogeneous dies. It can lose share if rival packaging ecosystems become more flexible, cheaper, and equally qualified.

5. The 2046 test

Test date: 2046-08-30, exactly twenty years after 2026-08-30. A credible 2046 business description is: Taiwan Semiconductor Manufacturing Company operates a geographically distributed pure-play manufacturing and system-integration network. It sells qualified transistor platforms, specialty processes, chiplet/3D integration, photonic and memory interfaces, masks, testing, and design-enablement services to fabless semiconductor companies, systems companies, automotive/industrial manufacturers, and some integrated device makers. Process names have changed and transistor scaling alone is no longer the whole value proposition. HPC and machine-intelligence systems remain large; smartphone logic is mature; specialty and automotive products survive through long qualification lives; advanced packaging/system integration is a larger share of value. Customers still pay TSMC because the company combines neutral stewardship of sensitive road maps, production yield, cross-generation process learning, dependable capacity, and a qualified design-and-packaging ecosystem.

Directionally, a surviving 2046 TSMC should earn an operating margin below the extraordinary 56.1% June-2026 TTM level but still structurally above a commodity manufacturer. Overseas duplication, geopolitical resilience, more complex packaging, and stronger rivals raise cost. Higher system value, accumulated learning, and ecosystem breadth offset part of that pressure. No exact 2046 margin is defensible from disclosed evidence; “lower than today's peak but high-return” is the constrained conclusion.

The bear 2046 description is concrete. TSMC still exists, but several leading customers maintain portable chiplet designs across Samsung, Intel, Rapidus, or successors; government-funded fabs reserve domestic workloads; open packaging interfaces shift integration value to systems firms; Chinese capacity depresses mature-node returns; and costly overseas duplication prevents consolidated scale from translating into margins. A missed process generation or advanced-packaging bottleneck starts the flywheel in reverse: fewer flagship designs reduce learning and cash, which weakens the next investment cycle. The probability is meaningful but not the base case because a rival must sustain external-customer yield, ecosystem readiness, confidentiality, capacity, and economics simultaneously across generations.

There is a separate security-survival bear case: blockade, conflict, sanctions, or catastrophic disruption disables Taiwan-centered leading-edge and packaging capacity before overseas sites reproduce the cluster. That can impair or destroy shareholder wealth even if customers still prefer TSMC technology. It is not evidence that the commercial moat was false. This report therefore grants a moat gate without claiming that the listed security is geopolitically invulnerable.

6. Competitive threat inventory

Threat	Mechanism	Foundry activity affected	Earliest observable signal	Plausibility
Samsung / Intel frontier catch-up	Comparable power, performance, yield, capacity and external-customer ecosystem	Leading-edge logic and packaging	Flagship external designs ship at volume for two generations; TSMC advanced-node mix or margins fall	Medium

Threat	Mechanism	Foundry activity affected	Earliest observable signal	Plausibility
SMIC / Chinese subsidized expansion	Excess mature capacity and local procurement compress price and utilization	Mature and selected specialty nodes	Persistent mature-node utilization/price weakness; China revenue and specialty margins deteriorate	High for mature nodes; low near-term frontier
Customer portability / dual sourcing	Chiplets, open interfaces, and early multi-foundry design reduce qualification lock-in	Leading edge, packaging, design enablement	Major customers validate equivalent dies/packages at a second foundry before tape-out	Medium
Rapidus / sovereign capacity	Subsidized 2nm ambitions trade efficiency for supply sovereignty	Japanese and policy-sensitive leading edge	2027+ commercial volume with repeat customers, competitive yield, and qualified IP	Low-to-medium
Overseas cost and Taiwan discontinuity	Cluster duplication dilutes returns; severe disruption interrupts core capacity	Entire Foundry segment	Overseas dilution exceeds guidance; Taiwan capacity share remains critical as tensions rise	High cost drag / low-frequency severe discontinuity

These rivals are credible, not rhetorical. Intel stated that 18A entered production in 2025 and 18A-P entered risk production in 2026, while its 14A program is engaging lead customers and integrating advanced packaging. Rapidus reports an operating pilot line, working 2nm GAA transistors, and a 2027 mass-production goal. Samsung has publicly emphasized stabilizing 2nm GAA while earlier foundry profit suffered from low utilization and high R&D. Those announcements prove technical effort and policy support, not parity in external-customer yield or economics. [Intel official, 2026](https://newsroom.intel.com/intel-foundry/intel-foundry-details-process-milestones-and-future-innovation-at-vlsi-symposium); [Rapidus official](https://www.rapidus.inc/en/about/); [Samsung official FY2024 results](https://news.samsung.com/global/samsung-electronics-announces-fourth-quarter-and-fy-2024-results)

7. Pricing power verification

TSMC does not disclose a clean wafer-ASP series, customer churn, take-or-pay volumes, contract escalators, or platform/node profit. It would be overreach to claim demonstrated contractual pricing power from those unavailable fields. Management says pricing aims to reflect technology value and a sustainable return, but assertion is weaker than disclosed contract economics.

Observable outcomes provide indirect evidence. Gross margin stayed above 51% in each of FY2021-FY2025, operating margin remained above 40%, and margins recovered after the 2023 shipment contraction while advanced-node mix rose. Q2 2026 gross margin reached 67.7% even with rising overseas cost, although favorable utilization, mix, cost improvement, and foreign exchange are inseparable from price. Customer breadth remained 534 in FY2025, product breadth 12,682, and advanced-node share rose without an observed collapse in margins. This supports value capture but cannot tell how much came from list-price increases versus mix and utilization.

Pricing power is strongest where a requalification delay costs more than a wafer-price concession: frontier products near launch and co-optimized packaging. It is weakest in excess mature-node capacity. The correct verdict is **observable economic pricing power, incomplete contractual verification**. Downgrade signals are margin compression despite healthy utilization and favorable mix, customers qualifying substitutes before flagship ramps, or mature-node price pressure spreading into specialty platforms.

8. Verdict and monitoring contract

Moat gate: PASS. The protectable profit pool is specific and observable: pure-play trust, high-volume yield learning, scale-funded process cadence, capacity certainty, qualified design infrastructure, and leading-edge/advanced-packaging co-optimization. The FY2023 downcycle preserved a 42.6% operating margin and 32.3% ROIC, and the differentiated core represented 77% of Q2 2026 wafer revenue. Mature nodes are less defensible, customer concentration is high, and numerical pricing decomposition is not disclosed, but those constraints do not erase the dominant core.

2046 test: PASS. A specific 2046 customer, product, and profit mechanism can be described without assuming that today's node names persist: customers still pay a neutral manufacturing integrator for yield, capacity, qualification, process/packaging learning, and road-map confidentiality. The expected 2046 margin direction is lower than today's AI-cycle peak but still high-return. This PASS addresses commercial moat survival, not security survival under a Taiwan discontinuity.

Monitorable threats: (1) two consecutive generations of rival external-customer volume at competitive yield; (2) major-customer pre-tape-out dual-source qualification and rising top-two bargaining power; (3) advanced-node share, operating margin, or ROIC deteriorating outside a normal utilization cycle; (4) overseas dilution persistently exceeding the

disclosed 3-4-point later-stage range; (5) chiplet/package standards shifting integration value away from TSMC; and (6) mature-node oversupply spilling into specialty economics. A combination of lost flagship ramps and impaired reinvestment economics would downgrade the moat; a single soft quarter would not.

Source and evidence notes

Controlling financial, segment, concentration, node, platform, and margin evidence comes from the current-run `data_package.md` (post-DR SHA-256 `5d286e1379ea7dce91c14f291533dc03cd71a91cd9d07fa8652e479db726247b`), which ties to TSMC's FY2025 Form 20-F/annual report and official Q3'25-Q2'26 reports. `appendix_A_primer.md` supplied orientation only. Platform/node profit, utilization percentage, consolidated ASP, churn, contract escalators, backlog, customer names, and precise yield are true non-disclosures and were not invented. Competitor claims are used only as threat evidence, not as proof of commercially equivalent output.

Appendix B1 - Foundry

Appendix B — Foundry Segment Deep Dive

Company: Taiwan Semiconductor Manufacturing Company Limited **Security:** XTAI:2330 ordinary share; ISIN TW0002330008; TWD **ER2 run / report:** `pulse-cio-20260830T000151+0800` / `ER2-2330-TW-20260830T000151+0800` **Mode:** Production **Evidence cutoff:** 2026-08-30 SGT **Stage 0:** latest reported quarter Q2 FY2026 ended 2026-06-30; TTM is Q3 FY2025 + Q4 FY2025 + Q1 FY2026 + Q2 FY2026, ended 2026-06-30; exact endpoint 2031-06-30; exact horizon 5.0 years **Currency and scale:** TWD billions unless stated otherwise **Sealed quote:** XTAI:2330 common share at TWD 2,420 on 2026-08-28; packet SHA-256 `238ea5f54f89680f2743513b4a5e30c0fdcc453df20745f473879666a6492453` **Sealed statutory bridge:** SHA-256 `1d6c522fb7d1ec7f58c87043e87893756ca524834bf95fd2d36e4bc35e9374e1` **Post-DR data package:** SHA-256 `5d286e1379ea7dce91c14f291533dc03cd71a91cd9d07fa8652e479db726247b`; `STATUTORY BRIDGE VERIFIED — CLEARED FOR FORECASTING`; `DATA PACKAGE VERIFIED — CLEARED FOR WAVE 2` **Authority boundary:** research only. No trade, ranking, sizing, portfolio mutation, broker, or message authority.

0. Segment boundary and taxonomy note

Taiwan Semiconductor Manufacturing Company has exactly one operating and reportable segment, **Foundry**. The boundary is stable across FY2021-FY2025: the segment manufactures customers' integrated-circuit designs and supplies related packaging, testing, mask-making, design-enablement, and royalty services. HPC, Smartphone, Internet of Things, Automotive, Digital Consumer Electronics, and Other are commercial revenue platforms inside Foundry, not accounting segments. Technology nodes are also operating drivers, not segments. Q2 FY2026 introduced N2 as a separate 3% wafer-revenue row and combined some mature-node buckets, but that was a technology-table presentation change, not a segment restatement. Clean consolidated platform-dollar comparability begins in FY2023; older platform schedules have a different presentation perimeter and are not mixed into the platform-dollar history below. [data_package §1 and §4]

The exact sealed profit basis is **Income from operations**. It is the issuer-disclosed statutory Foundry profit metric and equals consolidated statutory operating income. FY2025 Foundry Income from operations was TWD1,936.092bn; TTM Foundry Income from operations was TWD2,491.157bn. Corporate/unallocated and operating-bridge arrays are empty. Platform and node margins are not disclosed and are not inferred anywhere in this appendix. [data_package §3 and §3a]

1. What the Foundry segment actually is

Foundry sells manufacturing execution rather than a branded processor. A customer supplies an integrated-circuit design; TSMC turns that design into wafers and packaged chips using a selected process technology. The economic product is a bundle of process performance, manufacturability, yield, capacity, delivery reliability, confidentiality, and a design ecosystem that reduces the chance that a costly tape-out fails. Customers include fabless semiconductor designers, integrated device manufacturers, and systems companies that design proprietary silicon. Their products span AI accelerators, CPUs, GPUs, networking devices, mobile application processors, modems, automotive controllers, connectivity devices, sensors, power management, consumer electronics, and numerous specialty applications.

The relationship begins well before a wafer enters a fab. Customers use process-design kits, electronic-design-automation flows, silicon-proven intellectual property, reference designs, simulation tools, mask services, and qualification support. After tape-out, they depend on process control, yield learning, defect reduction, cycle time, packaging, testing, and logistics. At the leading edge, design and manufacturing are co-optimized: transistor architecture, routing, power delivery, memory connectivity, thermal constraints, and advanced packaging affect the end system together. This makes the transaction engineering-intensive and multi-year rather than a spot purchase of interchangeable capacity.

Pricing is not disclosed as a consolidated wafer-ASP series. The value delivered differs materially by node, die size, mask set, wafer volume, yield maturity, service content, package complexity, and customer commitment. The forecast therefore separates shipment, mix, price/value, utilization, and yield conceptually but does not fabricate wafer prices. The current revenue mix makes that discipline essential. HPC was 58% of FY2025 revenue and 66% of Q2 FY2026 revenue, while Smartphone moved from 29% to 22%. Advanced technologies of 7nm and below were 74% of FY2025 wafer revenue and 77% in Q2 FY2026. Those disclosures support a strong mix thesis, but neither supplies a platform profit margin. [data_package §0a, §4, and §5]

Go-to-market is direct. Capacity planning incorporates customer road maps because leading-edge fabs and packaging facilities require years to design, construct, equip, qualify, and ramp. That long lead time creates a mutual dependency. Customers want dependable supply and a competitive process; TSMC needs enough visibility to commit enormous capital without relying on a transient quarter. The arrangement is reinforced by TSMC's pure-play posture: it does not market a competing processor that uses a customer's confidential design information. Pure-play trust is an operating asset, not an accounting line.

2. Current economics

The TTM ended 2026-06-30 is the forecast anchor. Foundry revenue was TWD4,440.492bn, up materially from FY2025's TWD3,809.054bn, while Income from operations was TWD2,491.157bn and margin on Income from operations was 56.10%. Parent net income was TWD2,237.088bn; diluted EPS was TWD86.2708 on 25.931bn diluted ordinary shares. The Q2 FY2026 exit quarter was still stronger: revenue TWD1,270.381bn, 36.0% above the prior year, gross margin 67.7%, and operating margin 60.3%. These figures are the peak-current economics against which the forecast must allow both continued AI strength and normalization. [data_package §3 and §5]

The TTM platform amounts used as forward drivers are model estimates obtained by applying official whole-percentage quarterly mix to each official consolidated quarter and summing the four quarters. They are not issuer-disclosed quarterly platform dollars. The estimates are HPC TWD2,669.857bn, Smartphone TWD1,206.075bn, IoT TWD233.366bn, Automotive TWD197.980bn, DCE TWD44.405bn, and Other TWD88.810bn. Their sum is exactly TWD4,440.492bn because the rounded mix rows were constrained to 100% each quarter. Precision beyond the displayed TWD millions is not economically meaningful. [quant_foundation P1; data_package §4 open-gap treatment]

Capital intensity remains exceptional. TTM operating cash flow was TWD2,634.679bn, capex TWD1,491.123bn, and free cash flow TWD1,143.556bn. Capex therefore consumed 33.6% of revenue even as operating profitability reached record levels. FY2026 capex guidance rose from USD52-56bn to USD60-64bn, with roughly 70%-80% directed to advanced process, about 10% to specialty technology, and 10%-20% to advanced packaging, testing, masks, and other uses. High current margin is not evidence that the next five years require less reinvestment. [data_package §6 and §7]

The balance sheet makes the investment program financeable. At 2026-06-30 cash and marketable securities were TWD3,518.013bn versus interest-bearing debt of TWD1,031.680bn, leaving net cash of TWD2,486.333bn. The forecast treats net cash as resilience and an outcome of future cash retention. It is not added separately to a P/E-derived terminal share value, which would double-count balance-sheet earning power embedded in statutory EPS. [data_package §8]

3. Unit economics: how Foundry revenue becomes Income from operations

The central unit-economic relationship is fixed-cost absorption. A fab carries depreciation, maintenance, engineering, utilities, and facility overhead before all available wafer capacity is sold. When utilization rises, those costs are spread over more output; when utilization falls, margin can contract faster than revenue. TSMC does not disclose a numerical utilization series, so the scenarios use direction and margin outcomes rather than labeling invented percentages as company guidance. The Q2 FY2026 combination of 16.6% wafer-shipment growth, higher advanced-node mix, and 60.3% operating margin demonstrates the upside of high utilization and mix. The FY2023 operating margin of 42.63% after a cyclical revenue decline demonstrates the downside. [data_package §0a, §2, and §5]

Revenue per wafer is affected by technology and service content. A leading-edge wafer can carry more economic value than a mature-node wafer because it enables differentiated power, performance, and density and requires expensive process development. Advanced packaging expands TSMC's role from front-end wafer fabrication toward system integration through products such as CoWoS and SoIC. But price/value must be distinguished from profit: N2 carries start-up expense, low early yield, elevated depreciation, and working-capital demands before it matures. Management expects N2 to dilute second-half gross margin by roughly 3-4 percentage points. That is a reason to avoid extrapolating Q2's 67.7% gross margin mechanically.

Overseas fabs add another margin layer. Arizona, Japan, and Germany reduce some geographic concentration and meet local customer or policy needs, but labor, construction, supply-chain, scale, and ramp costs are higher. Management expects overseas-fab dilution of roughly 2-3 gross-margin points in early stages and 3-4 points later. Subsidies may offset part of the burden, but they do not recreate Taiwan cluster economics immediately. Base margin therefore falls at first even while HPC grows, bear margin absorbs fuller overseas/N2 dilution plus utilization pressure, and bull margin assumes learning and price/mix outweigh the burden.

Operating expenses are more scalable than cost of revenue but remain strategic. R&D finances node and packaging cadence, process-control methods, design enablement, and yield improvement. It cannot be cut simply to protect one year's margin without damaging the moat. SG&A is a small percentage of sales, so the primary operating-margin swing is gross margin rather than aggressive overhead removal. Q2 FY2026 operating expenses were only 7.8% of revenue, which limits how much further margin can rise through opex leverage alone.

Cash economics lag accounting economics when the capital cycle accelerates. Depreciation is spread across the useful lives of installed tools, while cash capex occurs before revenue. Inventory days rose to 87 in Q2 from 80 sequentially, mainly because of N2 ramp. A smooth earnings path can therefore coexist with volatile free cash flow. The model uses capex/revenue and cash-conversion diagnostics rather than pretending income from operations equals distributable cash.

4. Competitive dynamics

At advanced logic, the most relevant manufacturing alternatives are Samsung Foundry and Intel Foundry. At mature and specialty nodes, competition also includes GlobalFoundries, UMC, SMIC, Samsung, and regional suppliers. Node labels are not directly interchangeable. A nominally similar geometry can differ in density, power, performance, yield, libraries, design rules, packaging interfaces, and available volume. Customer qualification also imposes time, engineering expense, and execution risk. This is why a simple industry capacity-share table would understate differentiation at the leading edge.

TSMC's pricing power is strongest when three conditions align: its process is materially superior, the customer's design is committed to its ecosystem, and capacity is scarce relative to demand. It is weaker in mature nodes where multiple suppliers can meet functional requirements and new capacity can pressure price. The forecast captures that distinction through the platform and margin paths, not through invented node margins. HPC growth is allowed to outrun consolidated growth; DCE is held near flat; bear margin assumes mature-node pricing and underutilization can offset advanced-node value.

Entry barriers are cumulative. A credible rival must fund process R&D, build fabs, acquire restricted tools, establish supplier relationships, create process-design kits and IP libraries, demonstrate yield, qualify packages, protect customer information, and provide enough capacity to matter. Manufacturing learning improves with volume, making scale an input to future competitiveness. Government support can reduce the financial barrier, but it cannot instantly produce a broad, proven ecosystem or high-volume yield.

Substitution is nevertheless real. Customers can dual-source selected products, redesign for another process, internalize production, use chiplets to reduce dependence on one monolithic die, or accept a less advanced node if economics favor it. Large customers have bargaining power and can sponsor alternative capacity. The top ten customers represented 78% of FY2025 revenue, while the two largest represented 19% and 17%. HPC concentration magnifies the risk that a few AI road maps determine marginal capacity absorption. [data_package §1 and §10]

Advanced packaging both strengthens and broadens the competitive boundary. A customer choosing TSMC logic plus CoWoS or SoIC may benefit from tighter process/package co-optimization, but the completed system still depends on HBM, substrates, assembly, testing, thermal design, and customer qualification. A shortage or yield problem outside TSMC can delay system shipments. The Foundry moat therefore does not eliminate ecosystem bottlenecks.

5. Moat at the segment level

The Foundry moat is a reinforcing system rather than a single patent. Technology cadence attracts demanding designs; volume generates process learning; learning improves yield and reliability; strong execution and a direct customer relationship attract the next design generation; cash generated by those designs funds the next node, packaging generation, and capacity build. Design tools, libraries, IP, and engineering workflows raise switching costs. Pure-play trust supports early sharing of sensitive road maps. Breadth across leading-edge logic, mature specialty technologies, and packaging allows TSMC to solve more of a customer's system problem.

This moat appears durable over five to ten years if it is renewed continuously. The strongest evidence is not market share in isolation but repeated commercial ramps, high advanced-node mix, continued customer adoption, and the ability to produce attractive returns while spending at exceptional scale. FY2025 advanced technology share reached 74%; Q2 FY2026 was 77%, including 3% from newly disclosed N2. The business served 534 customers and manufactured 12,682 products in 2025. Breadth reduces dependence on one product, though not on the top customers that dominate revenue. [data_package §0a]

The moat is not an entitlement to a 60% operating margin. A node miss, yield problem, security breach, export restriction, or loss of customer trust could interrupt the loop. Overseas expansion tests whether tacit manufacturing discipline transfers across labor markets and supply chains. AI concentration raises the cost of a demand forecast error. Mature-node capacity

additions can pressure less differentiated economics. The model therefore treats margin above the TTM 56.10% level as a bull outcome, not the central assumption.

6. Historical growth rates

The segment table reproduces the post-DR data package. Each monetary cell identifies its controlling row. Growth is shown rather than re-derived from any prior report.

Product / sub-segment	FY2021 revenue	FY2022 revenue	FY2023 revenue	FY2024 revenue	FY2025 revenue	FY2021-FY2025 CAGR	Most recent YoY	Data package cite
Foundry total	1,587.415 [§3 Foundry row]	2,263.891 [§3 Foundry row]	2,161.736 [§3 Foundry row]	2,894.308 [§3 Foundry row]	3,809.054 [§3 Foundry row]	24.46% [§3 Foundry row]	31.6% [§3 Foundry row]	data_package §3, Foundry historicals row

The five-year table contains four compounding intervals. Arithmetic checks reproduce the disclosed growth within 0.1 percentage point after rounding: 1,587.415 × 1.426 = 2,263.891; 2,263.891 × 0.955 = 2,161.736; 2,161.736 × 1.339 = 2,894.308; and 2,894.308 × 1.316 = 3,809.054.

Clean platform-dollar history begins in FY2023. The CAGR column therefore spans two compounding intervals even though the table contains three annual observations. No platform dollar is back-solved.

Product / sub-segment	FY2023 revenue	FY2024 revenue	FY2025 revenue	FY2023-FY2025 CAGR	Most recent YoY	Data package cite
HPC	934.769 [§4 HPC row]	1,476.891 [§4 HPC row]	2,192.931 [§4 HPC row]	53.15%	48.5%	data_package §4, HPC row
Smartphone	814.914 [§4 Smartphone row]	1,005.130 [§4 Smartphone row]	1,110.816 [§4 Smartphone row]	16.75%	10.5%	data_package §4, Smartphone row
Internet of Things	161.917 [§4 IoT row]	165.516 [§4 IoT row]	191.047 [§4 IoT row]	8.64%	15.4%	data_package §4, IoT row
Automotive	133.654 [§4 Automotive row]	139.323 [§4 Automotive row]	186.667 [§4 Automotive row]	18.18%	34.0%	data_package §4, Automotive row
Digital Consumer Electronics	47.000 [§4 DCE row]	47.961 [§4 DCE row]	47.997 [§4 DCE row]	1.06%	0.1%	data_package §4, DCE row
Other	69.482 [§4 Other row]	59.487 [§4 Other row]	79.596 [§4 Other row]	7.03%	33.8%	data_package §4, Other row

Arithmetic checks are within 0.1% using the disclosed dollar rows: HPC 1,476.891 × 1.485 = 2,193.183 versus 2,192.931; Smartphone 1,005.130 × 1.105 = 1,110.669 versus 1,110.816; IoT 165.516 × 1.154 = 191.006 versus 191.047; Automotive 139.323 × 1.340 = 186.693 versus 186.667; DCE 47.961 × 1.001 = 48.009 versus 47.997; and Other 59.487 × 1.338 = 79.594 versus 79.596. Every difference is inside the required 2% tolerance and reflects displayed growth rounding.

7. Management guidance and the forecast anchor

Every segment-relevant quotation in data_package §6 is reproduced below. The model uses the latest Q2 statement where guidance progressed.

Data-package row	Verbatim quote	Interpretation
§6 Q2 FY2026, C.C. Wei	“we now expect our full-year 2026 revenue growth to be slightly above 40% year over year in US dollar terms.”	The near-term forecast cannot ignore the upgrade, but the exact five-year model must fade growth after the guided year.
§6 Q2 FY2026, Wendell Huang	“continued strong demand for our leading-edge process technologies, including the steep ramp-up of our 2-nanometer technology.”	N2 supports revenue and mix but also creates start-up dilution and working-capital demand.
§6 Q1 FY2026, C.C. Wei	“we maintain strong confidence for our full-year 2026 revenue to now grow by above 30% in US Dollar terms.”	The later Q2 guide supersedes this, while the progression confirms demand strengthened during 2026.
§6 Q1 FY2026, Wendell Huang	“continued strong demand for our leading-edge process technologies.”	Near-term leading-edge utilization is supported; terminal persistence remains an analyst assumption.
§6 Q4 FY2025, Wendell Huang	“In 2026, we expect our capital budget to be between USD52 billion and USD56 billion”	The later increase to USD60-64bn shows both demand confidence and forecast/capital-revision risk.
§6 Q4 FY2025, Wendell Huang	“continued strong demand for our leading-edge process technologies.”	This contemporaneous statement supports the Q1 ramp, not a perpetual margin extrapolation.
§6 Q3 FY2025, C.C. Wei	“the AI demand actually continue to be very strong and more stronger than we thought three months ago”	HPC upside is real, but stronger-than-expected AI also concentrates customer and capacity risk.

Data-package row	Verbatim quote	Interpretation
§6 Q3 FY2025, Wendell Huang	“continued strong demand for our leading-edge process technologies.”	The statement supports the Q4 acceleration and high utilization at the time.
§6 FY2025 annual report, C.C. Wei	“We will continue to invest in technology and capacity to support our customers’ growth”	Moat renewal requires recurring reinvestment; accounting profit is not fully distributable.

Additional source-bound guidance is essential to interpreting those quotations. Q3 FY2026 revenue was guided to USD44.6-45.8bn, gross margin 65%-67%, and operating margin 56%-58%. FY2026 capex was raised to USD60-64bn. N2 start-up is expected to dilute second-half gross margin by roughly 3-4 points, and overseas fabs by 2-3 points initially and 3-4 points later. A14 risk production is planned for 2027 and volume production for 2028; A13/A12 volume is scheduled for 2029. These counterweights prevent the model from equating strong demand with uninterrupted margin expansion.

8. Forward growth assumptions by platform

The forward model begins at 2026-06-30 and ends exactly five years later. TTM platform starting amounts are rounded-mix estimates described in §2, not issuer-disclosed platform dollars. Annual columns show the explicit growth applied from one June TTM endpoint to the next. Company guidance is consolidated and in U.S. dollars, so every platform table lists it as a near-term company anchor rather than pretending that management issued platform guidance.

Bear growth path

Product	FY2023-FY2025 historical CAGR	Latest disclosed FY2025 YoY	Management FY2026 anchor	TTM+1 growth	TTM+2	TTM+3	TTM+4	TTM+5	TTM-to-TTM+5 CAGR	Terminal revenue
HPC	53.15%	48.5%	Company slightly above 40% USD	8%	0%	-5%	4%	5%	2.30%	2,991.286
Smartphone	16.75%	10.5%	Company slightly above 40% USD	2%	0%	-2%	2%	3%	0.98%	1,266.595
Internet of Things	8.64%	15.4%	Company slightly above 40% USD	3%	1%	-2%	2%	3%	1.38%	249.953
Automotive	18.18%	34.0%	Company slightly above 40% USD	5%	3%	0%	3%	4%	2.99%	229.360
Digital Consumer Electronics	1.06%	0.1%	Company slightly above 40% USD	-3%	-2%	-1%	0%	1%	-1.01%	42.207
Other	7.03%	33.8%	Company slightly above 40% USD	3%	1%	-2%	2%	3%	1.38%	95.122

The bear path is not an immediate contradiction of FY2026 guidance because the TTM anchor already includes two quarters of 2026 acceleration and the first forecast year ends in June 2027. It assumes AI customers enter an inventory and capital-digestion phase after committed ramps, causing HPC to stagnate and then contract in year three. Smartphone and consumer electronics lack a powerful unit-growth engine; mature-node competition limits pricing. Automotive and IoT are more resilient but not immune to inventory correction. The deceleration is explicit rather than hidden in a single CAGR.

Base growth path

Product	FY2023-FY2025 historical CAGR	Latest disclosed FY2025 YoY	Management FY2026 anchor	TTM+1 growth	TTM+2	TTM+3	TTM+4	TTM+5	TTM-to-TTM+5 CAGR	Terminal revenue
HPC	53.15%	48.5%	Company slightly above 40% USD	22%	18%	15%	12%	10%	15.32%	5,445.508
Smartphone	16.75%	10.5%	Company slightly above 40% USD	8%	7%	6%	5%	4%	5.99%	1,613.282
Internet of Things	8.64%	15.4%	Company slightly above 40% USD	10%	9%	8%	7%	6%	7.99%	342.744
Automotive	18.18%	34.0%	Company slightly above 40% USD	12%	11%	10%	9%	8%	9.99%	318.717

Product	FY2023-FY2025 historical CAGR	Latest disclosed FY2025 YoY	Management FY2026 anchor	TTM+1 growth	TTM+2	TTM+3	TTM+4	TTM+5	TTM-to-TTM+5 CAGR	Terminal revenue
Digital Consumer Electronics	1.06%	0.1%	Company slightly above 40% USD	2%	2%	2%	2%	2%	2.00%	49.027
Other	7.03%	33.8%	Company slightly above 40% USD	10%	9%	8%	7%	6%	7.99%	130.435

Base HPC growth fades from 22% to 10%. It assumes AI accelerators, custom ASICs, server CPUs, networking, and advanced packaging remain structural growth pools, while arithmetic scale, customer concentration, power constraints, and capital productivity force deceleration well below the 53.15% two-year historical CAGR. Smartphone grows through silicon content, node migration, and premium-device computation rather than large unit expansion. Automotive and IoT benefit from rising electronic content and long qualification cycles, but their forecasts remain below the recent automotive spike. Other benefits from packaging and design services. DCE tracks nominal growth.

Bull growth path

Product	FY2023-FY2025 historical CAGR	Latest disclosed FY2025 YoY	Management FY2026 anchor	TTM+1 growth	TTM+2	TTM+3	TTM+4	TTM+5	TTM-to-TTM+5 CAGR	Terminal revenue
HPC	53.15%	48.5%	Company slightly above 40% USD	28%	24%	20%	16%	13%	20.08%	6,665.571
Smartphone	16.75%	10.5%	Company slightly above 40% USD	12%	10%	8%	7%	6%	8.58%	1,820.113
Internet of Things	8.64%	15.4%	Company slightly above 40% USD	14%	12%	10%	9%	8%	10.58%	385.836
Automotive	18.18%	34.0%	Company slightly above 40% USD	16%	14%	12%	10%	9%	12.17%	351.577
Digital Consumer Electronics	1.06%	0.1%	Company slightly above 40% USD	4%	4%	3%	3%	3%	3.40%	52.482
Other	7.03%	33.8%	Company slightly above 40% USD	14%	12%	10%	9%	8%	10.58%	146.834

Bull HPC growth assumes AI adoption broadens from training into inference, sovereign and enterprise deployments, custom accelerators, and networking, while CoWoS and related bottlenecks ease. It still decelerates annually; a constant 40%-plus rate at the TTM scale would be implausible. Smartphone benefits from on-device AI and accelerated node migration. Automotive and IoT see stronger content growth and a healthier industrial cycle. Bull requires TSMC to execute N2, A16, A14, A13/A12, and packaging ramps without a material yield or customer-delay shock.

9. Forward Income from operations margin assumptions

Platform-level profit is not disclosed. Consequently, the tables below project one Foundry margin on the exact sealed basis **Income from operations**. No corporate line, non-operating item, or tax item is allocated to a platform.

Case	TTM margin on Income from operations	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5	Five-year change	Mechanism
Bear	56.10%	53.0%	49.0%	47.0%	48.0%	49.0%	-7.10pp	AI digestion reduces utilization while N2 and overseas depreciation ramp; mature-node pricing weakens; recovery follows capacity restraint and yield learning.

Case	TTM margin on Income from operations	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5	Five-year change	Mechanism
Base	56.10%	55.0%	54.0%	54.5%	55.0%	55.5%	-0.60pp	Advanced-node and packaging mix offset most N2 and overseas dilution; cost improvement restores part of the early decline.
Bull	56.10%	56.0%	57.0%	58.0%	58.5%	59.0%	+2.90pp	Sustained high utilization, pricing/value capture, rapid yield learning, and opex leverage outweigh overseas cost dilution.

The bear change exceeds 100 basis points and therefore requires a specific mechanism. It combines a cyclical demand pause with fixed depreciation from an investment program committed during the AI upswing. The model does not assume management can cancel all capacity after demand changes. N2 and overseas start-up burdens arrive when absorption is weaker, producing a trough 47% margin. That remains above FY2023's 42.63% because advanced-node mix, the design ecosystem, and balance-sheet capacity are structurally stronger than in an ordinary commodity downturn.

Base starts below the current 56.10% because Q2 profitability benefited from especially high utilization and cost improvement just before more N2 and overseas dilution. Margin then recovers to 55.5% as yield improves and revenue scales. This is deliberately less than Q2's 60.3% exit-quarter margin, preserving a normalizing buffer.

Bull's 59.0% terminal margin is demanding. It requires price/value capture at advanced nodes and packages, no prolonged utilization gap, efficient overseas learning, and operating expenses growing slower than revenue without starving R&D. It is below Q2's 60.3% quarterly margin but above the TTM level because the favorable conditions persist across a much larger revenue base.

10. Bottom-up segment rollup and consolidated bridge

10.1 Platform revenue rollup

Each row is reconstructed from §8. Because Foundry is the only segment, platform totals equal Foundry revenue and consolidated revenue. Rounding residuals are less than TWD1m.

Case	TTM revenue	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5	TTM-to-TTM+5 CAGR
Bear	4,440.492	4,696.434	4,705.127	4,529.226	4,675.901	4,874.525	1.88%
Base	4,440.492	5,181.210	5,915.882	6,632.475	7,291.263	7,899.712	12.21%
Bull	4,440.492	5,411.338	6,444.672	7,485.055	8,482.537	9,422.413	16.24%

10.2 Foundry Income from operations rollup

Case	TTM Income from operations	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5	TTM+5 margin on Income from operations
Bear	2,491.157	2,489.110	2,305.512	2,128.736	2,244.432	2,388.517	49.0%
Base	2,491.157	2,849.666	3,194.576	3,614.699	4,010.195	4,384.340	55.5%
Bull	2,491.157	3,030.349	3,673.463	4,341.332	4,962.284	5,559.224	59.0%

Formula for every cell is `Foundry revenue × margin on Income from operations`. Example base terminal: TWD7,899.712bn × 55.5% = TWD4,384.340bn. The segment-to-consolidated residual is zero because the sealed packet has one additive Foundry segment, no corporate/unallocated adjustment, and no operating bridge adjustment.

10.3 Below-line, tax, parent net income, shares, and EPS

This appendix shows a complete diagnostic endpoint so later synthesis can audit the operating forecast. Synthesis remains responsible for the final independently reviewed below-line schedule. Non-operating income excludes repetition of Q2's TWD63bn Vanguard disposal/mark-to-market gain. Tax rates follow the data package's governed scenario rules: 18.5% bear,

17.5% base, and 17.0% bull at the endpoint. NCI remains separately visible.

Bear case	TTM	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5
Revenue	4,440.492	4,696.434	4,705.127	4,529.226	4,675.901	4,874.525
Income from operations	2,491.157	2,489.110	2,305.512	2,128.736	2,244.432	2,388.517
Total non-operating income and expenses	176.805	150.000	130.000	100.000	120.000	140.000
Pretax income	2,667.962	2,639.110	2,435.512	2,228.736	2,364.432	2,528.517
Income tax expenses	-431.209	-488.235	-450.570	-412.316	-437.420	-467.776
NCI adjustment to parent	0.335	0.000	0.000	0.000	0.000	0.000
Parent net income	2,237.088	2,150.875	1,984.942	1,816.420	1,927.012	2,060.741
Diluted ordinary shares, bn	25.931	25.960	25.990	26.020	26.040	26.050
Diluted EPS, TWD	86.27	82.85	76.37	69.81	74.00	79.11

Base case	TTM	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5
Revenue	4,440.492	5,181.210	5,915.882	6,632.475	7,291.263	7,899.712
Income from operations	2,491.157	2,849.666	3,194.576	3,614.699	4,010.195	4,384.340
Total non-operating income and expenses	176.805	180.000	190.000	200.000	210.000	220.000
Pretax income	2,667.962	3,029.666	3,384.576	3,814.699	4,220.195	4,604.340
Income tax expenses	-431.209	-530.192	-592.301	-667.572	-738.534	-805.760
NCI adjustment to parent	0.335	0.500	0.500	0.500	0.500	0.500
Parent net income	2,237.088	2,499.974	2,792.775	3,147.627	3,482.161	3,799.081
Diluted ordinary shares, bn	25.931	25.940	25.950	25.950	25.950	25.950
Diluted EPS, TWD	86.27	96.38	107.62	121.30	134.19	146.40

Bull case	TTM	TTM+1	TTM+2	TTM+3	TTM+4	TTM+5
Revenue	4,440.492	5,411.338	6,444.672	7,485.055	8,482.537	9,422.413
Income from operations	2,491.157	3,030.349	3,673.463	4,341.332	4,962.284	5,559.224
Total non-operating income and expenses	176.805	220.000	250.000	280.000	300.000	320.000
Pretax income	2,667.962	3,250.349	3,923.463	4,621.332	5,262.284	5,879.224
Income tax expenses	-431.209	-552.559	-666.989	-785.626	-894.588	-999.468
NCI adjustment to parent	0.335	1.000	1.500	2.000	2.500	2.500
Parent net income	2,237.088	2,698.790	3,257.974	3,837.706	4,370.196	4,882.256
Diluted ordinary shares, bn	25.931	25.920	25.900	25.880	25.860	25.850
Diluted EPS, TWD	86.27	104.12	125.79	148.29	168.99	188.87

The exact bridge formulas are: `pretax income = Income from operations + total non-operating income and expenses`; `tax = pretax income × scenario tax rate`; `parent net income = pretax income + signed tax + signed NCI adjustment`; and `EPS = parent net income / diluted ordinary shares`. These preserve the statutory line identity and sign convention. No below-line item is inserted into Foundry margin.

10.4 Capex, free-cash-flow, net-cash, and exit-valuation diagnostics

The cash and valuation diagnostics are not a trade, ranking, or sizing conclusion. They make the operating model usable by later security-return review. Starting net cash is the official Q2 FY2026 TWD2,486.333bn. Terminal capex and FCF margins are explicit analyst scenario diagnostics tied to capital-cycle intensity, utilization, and cash conversion; they are not used in the P/E value. This appendix does not contain a complete annual free-cash-flow, dividend, working-capital, debt, and other-balance-sheet-use roll-forward, so it does not invent a terminal net-cash point estimate; S must build and audit that bridge. Under the P/E method, neither starting nor terminal net cash is added separately to equity value. The current statutory TTM P/E is TWD2,420 divided by TWD86.2708, or 28.05x. Exit P/E is an independently selected scenario assumption applied

to statutory diluted EPS on the same denominator.

Case	TTM capex / revenue	Terminal capex / revenue	Terminal FCF / revenue	Terminal net cash	Terminal diluted EPS	Current / exit P/E	Implied terminal equity value / share	Method note
Bear	33.6%	28%	19%	Not audited here; S bridge required	79.11	28.05x / 16.0x	TWD1,265.71	P/E only; net cash not separately added
Base	33.6%	27%	28%	Not audited here; S bridge required	146.40	28.05x / 20.0x	TWD2,928.00	P/E only; net cash not separately added
Bull	33.6%	28%	32%	Not audited here; S bridge required	188.87	28.05x / 24.0x	TWD4,532.85	P/E only; net cash not separately added

Bear terminal capex intensity falls because demand disappointment forces slower new commitments after already committed projects. FCF margin remains positive but compressed by utilization and pricing pressure. Base capex stays high enough to fund node and packaging cadence, while operating cash conversion supports a rising net-cash balance after dividends. Bull preserves 28% terminal capex intensity despite scale because demand and roadmap breadth require continuing investment; higher utilization and margin support stronger free cash flow.

The exit multiples deliberately span de-rating and sustained quality. Bear 16x recognizes cyclicality, customer concentration, lower EPS than the TTM start, and geopolitical risk. Base 20x recognizes technology leadership and a strong balance sheet but does not capitalize the current growth spike indefinitely. Bull 24x requires durable high-teens operating growth, successful roadmap execution, and no escalation in Taiwan risk. These are constrained analyst diagnostics, not issuer guidance or a peer-comparable conclusion: the sealed data package contains no current peer-valuation dataset. VP must independently justify, audit, or replace the range without silently altering the operating figures. Relative to the comparable 28.05x statutory TTM denominator, the exits represent compression of 12.05, 8.05, and 4.05 turns, respectively.

10.5 Sensitivity and reverse case

At base terminal revenue of TWD7,899.712bn, each 100 basis points of margin changes Income from operations by TWD78.997bn. At a 17.5% tax rate and 25.95bn shares, that is approximately TWD2.51 of EPS before any below-line interaction. At a 20x P/E, one margin point is therefore about TWD50 per share of terminal value. A one-turn change in exit P/E changes terminal share value by TWD146.40 in the base case.

HPC is the largest revenue sensitivity. A five-point change in its five-year CAGR around the base assumption changes terminal HPC revenue by roughly TWD1.26tn before interactions, far more than the entire terminal DCE and Other contribution. This is why AI durability, customer concentration, packaging capacity, and power/infrastructure constraints dominate the range. Smartphone and automotive add diversification but cannot fully offset a deep HPC correction.

The reverse case begins with the current TWD2,420 price. On the base terminal EPS of TWD146.40, a flat terminal price requires a 16.53x exit P/E before distributions. Conversely, a 20x exit multiple implies TWD2,928 terminal share value, only about 3.9% annual price appreciation before distributions over five years. The operating base can therefore be strong without automatically producing a high shareholder return from the current price. This appendix stops at the operating and valuation bridge; final gross-local and net-SGD IRRs belong to the reviewed security-return package.

10.6 Accounting, units, and residual checks

- All income-statement monetary values are TWD billions; diluted shares are billions; EPS is TWD per XTAI:2330 ordinary share.
- Quote and financial-reporting currency are both TWD; the local ordinary share is the financial share; split and unit conversion factors are 1.0.
- The TTM segment revenue equals consolidated revenue of TWD4,440.492bn.
- The TTM segment Income from operations equals statutory operating income of TWD2,491.157bn.
- Corporate/unallocated and operating bridge adjustments are empty, not zero-valued analyst plugs.
- Every scenario's platform revenue sum equals its Foundry revenue within TWD1m rounding.
- Every scenario's Foundry Income from operations equals revenue multiplied by the displayed margin.

- Segment-to-consolidated residual is zero in all scenarios because Foundry is the sole reportable segment.
- Non-operating income, tax, and NCI are below the segment operating line and remain separately signed.
- Platform/node profit is not disclosed and has not been invented.
- The endpoint is 2031-06-30, exactly 5.0 years after the TTM end, not a sixth fiscal year.

11. Key risks and wildcards

Taiwan discontinuity — outside smooth scenarios. A blockade, conflict, severe sanctions escalation, or destruction/interruption of Taiwan's leading-edge manufacturing cluster could make ordinary revenue, margin, multiple, and net-cash assumptions meaningless. The bear case represents a cyclical and operating downturn with the corporate system still functioning. It does not monetize a catastrophic Taiwan impairment as a smooth percentage. That tail must remain a separate discontinuity test in final risk treatment.

AI capital-cycle reversal — bear. HPC is already 66% of Q2 revenue. Customers and their customers may overbuild accelerators, networking, power, or data centers; bottlenecks can defer completed-system deployment; capital productivity concerns can slow orders. The bear path includes a flat year and a 5% HPC contraction.

Customer concentration — bear and base. The ten largest customers were 78% of FY2025 revenue and the two largest were 36%. A road-map delay, internal-silicon change, dual-source decision, export restriction, or inventory correction at one large customer can affect utilization quickly. Broad product count does not eliminate revenue concentration.

Node and yield execution — bear. N2, A16, A14, A13/A12, and successive packaging generations require overlapping development and capital. A yield or performance miss can move designs, slow shipments, increase scrap, and depress absorption. The bull case requires unusually consistent execution across this stack.

Overseas-fab economics — bear and base. Geographic diversification reduces some concentration only gradually while raising cost. Management's 2-3 point early and 3-4 point later gross-margin dilution is explicit. Subsidies, local supply chains, staffing, and cross-site process consistency can differ from plan.

Advanced-packaging bottlenecks — all cases. CoWoS and SoIC can increase strategic value, but HBM, substrates, tools, assembly, testing, thermal design, and customer qualification are interdependent. A constraint can cap completed-system revenue even if front-end wafers are available.

Mature-node competition — bear. Increased capacity, particularly in China, can pressure price and utilization in less differentiated processes. TSMC's breadth and specialty qualification offer protection but do not create frontier-node economics in every fab.

Export controls and trade fragmentation — bear and base. Rules may restrict customers, end uses, equipment, design software, or service. Localization can create inefficient duplication. North America was 78% of Q2 revenue by customer headquarters, so policy and customer concentration overlap.

Foreign exchange — all cases. Revenue economics are substantially linked to U.S. dollars while reporting is TWD and many costs are TWD. Management's 2026 guide is in U.S. dollars, whereas this model is TWD. Currency can cause reported growth and margin to differ from unit demand.

Capital intensity and free-cash-flow timing — all cases. Capacity decisions precede revenue by years. Depreciation can rise after demand slows, and capex can absorb cash during strong accounting earnings. TTM FCF was healthy, but it was only TWD1,143.556bn after TWD1,491.123bn of capex.

Power, water, tools, and talent — all cases. Leading-edge manufacturing depends on scarce equipment, stable electricity and water, specialist materials, and engineers. AI demand also depends on data-center power. A constraint can limit growth without weakening long-run customer intent.

For downstream disclosure, a separate finite Taiwan-discontinuity diagnostic should test zero distributions and terminal recovery of 0%-20% of the TWD2,420 entry price, or TWD0-TWD484 per share. This is an analyst severity range, not a probability estimate or fair-value claim. It must constrain final actionability independently because the 35% / 50% / 15% smooth-scenario probabilities are conditional on enterprise continuity.

12. Forecast conclusion

The single-segment forecast frames TSMC as a high-quality but capital-intensive Foundry whose present economics are unusually elevated. Base revenue grows 12.21% annually to TWD7,899.712bn by 2031-06-30, led by HPC at 15.32%, while margin on Income from operations settles at 55.5%. Bear assumes an AI digestion cycle, utilization pressure, and full N2/overseas dilution, producing TWD4,874.525bn revenue, a 49.0% margin, and EPS below the current TTM level. Bull requires sustained AI breadth, packaging relief, roadmap execution, and rapid learning, producing TWD9,422.413bn revenue and a 59.0% margin.

The probability allocation is 35% bear, 50% base, and 15% bull. Within the conditional enterprise-continuity model, bear probability exceeds bull because customer concentration, AI capital-cycle risk, node execution, overseas dilution, and mature-node pressure are more credible than the combination required for the bull case. Catastrophic Taiwan impairment is not embedded in those weights; the probability-weighted smooth-scenario return is therefore explicitly conditional, not an unconditional expected return, and the separate discontinuity diagnostic must constrain final risk and actionability review.

Case	Segment TTM+5y Revenue	Exact profit metric	Segment TTM+5y Profit Margin	Segment TTM+5y Profit	Parent net income	Diluted shares	Diluted EPS	Net cash diagnostic	Exit valuation	Probability
Bear	TWD4,874.525bn	Income from operations	49.0%	TWD2,388.517bn	TWD2,060.741bn	26.050bn	TWD79.11	Not audited here; S bridge required	16.0x P/E; TWD1,265.71/share	35%
Base	TWD7,899.712bn	Income from operations	55.5%	TWD4,384.340bn	TWD3,799.081bn	25.950bn	TWD146.40	Not audited here; S bridge required	20.0x P/E; TWD2,928.00/share	50%
Bull	TWD9,422.413bn	Income from operations	59.0%	TWD5,559.224bn	TWD4,882.256bn	25.850bn	TWD188.87	Not audited here; S bridge required	24.0x P/E; TWD4,532.85/share	15%

SEGMENT REVIEW VERIFIED — NO ISSUES REMAIN

Appendix S - Synthesis (Combined Earnings Model)

Taiwan Semiconductor Manufacturing Company Limited — Synthesis (Combined Earnings Model)

Report ID: ER2-2330-TW-20260830T000151+0800 **Run ID:** pulse-cio-20260830T000151+0800 **Security:** XTAI:2330 ordinary common share, ISIN TW0002330008 **Mode:** Production ER2; non-insurer lane **Authority boundary:** Research only. No trade, broker, ranking, sizing, portfolio mutation, messaging, or execution authority.

This appendix consolidates the reviewed one-segment Foundry forecast into statutory operating income, parent-attributable net income, diluted listed-unit EPS, the binary P/E 15 entry-price gate, and the inputs required for later shareholder-return underwriting. It performs mechanical forecast consolidation only. It does not reclassify statutory lines, invent platform profit, create a balance-sheet plug, select a primary return method, choose an exit valuation, or estimate distributions. Those later valuation decisions belong to VP and CS after the synthesis gate clears.

1. Anchors and frozen evidence

- Today and information cut-off: 2026-08-30 SGT; the run information cut-off is 2026-08-30T00:01:51+08:00.
- Fiscal year end: December 31.
- Latest completed fiscal year for historical tie-out only: FY2025 ended 2025-12-31.
- TTM anchor: 2026-06-30, built from Q3 FY2025, Q4 FY2025, Q1 FY2026, and Q2 FY2026.
- Horizon: 2031-06-30, exactly 5.0 calendar years after the TTM anchor. No forecast row uses six fiscal years.
- Valuation price: TWD2,420 per XTAI:2330 ordinary share, raw exchange close on 2026-08-28. The quote actionability expiry is 2026-08-31T13:30:00+08:00.
- Raw quote evidence SHA-256: 17fe6a8a4439062e224465c18aa84139ba671132cac6046b0e803f254551cb42.
- QFR-sealed quote-packet SHA-256: 238ea5f54f89680f2743513b4a5e30c0fdcc453df20745f473879666a6492453.
- Historical statutory-bridge SHA-256: 1d6c522fb7d1ec7f58c87043e87893756ca524834bf95fd2d36e4bc35e9374e1.
- Post-DR data-package SHA-256: 5d286e1379ea7dce91c14f291533dc03cd71a91cd9d07fa8652e479db726247b.
- Post-R Foundry appendix SHA-256: 249c6f46b5ac2e7ff2ee937dab94cb505a70c1ef7b577c70b1aad9a2d775d62e.
- Management appendix SHA-256: 6b6c76a42cf10a0ef183785a27fdb7322a158286cffa7e24e8d6229877f7acbf; Management gate PASS.
- Moat appendix SHA-256: 36486f19755281253f5f9c2ceae80be56d680553cb94a87f07ef025965ff9163; Moat gate PASS and 2046 test PASS.

The strict quote-packet validator was run at 2026-08-30T01:35:03+08:00 and returned QUOTE_PACKET_VALID with the exact sealed hash. The statutory-bridge validator returned STATUTORY_BRIDGE_VALID with exact hash equality. The durable gate manifest records both DATA PACKAGE VERIFIED — CLEARED FOR WAVE 2 and STATUTORY BRIDGE VERIFIED — CLEARED FOR FORECASTING. The Foundry appendix contains the exact reviewer token SEGMENT REVIEW VERIFIED — NO ISSUES REMAIN.

Security-unit, split, and FX bridge

The quote and financial statements refer to the same Taiwan-listed common share. The financial reporting currency and quote currency are both TWD. The quote packet reports 25,932 million financial-statement diluted shares at 2026-06-30. No split intervened between that basis date and the 2026-08-28 quote date, so the split factor is 1. The depositary-receipt ratio for this ordinary-share listing is 1, the share-class conversion factor is 1, financial shares per listed unit are 1, and TWD per TWD is 1. The NYSE ADS is not the security underwritten here.

Bridge component	Frozen value	Arithmetic / implication	Evidence
Financial-statement diluted shares	25,932m	Starting financial-share basis	Quote packet, basis date 2026-06-30

Bridge component	Frozen value	Arithmetic / implication	Evidence
Split adjustment factor	1.000000	25,932m × 1 = 25,932m quote-basis financial shares	TWSE August 2026 file; no intervening split
Depositary ratio	1.000000	Ordinary share is not a depositary receipt	Quote packet
Share-class factor	1.000000	Same common-share class	Quote packet
Financial shares per listed unit	1.000000	1 × 1 = 1	Quote packet
Listed-equivalent diluted units	25,932m	25,932m ÷ 1 = 25,932m	Quote packet
FX, quote currency per reporting currency	1.000000	TWD per TWD identity	Quote packet, 2026-08-28

The mandatory EPS bridge therefore remains visible even though every conversion factor is one:

EPS_REPORTING_PER_QUOTE_BASIS_FINANCIAL_SHARE = parent net income in TWD billions ÷ quote-basis diluted shares in billions.

EPS_TWD_PER_LISTED_UNIT = reporting-currency EPS × 1 financial share per listed unit × 1 TWD per TWD.

2. Segment-level forward assumptions

TSMC has one operating and reportable segment, Foundry. The six platforms are revenue disaggregation, not accounting segments. The exact issuer-disclosed segment profit metric is Income from operations. It equals statutory operating income in both historical sealed periods, with no corporate/unallocated or operating-bridge adjustments. Platform or node profit is not disclosed and is not inferred.

Segment	Exact profit metric	TTM revenue, TWD bn	Bear TTM+5y revenue	Base TTM+5y revenue	Bull TTM+5y revenue	Bear margin	Base margin	Bull margin
Foundry	Income from operations	4,440.492	4,874.525	7,899.712	9,422.413	49.0%	55.5%	59.0%

Source: appendix_B_foundry.md Sections 8, 9, and 10 after independent R review. Bear assumes AI inventory digestion, lower utilization, mature-node price pressure, N2 start-up dilution, and offshore-fab fixed-cost absorption. Base fades HPC growth annually while advanced-node and packaging mix offset most N2 and overseas dilution. Bull requires broad AI adoption, packaging bottleneck relief, strong utilization, roadmap execution, and faster yield learning. These are conditional smooth-enterprise scenarios; they do not absorb the separate Taiwan discontinuity severity case.

The platform rollup provides the operating logic without claiming platform-level margins:

Platform	TTM estimate, TWD bn	Bear terminal	Base terminal	Bull terminal	Base five-year CAGR
HPC	2,669.857	2,991.286	5,445.508	6,665.571	15.32%
Smartphone	1,206.075	1,266.595	1,613.282	1,820.113	5.99%
Internet of Things	233.366	249.953	342.744	385.836	7.99%
Automotive	197.980	229.360	318.717	351.577	9.99%
Digital Consumer Electronics	44.405	42.207	49.027	52.482	2.00%
Other	88.810	95.122	130.435	146.834	7.99%
Platform total	4,440.493	4,874.523	7,899.713	9,422.413	12.21% Foundry total

The TTM platform total differs from statutory segment revenue by TWD1m because quarterly whole-percentage platform mixes are rounded. Terminal displayed platform rows differ from the reviewed consolidated scenario values by at most TWD2m. These are presentation-rounding residuals of less than 0.001%, not plugs.

3. Combined revenue build

Foundry is the only reportable segment and represents 100% of consolidated revenue. The sealed bridge has no consolidating adjustment or corporate elimination. Combined revenue therefore equals the reviewed Foundry revenue in every scenario.

Line	Bear	Base	Bull
Sum of segment TTM+5y revenue, TWD bn	4,874.525	7,899.712	9,422.413
Corporate eliminations	0.000; empty governed array	0.000; empty governed array	0.000; empty governed array
Combined TTM+5y revenue, TWD bn	**4,874.525**	**7,899.712**	**9,422.413**
Implied TTM to TTM+5y CAGR over 5.0 years	1.8827%	12.2112%	16.2375%

Arithmetic is based on TWD4,440.492bn at 2026-06-30. For example, base revenue equals 4,440.492 × (1 + 12.211155%)^5 = 7,899.712. Bear is only modestly above the TTM anchor after a year-two plateau and a year-three contraction. Bull still decelerates annual HPC growth from 28% to 13%; it does not extend the current greater-than-40% company guidance indefinitely.

4. Combined operating-income build

The reviewed common metric is Income from operations. Because the one segment's metric is statutory operating income, no corporate cost, restructuring, acquisition, stock-compensation, or other adjustment is allocated outside the Foundry result. An empty governed array is not an analyst-estimated zero line.

Line	Bear	Base	Bull
Sum of segment TTM+5y profit on Income from operations, TWD bn	2,388.517	4,384.340	5,559.224
Corporate / unallocated adjustments from Section 3a	None; sealed array empty	None; sealed array empty	None; sealed array empty
Consolidated TTM+5y segment-profit metric, TWD bn	2,388.517	4,384.340	5,559.224
Operating bridge adjustments from Section 3a	None; sealed array empty	None; sealed array empty	None; sealed array empty
Combined statutory TTM+5y operating income, TWD bn	**2,388.517**	**4,384.340**	**5,559.224**
Implied statutory operating margin	49.0000%	55.5000%	59.0000%
TTM-to-terminal operating-income CAGR	-0.83796%	11.9697%	17.4147%

The operating-income formula in each case is revenue multiplied by the reviewed Foundry margin. Bear: 4,874.525 × 49.0% = 2,388.517bn after rounding. Base: 7,899.712 × 55.5% = 4,384.340bn. Bull: 9,422.413 × 59.0% = 5,559.224bn. The current TTM margin is 56.10%. Base therefore embeds a 0.60 percentage-point normalization, not expansion from a peak quarter. Bull's 2.90-point expansion requires a demanding combination of mix, utilization, yield, pricing/value capture, and offshore learning. Bear's 7.10-point contraction explicitly absorbs cyclical and ramp pressure while staying above the FY2023 downturn margin.

5. Net income and listed-unit EPS build

The sealed historical bridge discloses one combined line, Total non-operating income and expenses. It does not separately disclose an additive net-interest forecast line and other-income forecast line for this synthesis. To avoid classification invention, the combined statutory label remains intact. Exceptional Q2 FY2026 Vanguard disposal and mark-to-market income is not repeated. Scenario tax rates follow the post-DR driver schedule. The NCI adjustment remains separately signed and small.

Line	Bear	Base	Bull
Combined statutory TTM+5y operating income, TWD bn	2,388.517	4,384.340	5,559.224
Net interest income / expense	Unavailable separately; included in combined line	Unavailable separately; included in combined line	Unavailable separately; included in combined line
Other income	Not added separately	Not added separately	Not added separately
Total non-operating income and expenses, TWD bn	140.000	220.000	320.000
Pretax income, TWD bn	2,528.517	4,604.340	5,879.224

Line	Bear	Base	Bull
Effective tax rate assumed	18.5000%	17.5000%	17.0000%
Income tax expense, TWD bn	(467.775645)	(805.759500)	(999.468080)
NCI adjustment to parent, TWD bn	0.000000	0.500000	2.500000
Parent-attributable net income, TWD bn	**2,060.741355**	**3,799.080500**	**4,882.255920**
Quote-basis diluted financial shares, bn	26.050000	25.950000	25.850000
EPS in TWD per quote-basis financial share	79.107154	146.400019	188.868701
Financial shares per listed unit	1.000000	1.000000	1.000000
EPS in TWD per listed unit before FX	79.107154	146.400019	188.868701
FX, TWD quote currency per TWD reporting currency	1.000000	1.000000	1.000000
EPS in quote currency per listed unit at TTM+5y	**TWD79.107154**	**TWD146.400019**	**TWD188.868701**

Bear arithmetic is 2,388.517 + 140.000 = 2,528.517 pretax; 2,528.517 × 18.5% = 467.775645 tax; 2,528.517 – 467.775645 + 0 = 2,060.741355 parent net income; and 2,060.741355 ÷ 26.050 = TWD79.107154 EPS. Base and bull use the same sequence and sign convention. No non-operating amount appears in the Foundry margin, and no terminal net cash is added to EPS.

5a. Return-method input bridge

CS, not S, selects the primary shareholder-return method after VP has completed the valuation preflight. This table supplies the reconciled operating and per-share denominators and records capital-structure limits rather than creating a net-debt plug. Normalized NOPAT is a diagnostic operating denominator only. The tax rate is the same scenario rate used in the net-income bridge.

Return-method input	Bear	Base	Bull	Source / status
Statutory operating income, TWD bn	2,388.517000	4,384.340000	5,559.224000	Reviewed Foundry model
Normalized cash tax rate	18.5000%	17.5000%	17.0000%	Post-DR driver schedule
Normalized NOPAT, TWD bn	1,946.641355	3,617.080500	4,614.155920	Operating income × one minus tax rate
Terminal cash and marketable securities	Unavailable	Unavailable	Unavailable	No audited annual balance-sheet roll-forward
Terminal gross interest-bearing debt	Unavailable	Unavailable	Unavailable	No source-bound scenario debt schedule
Terminal lease liabilities	Unavailable	Unavailable	Unavailable	FY2025 anchor TWD31.595bn exists; terminal path absent
Preferred equity	Unavailable as terminal path	Unavailable as terminal path	Unavailable as terminal path	No separately forecast terminal claim schedule
Minority interest	Unavailable as terminal balance	Unavailable as terminal balance	Unavailable as terminal balance	Income attribution is modeled; terminal claim balance is not
Other senior claims	Unavailable	Unavailable	Unavailable	No complete terminal claim-perimeter schedule
Separately valued non-operating assets	None identified for separate addition	None identified for separate addition	None identified for separate addition	No asset proven absent from statutory EPS and P/E benchmark
Terminal diluted listed-equivalent shares, bn	26.050000	25.950000	25.850000	Reviewed share path; unit factor 1
Cumulative distributions per listed unit	Unavailable at S stage	Unavailable at S stage	Unavailable at S stage	Dividends are real, but no audited five-year distribution bridge is frozen

The current balance-sheet anchor is source-bound: cash and marketable securities of TWD3,518.013bn, interest-bearing debt of TWD1,031.680bn, and net cash of TWD2,486.333bn at 2026-06-30. It demonstrates resilience but does not create a terminal path. The absence of supportable terminal cash, debt, lease, senior-claim, and non-operating-asset schedules

prevents EV/NOPAT from controlling at this stage. It does not prevent later selection of P/E because statutory diluted EPS is fully reconciled. If P/E controls, terminal net cash/debt must not be added separately. If VP instead wants EV/NOPAT, it must first create and freeze a complete source-bound enterprise-to-equity bridge.

Dividends are the principal historical distribution: FY2025 paid approximately TWD18 per share and management stated shareholders would receive TWD24 per share in 2026, with a continued-increase objective for 2027. Those facts do not support a full five-year cumulative amount by themselves. S therefore does not extrapolate a distribution series. VP/CS may use a clearly governed conservative range or a zero-distribution diagnostic, but must not imply that S supplied an audited distribution forecast.

The separate Taiwan discontinuity diagnostic is not mixed into the 35%/50%/15% smooth-enterprise probabilities. The reviewed severity range of TWD0-TWD484 per share with zero distributions is an explicit security-survival stress, not a fourth smooth operating scenario and not a residual adjustment to terminal net cash.

6. Share-count path

The quote packet's 25,932m shares, not the rounded 25,931m TTM weighted-average denominator in the financial model, controls the starting quote-basis share path. TSMC's historical diluted count was effectively flat: 25,930m in FY2021 and 25,931m in FY2025. Buybacks were immaterial and dividends were the principal capital return. The reviewed Foundry appendix nonetheless fixes scenario terminal diluted shares. The following schedule is a transparent mechanical reconciliation of those fixed paths.

The cash/price columns are share-path diagnostics, not a frozen distribution forecast for CS. Bear assumes no repurchases and rising employee/dilution issuance under operating pressure. Base retains immaterial repurchases and small offsetting issuance. Bull makes the reviewed modest net share decline explicit through repurchases that remain small relative to the current TWD1,143.556bn TTM FCF; this is conditional on bull cash generation and must not be counted again as a per-share distribution.

Bear share path

Year end	Starting shares, m	Buyback, TWD bn	Avg price, TWD	Shares retired, m	SBC / other dilution issuance, m	Ending shares, m
2027-06-30	25,932	0.000	Not applicable	0	28	25,960
2028-06-30	25,960	0.000	Not applicable	0	30	25,990
2029-06-30	25,990	0.000	Not applicable	0	30	26,020
2030-06-30	26,020	0.000	Not applicable	0	20	26,040
2031-06-30	26,040	0.000	Not applicable	0	10	26,050

Base share path

Year end	Starting shares, m	Buyback, TWD bn	Avg price, TWD	Shares retired, m	SBC / other dilution issuance, m	Ending shares, m
2027-06-30	25,932	2.420	2,420	1	9	25,940
2028-06-30	25,940	2.500	2,500	1	11	25,950
2029-06-30	25,950	2.600	2,600	1	1	25,950
2030-06-30	25,950	2.700	2,700	1	1	25,950
2031-06-30	25,950	2.500	2,500	1	1	25,950

Bull share path

Year end	Starting shares, m	Buyback, TWD bn	Avg price, TWD	Shares retired, m	SBC / other dilution issuance, m	Ending shares, m
2027-06-30	25,932	52.000	2,600	20	8	25,920
2028-06-30	25,920	78.400	2,800	28	8	25,900
2029-06-30	25,900	84.000	3,000	28	8	25,880
2030-06-30	25,880	89.600	3,200	28	8	25,860
2031-06-30	25,860	61.200	3,400	18	8	25,850

Bear ties as 25,932 + 118 issuance − 0 retired = 26,050m. Base ties as 25,932 + 23 issuance − 5 retired = 25,950m. Bull ties as 25,932 + 40 issuance − 122 retired = 25,850m. Each terminal count matches the R-cleared endpoint exactly. The starting packet factor, split bridge, and listed-unit factor all remain 1. The share path is modest relative to the company: terminal bear dilution is 0.09% annualized, base is effectively flat, and bull contraction is 0.06% annualized.

7. Binary P/E 15 entry-price test

This gate asks whether TWD2,420 is at or below 15 times confident terminal EPS. It does not choose the exit P/E and must not be relabeled as expected-return underwriting. Required EPS is exactly TWD2,420 ÷ 15 = TWD161.333333 per listed unit.

Case	EPS in TWD per listed unit at TTM+5y	EPS × 15	Quote-packet price	Cushion	Pass?
Bear	79.107154	1,186.607306	2,420.000000	-50.9666%	FAIL
Base	146.400019	2,196.000289	2,420.000000	-9.2562%	FAIL
Bull	188.868701	2,833.030515	2,420.000000	+17.0674%	PASS

P/E 15 gate: FAIL — cushion -9.26%

The confident case is base, not bull. Base terminal EPS is TWD14.933314 below required EPS, or 9.26% short on the entry-price cushion calculation. The fact that bull clears cannot rescue the gate. Management PASS plus Moat PASS plus valuation FAIL results in the formal Production ER2 verdict PASS under the exact decision rule. This is an underwriting verdict, not a trade instruction.

8. Reflexivity and historical-anchor checks

The TTM uses four non-overlapping standalone quarters. Reported revenue is TWD989.918bn, TWD1,046.090bn, TWD1,134.103bn, and TWD1,270.381bn for Q3 FY2025 through Q2 FY2026. Their sum is TWD4,440.492bn. The exact workpaper statutory operating-income total is TWD2,491.157bn and parent net income is TWD2,237.088bn.

Anchor check	Segment / model result	Statutory result	Residual	Status
FY2025 revenue, TWD bn	Foundry 3,809.054	Consolidated 3,809.054	0.000	PASS
FY2025 Income from operations, TWD bn	Foundry 1,936.092	Statutory OI 1,936.092	0.000	PASS
FY2025 pretax bridge, TWD bn	1,936.092 + 105.571	2,041.663	0.000	PASS
FY2025 parent NI bridge, TWD bn	2,041.663 − 326.266 + 2.486	1,717.883	0.000	PASS
TTM revenue, TWD bn	Foundry 4,440.492	Consolidated 4,440.492	0.000	PASS
TTM Income from operations, TWD bn	Foundry 2,491.157	Statutory OI 2,491.157	0.000	PASS
TTM pretax bridge, TWD bn	2,491.157 + 176.805	2,667.962	0.000	PASS
TTM parent NI bridge, TWD bn	2,667.962 − 431.209 + 0.335	2,237.088	0.000	PASS

Both the latest-FY and TTM bridge residuals are zero. The packet tolerances are TWD1.021bn and TWD1.334bn, respectively, so the reproduced arithmetic is comfortably inside the governed tolerance and the separate 2% reflexivity threshold. No RECON repair, scaling factor, or plug is used.

9. Latest interim bridge reconciliation

NOT TRIGGERED — four non-overlapping quarters used: Q3 FY2025 ended 2025-09-30, Q4 FY2025 ended 2025-12-31, Q1 FY2026 ended 2026-03-31, and Q2 FY2026 ended 2026-06-30.

No cumulative-half-year bridge, prior-year-YTD subtraction, overlapping YTD period, or latest-FY substitution is present. The TTM forecast anchor is 2026-06-30 and every scenario compounds to 2031-06-30 over exactly five annual intervals.

10. Sensitivity

Sensitivity holds two variables at the base case while varying the third. Since TSMC has one reportable segment, the second requested segment sensitivity is replaced by the same Foundry segment's exact Income from operations margin. This avoids inventing a second accounting segment or platform profit margin.

Variable changed	Down case	Base	Up case	EPS impact versus base	Interpretation
Foundry revenue CAGR	10.2112% gives TWD7,220.360bn revenue	12.2112% gives TWD7,899.712bn	14.2112% gives TWD8,629.263bn	TWD134.41 / 146.40 / 159.27	A ±200bp five-year revenue CAGR changes EPS by about -TWD11.99 / +TWD12.87
Foundry terminal operating margin	53.5%	55.5%	57.5%	TWD141.38 / 146.40 / 151.42	Each 100bp margin changes EPS by approximately TWD2.51
Terminal diluted shares	24.6525bn, -5%	25.9500bn	27.2475bn, +5%	TWD154.11 / 146.40 / 139.43	Share count is material but less important than HPC-led revenue growth
Effective tax rate	14.5%	17.5%	20.5%	TWD151.72 / 146.40 / 141.08	A ±300bp tax rate changes EPS by about ±TWD5.32

Revenue growth is the largest modeled verdict driver, dominated by HPC. Even the +200bp base revenue-CAGR sensitivity produces TWD159.27 EPS, still slightly below required TWD161.33 before any other improvement. Margin is second: a 200bp improvement alone raises EPS only to TWD151.42. Therefore the P/E 15 gate requires a combination of better growth and margin, or a lower entry price; a single modest assumption change does not cure the base shortfall.

Monitorable variables are: sustained HPC growth as the current 66% quarterly platform mix scales; N2/A16/A14 and advanced-packaging execution; overseas-fab dilution versus management's 3-4-point later-stage indication; utilization and inventory normalization; and whether capex converts to FCF while the share count remains controlled. These sensitivities inform monitoring only. They do not authorize a ranking, size, or trade.

11. Combined earnings summary

The conditional smooth-case probabilities are 35% bear, 50% base, and 15% bull. Bear exceeds bull because customer concentration, the AI capital cycle, node execution, overseas dilution, mature-node price pressure, and geopolitical fragility create more ways to miss than to sustain the full bull combination. The weights sum to 100%. The separate Taiwan discontinuity severity diagnostic remains outside these probabilities.

Case	Revenue, TWD bn	OI, TWD bn	OI margin	Parent NI, TWD bn	EPS, TWD per listed unit	Probability	EPS × 15	Versus TWD2,420
Bear	4,874.525	2,388.517	49.0%	2,060.741355	79.107154	35%	1,186.607306	-50.9666%
Base	7,899.712	4,384.340	55.5%	3,799.080500	146.400019	50%	2,196.000289	-9.2562%
Bull	9,422.413	5,559.224	59.0%	4,882.255920	188.868701	15%	2,833.030515	+17.0674%
Probability-weighted smooth case	7,069.301700	3,862.034550	54.63% on weighted totals	3,353.138112	129.217819	100%	1,938.267279	-19.9063%

Probability-weighted EPS is 0.35 × 79.107154 + 0.50 × 146.400019 + 0.15 × 188.868701 = TWD129.217819. This is an earnings diagnostic, not a shareholder-return IRR. Later probability-weighted return must use the CAGR of probability-weighted terminal shareholder wealth under one audited valuation method; it must not average scenario IRRs.

12. Eleven arithmetic tie-out checks

Check 1 — Reported financial and statutory bridge

PASS. FY2025 Foundry Income from operations of TWD1,936.092bn equals statutory operating income exactly. Adding TWD105.571bn total non-operating income gives TWD2,041.663bn pretax; subtracting TWD326.266bn tax and adding TWD2.486bn NCI adjustment gives TWD1,717.883bn parent NI. TTM Foundry Income from operations of TWD2,491.157bn equals statutory operating income; adding TWD176.805bn gives TWD2,667.962bn pretax; subtracting TWD431.209bn tax and adding TWD0.335bn gives TWD2,237.088bn parent NI. Revenue and OI segment-to-consolidated residuals are zero for both anchors.

Check 2 — NI, shares, listed-unit, and FX equals EPS

PASS. Bear: 2,060.741355 ÷ 26.050000 × 1 × 1 = TWD79.107154. Base: 3,799.080500 ÷ 25.950000 × 1 × 1 = TWD146.400019. Bull: 4,882.255920 ÷ 25.850000 × 1 × 1 = TWD188.868701. Reporting currency, quote currency, financial-share class, and listed unit all match.

Check 3 — Segment sum at the horizon

PASS. There is one modeled segment. Foundry revenue divided by combined revenue is 100.0000% in bear, base, and bull. Corporate eliminations are absent in the sealed arrays; no gap is hidden in a zero-valued plug.

Check 4 — Product-to-segment rollup

PASS. The reviewed platform sums reproduce Foundry terminal revenue. Using full path arithmetic: bear TWD4,874.525932bn versus TWD4,874.525bn, base TWD7,899.713131bn versus TWD7,899.712bn, and bull TWD9,422.414570bn versus TWD9,422.413bn. Maximum residual is TWD1.57m, or less than 0.00004%, caused by displayed whole-million starting mixes and growth rates.

Check 5 — Weighted margin

PASS; product-margin subcheck not triggered. Platform-level profit and margins are true non-disclosures. The reviewed model applies one Foundry Income from operations margin after the platform revenue rollup and does not pretend to calculate a revenue-weighted platform margin. Foundry revenue multiplied by 49.0%, 55.5%, and 59.0% reproduces the displayed operating-profit totals within rounding.

Check 6 — Share count and security-unit path

PASS. Starting financial-statement diluted shares of 25,932m × split factor 1 = 25,932m quote-basis diluted financial shares. Dividing by depositary ratio 1 × share-class factor 1 gives 25,932m listed-unit equivalents. Bear 25,932 + 118 issued − 0 retired = 26,050m. Base 25,932 + 23 issued − 5 retired = 25,950m. Bull 25,932 + 40 issued − 122 retired = 25,850m. All paths contain five annual movements and are expressed in ordinary financial shares, not ADS units.

Check 7 — Growth plausibility

PASS. Base Foundry CAGR is 12.21%, below the 24.46% FY2021-FY2025 historical CAGR and below 1.2 times that rate. Base platform CAGRs are HPC 15.32%, Smartphone 5.99%, IoT 7.99%, Automotive 9.99%, DCE 2.00%, and Other 7.99%. All except DCE are below 1.2 times their disclosed FY2023-FY2025 historical CAGRs. DCE's 2.00% exceeds 1.2 times its unusually flat 1.06% history, but appendix_B_foundry.md explicitly justifies it as nominal growth from a tiny base rather than share gain or a new demand engine. The current scale, customer concentration, power constraints, and capital intensity justify fading HPC far below its 53.15% recent platform CAGR.

Check 8 — Historical forward arithmetic

PASS. Every platform terminal row is reconstructed from its TTM estimate and five explicit annual growth rates. For example, base HPC is 2,669.857 × 1.22 × 1.18 × 1.15 × 1.12 × 1.10 = TWD5,445.507831bn. Bear Smartphone is 1,206.075 × 1.02 × 1.00 × 0.98 × 1.02 × 1.03 = TWD1,266.595554bn. Bull Automotive is 197.980 × 1.16 × 1.14 × 1.12 × 1.10 × 1.09 = TWD351.577737bn. Recalculated platform totals are within 0.001% of the reviewed segment totals.

Check 9 — Recency anchor

PASS with quantified primary-source step-change support. Bear TTM+1 revenue of TWD4,696.434bn is 5.76% above the TTM anchor and within 10%. Base TTM+1 revenue of TWD5,181.210bn is 16.68% above TTM, while bull TTM+1 is 21.86% above. The above-10% base step is supported by the latest official Q2 FY2026 disclosure: Q2 revenue grew 36.0% year over year, management raised full-year 2026 USD revenue growth to slightly above 40%, and Q3 FY2026 revenue guidance was USD44.6-45.8bn. The first forecast endpoint is June 2027 and the model fades annual growth thereafter. This is the permitted evidence-backed exception, not an unsupported jump.

Check 10 — Period and horizon integrity

PASS. The TTM contains four standalone, non-overlapping quarters ending 2025-09-30, 2025-12-31, 2026-03-31, and 2026-06-30. No cumulative interim bridge is used. Each platform path has exactly five growth factors from 2026-06-30 to 2031-06-30. The valuation horizon is exactly 5.0 calendar years, and no FY2025 historical row substitutes for the TTM forecast anchor.

Check 11 — Valuation, unit bridge, hashes, and probabilities

PASS. Exact packet-byte hashes match 238ea5f54f89680f2743513b4a5e30c0fdcc453df20745f473879666a6492453 and 1d6c522fb7d1ec7f58c87043e87893756ca524834bf95fd2d36e4bc35e9374e1. XTAI:2330, TWD2,420 raw close, ordinary-share basis, factor-one split/share/listed-unit bridge, and factor-one TWD FX all reproduce. EPS × 15 equals TWD1,186.607306, TWD2,196.000289, and TWD2,833.030515. Probabilities sum to 35% + 50% + 15% = 100%. Weighted

EPS is TWD129.217819. The base cushion is -9.2562%, so the binary gate is FAIL.

SYNTHESIS CLEARED — 11/11 TIE-OUTS PASSED

13. Formal conclusion and handoff

Management gate: PASS. **Moat gate:** PASS; 2046 test PASS. **P/E 15 entry-price gate:** FAIL at a -9.26% base cushion. **Formal Production ER2 verdict from the non-compensating rule:** PASS.

Base TSMC reaches TWD7,899.712bn revenue, TWD4,384.340bn statutory operating income, TWD3,799.0805bn parent net income, and TWD146.400019 EPS at 2031-06-30. That is a strong operating outcome, but TWD2,420 requires TWD161.333333 EPS to meet the P/E 15 entry bar. The present price therefore fails even though Management and Moat pass.

The return-method input package is complete for reconciled statutory EPS/P-E consideration and constrained for EV/NOPAT because terminal capital-structure paths are unavailable. Terminal cash, gross debt, leases, preferred claims, minority interest, senior claims, and distributions remain explicitly unavailable rather than filled with residuals. VP and CS must choose and audit one method, justify scenario exit valuations independently of the P/E 15 gate, and publish finite gross-local and net-SGD returns. They must preserve the separate Taiwan discontinuity severity diagnostic and must not average scenario IRRs.

Insurer lane: NOT TRIGGERED — issuer is not a P&C insurer or reinsurer. No insurer_return_bridge.json is created.

Trade execution authorized: NO.

Appendix CS - Compounder Score

Taiwan Semiconductor Manufacturing Company Limited - Compounder Score and Security-Return Underwriting

Security: XTAI:2330 ordinary common share; vendor ticker 2330.TW; ISIN TW0002330008; the NYSE ADS is outside the underwritten unit **Run / report:** `pulse-cio-20260830T000151+0800` / `ER2-2330-TW-20260830T000151+0800` **Analysis date:** 2026-08-30 SGT **Reporting / quote currency:** TWD **Current price:** TWD2,420, sealed completed close on 2026-08-28 **Operating anchor / horizon:** TTM ended 2026-06-30 to 2031-06-30, exactly 5.0 years **Authority:** research only; no trade, ranking, sizing, broker, portfolio-mutation, or message authority

1. Executive Verdict

TSMC remains an exceptional capital compounder, but the evidence does not support a 20% annualized shareholder return from TWD2,420 under the independently frozen P/E method. Five-year median R&D- and lease-adjusted ROIC is approximately 35.1%; adjusted three- and five-year ROIIC are approximately 46.1% and 49.4%. The Foundry model has a long organic runway, strong balance-sheet resilience, essentially flat historical dilution, and verified Management and Moat PASS gates. Those strengths are already heavily capitalized in the entry price.

The audited method is **P/E** in Bear, Base, Bull, probability weighting, reverse-return diagnostics, and the net-SGD overlay. The sealed terminal EPS values are TWD79.107154 / 146.400019 / 188.868701 and the preselected exit P/Es are 16x / 20x / 24x. A transparent dividend diagnostic of TWD120 / 140 / 160 per share over five years produces gross local-TWD IRRs of **-10.55% / 4.86% / 14.16%**. Probability-weighted terminal wealth is TWD2,722.927576 per share; its five-year CAGR from TWD2,420 is **2.39%**. That is the required method, not the arithmetic average of scenario IRRs.

After 21% nonresident dividend withholding, a 0.3% Taiwan stock sale tax, 0.1425% commissions on entry and exit, 0.05% FX friction on each conversion, and explicit terminal FX diagnostics, net-SGD IRRs are **-12.72% / 4.52% / 15.70%**. Probability-weighted terminal SGD wealth is SGD108.104330 against an entry cost of SGD97.219736, for a **2.15%** annualized return. Base and weighted returns trail the prior-date AVEM, EWY, and whole-portfolio modeled return context. CIO actionability is therefore **PASS**, with no proposed sizing ceiling and `trade_execution_authorized=false`.

Compounder Score: 71/100. Business Quality: 69/80. 20% Return Underwriting: 2/20. Score-implied classification: Buy only at lower price. This is a diagnostic classification and does not override the formal ER2 gates or authorize capital.

2. Data Source Map

Evidence need	Controlling source	Period / treatment	Confidence
Exact security and price	`quote_packet.json`, SHA-256 `238ea5f54f89680f2743513b4a5e30c0fdcc453df20745f473879666a64924 53`	XTAI:2330 ordinary share; TWD2,420 close, 2026-08-28	High
Valuation method and multiples	`valuation_preflight.json`, SHA-256 `02a04760af3a8126666c11ac41a15afbbf5fe27381134d025355c747504cd6ac`	Validator-clear 5/5; P/E; 16x/20x/24x	High
Statutory profit bridge	`statutory_bridge.json`, SHA-256 `1d6c522fb7d1ec7f58c87043e87893756ca524834bf95fd2d36e4bc35e9374e1`	FY2025 and TTM ended 2026-06-30; zero residuals	High
Income, balance sheet, cash flow, shares	`quant_foundation.md` and `data_package.md`, post-DR SHA-256 `5d286e1379ea7dce91c14f291533dc03cd71a91cd9d07fa8652e479db726247b`	Official TSMC controls vendor differences	High
Segment and runway model	`appendix_B_foundry.md`, SHA-256 `249c6f46b5ac2e7ff2ee937dab94cb505a70c1ef7b577c70b1aad9a2d775d62e`	One reportable Foundry segment	High
Management and capital allocation	`appendix_management.md`, SHA-256 `6b6c76a42cf10a0ef183785a27fdb7322a158286cffa7e24e8d6229877f7acbf`	Production gate PASS	High

Evidence need	Controlling source	Period / treatment	Confidence
Moat and competition	`appendix_moat.md`, SHA-256 `36486f19755281253f5f9c2ceae80be56d680553cb94a87f07ef025965ff9163`	Moat PASS; 2046 PASS	High / Medium
Combined forecast	`appendix_synthesis.md`, SHA-256 `7fb3fc16f69406d5bc4a3b492d1dcc7bde69b137be23c25d6d2e451f28715594`	11/11 arithmetic checks; formal ER2 PASS; P/E-15 cushion -9.26%	High
Ten-year extension	Four live FMP stable annual pulls in `raw/pulse-cio-20260830T000151+0800/cs_live/`	FY2014-FY2025; official overrides preserved	Medium
FX, withholding, and costs	`fx_tax_cost_provenance.json`, SHA-256 `5193d8f05ef08229fb16d6b4ecb0e70a9ff319723bae6e75eaa811fc00c7323f`	Bank of Taiwan 2026-08-27 spot; TWSE / Taiwan tax authority rules	High for cited current rules; Medium for scenario FX
Portfolio fit only	`portfolio_context_snapshot.json`	Prior-date completed Pulse publication; freshness advisory, not a blocker	Medium

The current-run 12-row live FMP annual income, balance-sheet, cash-flow, and key-metric files were copied without overwrite to the investing warehouse. Source and destination hashes match and are logged in `cs_warehouse_copy_log.json`. FMP's FY2025 OCF and FCF are not controlling: official FY2025 OCF is TWD2,274.976bn and official FCF is TWD1,002.565bn. No cached warehouse file was used as a research source.

3. Key Financial and Quality Metrics

Metric	Latest / one-year	Three-year	Five-year	Ten-year
Revenue growth / CAGR	31.6% FY2025 YoY	18.9% FY2022-FY2025	24.5% FY2021-FY2025	16.3% FY2015-FY2025
NOPAT growth / CAGR	49.4% FY2025 YoY	18.7% FY2022-FY2025	29.3% FY2021-FY2025	19.4% FY2015-FY2025
FCF growth / CAGR	15.2% FY2025 YoY	24.4% FY2022-FY2025	39.8% FY2021-FY2025	14.1% FY2015-FY2025
Reported ROIC	52.3% FY2025	39.7% median FY2023-FY2025	39.7% median FY2021-FY2025	Insufficient consistent official denominator
R&D / lease-adjusted ROIC	45.9% FY2025	35.2% median FY2023-FY2025	35.1% median FY2021-FY2025	Insufficient pre-2014 R&D vintages
Adjusted ROIIC	Not meaningful for one year	46.1% FY2022-FY2025	49.4% FY2020-FY2025	Insufficient consistent reinvestment bridge
Acquisition-inclusive adjusted ROIIC	Same within rounding	46.1%	49.4%	Insufficient evidence
Adjusted reinvestment rate	43.8% FY2025	39.5% cumulative	44.7% cumulative	Insufficient consistent bridge
FCF / NOPAT	61.6% FY2025	61.6% cumulative FY2023-FY2025	58.2% cumulative FY2021-FY2025	Not used due official/vendor cash-flow differences
Gross margin	67.7% Q2 FY2026	56.1% median FY2023-FY2025	56.1% median FY2021-FY2025	Directional only
Operating margin	56.10% TTM	45.7% median FY2023-FY2025	45.7% median FY2021-FY2025	Directional only
Diluted share CAGR	Approximately 0.0%	Approximately 0.0%	Approximately 0.0%	Approximately 0.0%

TTM conversion is healthy but capital-intensive: CFO / parent net income is 117.8%, FCF / parent net income is 51.1%, CFO / normalized NOPAT is approximately 126.2%, and FCF / normalized NOPAT is approximately 54.8%. TTM capex was TWD1,491.123bn. The cash-flow lag reflects economically necessary leading-edge capacity and is therefore a valuation and cycle risk, not evidence by itself of weak collections or acquisition accounting.

Current valuation / capital item	Value	Formula / treatment
Market capitalization	TWD62,755.440bn	TWD2,420 x 25.932bn quote-basis shares
Simplified current enterprise-value diagnostic	TWD60,269.107bn	Market cap less TWD2,486.333bn current net cash; not the primary method
Reported current P/E	28.051208x	TWD2,420 / TWD86.270796 reported TTM statutory diluted EPS
Normalized comparable current P/E	28.798966x	TWD2,420 / TWD84.030796 after excluding TWD2.24 VIS gain

Current valuation / capital item	Value	Formula / treatment
Market cap / TTM FCF	54.88x	Market cap / TWD1,143.556bn TTM FCF
TTM FCF yield	1.82%	TTM FCF / market cap
Established 2026 annual dividend yield	0.99%	TWD24 / TWD2,420
Current cash and marketable securities	TWD3,518.013bn	Official 2026-06-30 anchor
Current interest-bearing debt	TWD1,031.680bn	Official 2026-06-30 anchor
Current net cash	TWD2,486.333bn	Cash / securities less debt
SBC ratios	Insufficient TTM evidence	TTM SBC is not separately disclosed; never set to zero

4. Rubric Scorecard

Category	Score	Maximum	Evidence-based conclusion
1. Incremental Returns on Capital	22	25	Adjusted ROIC and ROIIC are exceptional; cash conversion and working-capital volatility prevent perfection
2. Reinvestment Runway	18	20	AI, frontier logic, packaging, and automotive runway is large; overseas economics and capex reflexivity cap the score
3. Durability of Moat	13	15	Neutrality, yield learning, scale, ecosystem, and switching costs are strong; Taiwan and rival qualification remain real
4. Accounting and Financial Quality	9	10	Clean reconciliations, net cash, negligible goodwill, and flat shares; selected KPI and SBC evidence is absent
5. Capital Allocation Discipline	7	10	Organic reinvestment and dividends are rational; global-fab returns, incentives, and modest ownership constrain points
Business Quality	**69**	**80**	**Strong dream-business evidence, but not invulnerable**
6. Price and 20% Return Underwriting	2	20	Base gross IRR is 4.86%; even Bull is 14.16%, and the 20% reverse hurdle is not beatable at this price
Compounder Score	**71**	**100**	**Buy only at lower price; diagnostic only**

Category 1 awards 5/5 for normalized ROIC, 8/8 for calculated ROIIC, 2/3 for trend stability, 3/3 for unit economics, 2/3 for cash conversion, and 2/3 for avoiding an accounting-artifact conclusion. Category 2 awards 5/5 for market opportunity, 5/5 for reinvestment at scale, 4/4 for organic opportunity, 3/3 for the repeatable node/packaging playbook, 1/2 for market structure, and 0/1 for proving future growth without ROIC compression. Category 3 awards 4/4 for a clear advantage, 2/3 for observable but incompletely decomposed pricing power, 3/3 for competitive evidence, 2/2 for customer stickiness, 2/2 for stress resilience, and 0/1 for low disruption risk.

Category 4 awards 2/2 for revenue and earnings quality, 2/2 for cash support, 2/2 for conservative treatment of SBC/dilution, 2/2 for balance-sheet strength, 0/1 for complete disclosure, and 1/1 for no material governance/accounting red flag. Category 5 awards 2/2 for reinvestment priority, 2/2 for acquisition discipline, 1/2 for buyback discipline, 1/2 for incentives, 0/1 for owner mentality, and 1/1 for the historical decision record.

Valuation awards 0/6 because Base is below 10%; 1/4 because the independently frozen exit multiples are below the comparable current P/E but still do not clear 20%; 0/3 because Bear is deeply negative; 0/3 because required EPS growth is not beatable; 0/2 because the price discounts substantial success; and 1/2 because dividends help modestly. Formal ER2 gates and portfolio fit do not alter the 100-point diagnostic score.

5. ROIIC and Reinvestment Analysis

Reported NOPAT is operating income multiplied by one minus the normalized cash tax rate. Reported invested capital is common shareholders' equity plus interest-bearing debt less cash and short-term investments, using average opening and closing balances where available. The adjusted method treats R&D as a five-year straight-line asset, adds current R&D less amortization after tax to NOPAT, and includes R&D assets and lease liabilities in invested capital. It does not add capex twice. Goodwill and other intangibles were only about TWD24.953bn at FY2025, so goodwill does not explain the high returns.

Fiscal year	Reported NOPAT, TWD bn	Reported ROIC	R&D asset, TWD bn	Adjusted NOPAT, TWD bn	Adjusted invested capital, TWD bn	Adjusted ROIC
FY2021	581.2	37.5%	317.7	614.3	1,870.1	32.8%
FY2022	973.5	49.9%	382.5	1,029.8	2,326.6	44.3%
FY2023	788.4	32.3%	449.9	846.1	2,883.2	29.3%
FY2024	1,088.5	39.7%	519.8	1,146.1	3,252.2	35.2%
FY2025	1,626.7	52.3%	609.4	1,702.0	3,705.7	45.9%

ROIIC uses cumulative reinvestment rather than the simple change in balance-sheet capital. Net capex is capex less depreciation; non-cash working capital is current operating assets less current operating liabilities; adjusted reinvestment adds the change in the capitalized R&D asset and net acquisitions. Official capex overrides control. Net acquisitions total only about TWD2.9bn over the measured period.

ROIIC window	Delta adjusted NOPAT, TWD bn	Net capex and NWC, TWD bn	Delta R&D asset, TWD bn	Net acquisitions, TWD bn	Cumulative reinvestment, TWD bn	Adjusted ROIIC
FY2022-FY2025	672.2	1,229.0	227.0	2.9	1,458.9	46.1%
FY2020-FY2025	1,180.0	2,056.0	328.8	2.9	2,387.7	49.4%

Working capital is volatile and supplied TWD71.7bn / 324.1bn of funding in the respective windows. Excluding that benefit still yields approximately 43.9% / 43.5% ROIIC, so the high-return conclusion is robust. However, the multi-year working-capital bridge is live-FMP dependent and overlap between the three- and five-year windows limits the strength of the trend inference. TTM/FY2025 are also near a demand and margin peak. The USD60-64bn 2026 capex plan and disclosed 3-4 percentage-point later-stage overseas-fab margin dilution make historical ROIIC a range, not a guaranteed forward outcome.

6. Runway Analysis

The runway is large and demonstrably organic. HPC rose to 58% of FY2025 revenue and 66% in Q2 FY2026. Advanced technologies of 7nm and below represented 74% of FY2025 wafer revenue and 77% in Q2 FY2026. N2 entered high-volume manufacturing, A14 risk production is planned for 2027 with volume in 2028, and advanced packaging adds content as AI systems combine logic, high-bandwidth memory, chiplets, and networking. Smartphone node migration, automotive compute, IoT, and specialty power-management processes provide secondary growth paths.

The Base case is not effortless. Revenue reaches TWD7,899.712bn by 2031-06-30 at a 12.21% CAGR, and Foundry operating income reaches TWD4,384.340bn at a 55.5% margin. HPC supplies much of the modeled increase. The ten largest customers already contributed 78% of FY2025 revenue; the two largest contributed 19% and 17%. No company-wide backlog, book-to-bill, cancellation rate, utilization percentage, node yield, node ASP, or platform/node profit series is disclosed. The accounting rollup is high-confidence; the physical demand-to-capacity bridge is medium-confidence.

The main runway risk is reflexivity. Strong AI forecasts induce fabs and packaging capacity years before demand is known. If customer capital spending slows after those commitments, utilization and pricing can weaken as depreciation accelerates. Export controls can remove customers or restrict equipment. Overseas duplication improves resilience but may dilute returns. These constraints cap the final runway point even though TSMC has repeatedly reinvested at scale.

7. Moat Analysis

The moat gate is PASS and the 2046 test is PASS. TSMC combines pure-play neutrality, trusted handling of customer designs, process-design kits, silicon-verified IP, EDA integration, qualification costs, high-volume yield learning, capacity certainty, capital scale, and front-end/back-end co-optimization. A customer switching an advanced design must redesign, requalify, rebuild yield knowledge, and risk launch timing. FY2023 is useful stress evidence: revenue fell, but operating margin remained 42.6% and reported ROIC 32.3%.

Pricing power is observable in margin resilience and mix/value capture, but customer-level prices, contract escalators, and node margins are not disclosed. Samsung, Intel, Rapidus, and subsidized regional capacity do not need to surpass TSMC

everywhere. A credible alternative for one generation can win a major program or increase customer bargaining power. Open chiplet standards could also shift some integration value to other packaging ecosystems.

Taiwan concentration is a security-survival risk, not merely ordinary moat erosion. Conflict, blockade, cyberattack, power/water interruption, or broad tool restrictions could permanently impair the listed equity. Overseas fabs cannot quickly replicate Taiwan's full supplier and engineering cluster. No fabricated probability is attached to that discontinuity; it remains a major hard-watch condition outside the 35%/50%/15% smooth-enterprise scenario set.

8. Accounting and Capital Allocation Analysis

Official quarterly revenue, income, cash flow, and share counts reconcile. QFR verified the statutory overrides, quote unit, split factor, and source hashes. FY2025 FMP OCF exceeds the official figure by TWD83.766bn, and the official result controls. The TTM VIS disposal/mark-to-market gain of TWD2.24 per share is excluded from the normalized current P/E denominator and is not repeated in the terminal model. Goodwill is immaterial, diluted shares have been essentially flat, and there is no material acquisition dependence.

SBC is treated as an economic cost. The official condensed TTM package does not separately disclose SBC; therefore SBC / revenue and SBC / FCF remain unavailable rather than being assigned zero. Scenario share paths include explicit issuance/retirement: 26.050bn Bear, 25.950bn Base, and 25.850bn Bull versus 25.932bn at entry. Dividends are the principal cash return. FY2025 paid approximately TWD18 per share; management stated TWD24 for 2026 and a continued-increase objective for 2027. The five-year distribution schedules below are governed diagnostics, not issuer guidance.

Capital allocation is predominantly organic. Five-year capex was approximately TWD5.117tn and R&D TWD0.921tn. Buybacks and M&A were immaterial. The net-cash balance provides resilience, but it is not added after EPS x P/E because that would double count balance-sheet earning power inside statutory EPS and the equity multiple. The constant-current net-cash endpoint is displayed solely because the completion contract requires a finite diagnostic.

9. 20% Return Underwriting

Valuation-preflight and method integrity

`valuation_preflight.json` was recomputed at SHA-256 `02a04760af3a8126666c11ac41a15afbbf5fe27381134d025355c747504cd6ac` and independently passed `validate_valuation_preflight.py --check-evidence-files`. Status is `CLEARED`, all five foundations pass, and the blocker list is empty. CS reproduces the VP locks without modification.

Primary valuation method: P/E. Reported current P/E is 28.051208x on TWD86.270796 reported TTM EPS. Normalized comparable current P/E is 28.798966x on TWD84.030796 EPS after removing the source-bound TWD2.24 VIS gain. Terminal denominators are statutory diluted EPS on the same XTAI:2330 ordinary-share, TWD, and 1:1 unit basis. Exit P/Es of 16x / 20x / 24x were selected before return calculation from TSMC's historical P/E distribution, a limited pure-play peer bracket, cycle/maturity, Taiwan risk, margin, and growth. Both excessive-optimism and excessive-bearishness challenges passed upstream. No raw provider ratio was relabeled, and no exit multiple was altered after seeing IRR.

The P/E formula is `terminal equity value/share = terminal statutory diluted EPS x exit P/E`. No terminal cash, debt, lease, NCI, or non-operating asset adjustment is applied afterward. `Terminal shareholder wealth/share = terminal equity value/share + cumulative distributions/share`. All three scenarios, probability weighting, max-buy diagnostics, and net-SGD use that same bridge.

Measure	Result	Notes
Primary valuation method	P/E	One audited method across gross, probability weighting, reverse return, and net-SGD
Current price / operating horizon	TWD2,420 on 2026-08-28 / 2026-06-30 to 2031-06-30	Exactly 5.0 years; price date disclosed separately from the TTM anchor
Scenario probabilities	35% / 50% / 15%	Bear / Base / Bull; sum 100%
Gross local-currency Bear / Base / Bull IRR	**-10.55% / 4.86% / 14.16%**	CAGR of each scenario terminal wealth from TWD2,420
Probability-weighted gross local-currency IRR	**2.39%**	CAGR of TWD2,722.927576 probability-weighted terminal wealth; not an average of IRRs
Distribution diagnostics	TWD120 / 140 / 160	Bear TWD24 flat; Base +TWD2/year; Bull +TWD4/year, beginning at established 2026 TWD24

Measure	Result	Notes
Constant-current terminal net-cash diagnostic	TWD2,486.333bn	Cash/securities TWD3,518.013bn less debt TWD1,031.680bn; not added to P/E value

Gross local-currency underwriting is in TWD. The operating start is 2026-06-30 and the terminal date is 2031-06-30; net-SGD adjustments appear after the three scenario tables.

Bear-case operating and return bridge

Bear case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	TWD4,440.492bn	TWD4,874.525bn	1.88%	AI digestion, customer concentration, mature-node pressure, and a mid-path contraction
Operating margin	56.10%	49.00%	-7.10 pp	Lower utilization plus N2 and overseas-fab absorption outweigh mix
Operating earnings	TWD2,491.157bn	TWD2,388.517bn	-0.84%	Foundry Income from operations equals consolidated statutory operating income
Diluted share count	25.932bn	26.050bn	0.09%	No buybacks and 118m cumulative employee/other issuance
EPS	TWD86.270796	TWD79.107154	-1.72%	Statutory parent diluted EPS; exceptional VIS gain not repeated
Valuation denominator	Reported TWD86.270796 / normalized TWD84.030796 EPS	TWD79.107154 statutory EPS	Comparable after normalization	Same TWD ordinary-share denominator; current one-off removed for comparison
Valuation	28.7990x normalized current P/E	16.00x exit P/E	-12.7990x	Lower historical band near FY2018; profitable survivor, but cycle/Taiwan risk
Share value	TWD2,420	TWD1,265.714464	-12.16%	TWD79.107154 x 16; no net-cash addition
Annual dividend	TWD24	TWD24	0.00%	Flat established 2026 rate is conservative despite continued-increase objective
Dividend yield	0.99%	1.90%	+0.90 pp	Annual dividend divided by endpoint share value
Five-year dividends	-	TWD120	cumulative	TWD24 in each of five annual diagnostics
Total ending value	TWD2,420	TWD1,385.714464	**-10.55% gross local IRR**	Terminal share value plus distributions, with no separate adjustment

Terminal aggregate equity value is **TWD32,971.861787bn**: TWD1,265.714464 per share x 26.050bn diluted shares, equivalently TWD2,060.741355bn parent net income x 16. The constant-current TWD2,486.333bn net-cash diagnostic is shown but not added.

Base-case operating and return bridge

Base case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	TWD4,440.492bn	TWD7,899.712bn	12.21%	HPC, N2/A16/A14 and packaging grow, with deliberate post-2026 fade
Operating margin	56.10%	55.50%	-0.60 pp	Mix and yield offset much, not all, N2/overseas dilution
Operating earnings	TWD2,491.157bn	TWD4,384.340bn	11.97%	Foundry Income from operations; no invented platform profit rows
Diluted share count	25.932bn	25.950bn	0.01%	Five million shares retired and 23m issuance over five steps

Base case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
EPS	TWD86.270796	TWD146.400019	11.16%	Parent statutory diluted EPS after 17.5% tax and explicit NCI adjustment
Valuation denominator	Reported TWD86.270796 / normalized TWD84.030796 EPS	TWD146.400019 statutory EPS	Comparable after normalization	Same common-share accounting perimeter and cadence
Valuation	28.7990x normalized current P/E	20.00x exit P/E	-8.7990x	Near 20.73x ten-observation historical median and 19.43x UMC cross-check
Share value	TWD2,420	TWD2,928.000380	3.88%	TWD146.400019 x 20; no net-cash addition
Annual dividend	TWD24	TWD32	5.92%	TWD24/26/28/30/32 schedule is a conservative increasing diagnostic
Dividend yield	0.99%	1.09%	+0.10 pp	Annual dividend divided by endpoint share value
Five-year dividends	-	TWD140	cumulative	Sum of five stated annual diagnostics
Total ending value	TWD2,420	TWD3,068.000380	**4.86% gross local IRR**	Terminal share value plus distributions, with no separate adjustment

Terminal aggregate equity value is **TWD75,981.609861bn**: TWD2,928.000380 per share x 25.950bn diluted shares, equivalently TWD3,799.080500bn parent net income x 20. The constant-current net-cash diagnostic remains outside valuation.

Bull-case operating and return bridge

Bull case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	TWD4,440.492bn	TWD9,422.413bn	16.24%	Sustained AI demand, node leadership, packaging capacity, and utilization
Operating margin	56.10%	59.00%	+2.90 pp	Mix, yield, pricing/value capture, and offshore learning outweigh dilution
Operating earnings	TWD2,491.157bn	TWD5,559.224bn	17.41%	Foundry Income from operations at the demanding 59% terminal margin
Diluted share count	25.932bn	25.850bn	-0.06%	122m shares retired against 40m issuance; cash use is not a distribution
EPS	TWD86.270796	TWD188.868701	16.97%	Parent statutory diluted EPS after 17.0% tax and explicit NCI adjustment
Valuation denominator	Reported TWD86.270796 / normalized TWD84.030796 EPS	TWD188.868701 statutory EPS	Comparable after normalization	Same security and parent-common denominator
Valuation	28.7990x normalized current P/E	24.00x exit P/E	-4.7990x	Below 24.45x historical upper quartile and current normalized premium
Share value	TWD2,420	TWD4,532.848824	13.37%	TWD188.868701 x 24; no net-cash addition
Annual dividend	TWD24	TWD40	10.76%	TWD24/28/32/36/40 diagnostic requires sustained bull cash generation
Dividend yield	0.99%	0.88%	-0.11 pp	Share value grows faster than the annual dividend
Five-year dividends	-	TWD160	cumulative	Sum of five explicit annual diagnostics
Total ending value	TWD2,420	TWD4,692.848824	**14.16% gross local IRR**	Terminal share value plus distributions, with no separate adjustment

Terminal aggregate equity value is **TWD117,174.142100bn**: TWD4,532.848824 per share x 25.850bn diluted shares, equivalently TWD4,882.255920bn parent net income x 24. The bull does not reach 20%, so the score cannot be rescued by scenario optimism.

Probability weighting, reverse return, and maximum buy prices

Probability-weighted terminal wealth is `35% x 1,385.714464 + 50% x 3,068.000380 + 15% x 4,692.848824 = TWD2,722.927576`. The required probability-weighted gross IRR is `(2,722.927576 / 2,420)^(1/5) - 1 = 2.386841%`. The arithmetic mean of scenario IRRs would answer a different question and is not used.

A 20% five-year return requires TWD6,021.734400 terminal wealth per current share. The method-matched reverse return and max-buy diagnostics are:

Diagnostic	Bear	Base	Bull
Frozen exit P/E	16.00x	20.00x	24.00x
Cumulative distributions / share	TWD120	TWD140	TWD160
Required terminal EPS for 20% from TWD2,420	TWD368.858400	TWD294.086720	TWD244.238933
Required EPS CAGR from TWD86.270796	33.72%	27.80%	23.14%
Modeled terminal EPS	TWD79.107154	TWD146.400019	TWD188.868701
Required exit P/E at modeled EPS	74.60x	40.18x	31.04x
Max entry price for 20% using modeled wealth	TWD556.887564	TWD1,232.960544	TWD1,885.950691

Even Bull requires a 31.04x exit P/E to deliver 20% from the current price, above the 28.80x normalized current P/E and well above the locked 24x bull exit. The 20% hurdle therefore requires either a materially lower entry price or a combination of earnings and valuation beyond the frozen Bull. This is the main valuation hard veto.

Net-SGD overlay and CIO actionability

Bank of Taiwan's latest near-date source located for the sealed equity close was the 2026-08-27 business-hours SGD spot quote: TWD24.85 buying and TWD25.03 selling per SGD, midpoint **TWD24.94 per SGD**, one business day before the 2026-08-28 share-price anchor. Taiwan's tax authority states a 21% nonresident dividend withholding rate. TWSE identifies 0.3% stock sale tax and the 0.1425% standard commission reference while noting brokers set schedules. CS adds a conservative 0.05% FX friction per conversion. These are research diagnostics, not executable quotes.

Entry SGD cost/share is `TWD2,420 x 1.001425 commission x 1.0005 FX friction / 24.94 = SGD97.219736`. Exit TWD value is `terminal share value x (1 - 0.003 sale tax - 0.001425 commission) + distributions x (1 - 0.21 withholding)`. The result is multiplied by `0.9995` for FX friction and divided by scenario TWD per SGD. Terminal FX diagnostics are Bear 27.50, Base 24.94, and Bull 23.00 TWD per SGD.

Net-SGD bridge	Bear	Base	Bull
P/E-derived terminal share value, TWD	1,265.714464	2,928.000380	4,532.848824
Sale value after 0.3% tax and 0.1425% commission, TWD	1,260.113677	2,915.043978	4,512.790968
Distributions after 21% withholding, TWD	94.800000	110.600000	126.400000
TWD wealth before FX friction	1,354.913677	3,025.643978	4,639.190968
Terminal FX, TWD per SGD	27.50	24.94	23.00
Terminal SGD wealth after 0.05% FX friction	49.244953	121.256261	201.603103
Five-year net-SGD IRR	**-12.72%**	**4.52%**	**15.70%**

Probability-weighted terminal SGD wealth is `35% x 49.244953 + 50% x 121.256261 + 15% x 201.603103 = SGD108.104330`. Its CAGR from SGD97.219736 is **2.145145%**, shown as **2.15%**. This is not an arithmetic average of net-SGD IRRs.

Measure	Result	Notes
Status	**PASS**	Base return is below 8% and price/portfolio fit does not clear the CIO matrix
Bear / Base / Bull net SGD IRR	**-12.72% / 4.52% / 15.70%**	Same P/E terminal values and 35%/50%/15% scenario set
Probability-weighted net SGD IRR	**2.15%**	CAGR of probability-weighted terminal SGD wealth
10% mandate hurdle	FAIL	Base and probability-weighted cases both fail
15% stretch hurdle	FAIL	Base and probability-weighted cases both fail; Bull alone clears
Downside and portfolio fit	FAIL	Bear is -12.72%; Base/PW trail AVEM 11.69%, EWY 14.79%, and portfolio 12.44% modeled context
Proposed sizing ceiling	none / null	No ranking or sizing authority; no proposal

The portfolio snapshot is prior-date completed context under the scheduled freshness advisory: NAV SGD2.909m, cash 0.272%, no consolidated borrowing, AVEM weight 6.225%, EWY weight 4.800%, and latest memo `HOLD_NO_TRADES`. It is used only to constrain fit. Direct TSMC would add Taiwan, semiconductor-cycle, AI-capex, and foundry overlap without a modeled Base or probability-weighted return premium over those references.

Trade execution authorized: NO. Portfolio mutation authorized: NO. Ranking authorized: NO. Sizing authorized: NO.

10. Hard Veto Checklist

Hard-veto test	Status	Evidence-based reason
1. ROIIC below cost of capital	PASS	Adjusted three-/five-year ROIIC is 46.1%/49.4%; sensitivity excluding NWC funding remains above 43%
2. ROIC high only because capital is artificial	WATCH	Excess cash reduces invested capital, but R&D/lease-adjusted five-year median remains 35.1%
3. Growth requires persistent external financing	PASS	Current net cash is TWD2,486.333bn and historical growth was internally funded
4. Shares rise without value creation	PASS	Historical shares are essentially flat; terminal paths remain within +/-0.3% of current
5. Undisclosed acquisition dependence	PASS	Acquisitions are immaterial and Foundry growth is organic
6. Structural FCF shortfall	WATCH	Five-year FCF/NOPAT is 58.2%; capex is economically necessary and cyclical
7. Concentration/regulation/cycle can impair equity	WATCH	Taiwan tail risk, 78% top-ten customer concentration, AI reflexivity, and export controls are material
8. 20% return requires multiple expansion	FAIL AT CURRENT PRICE	Even Bull needs about 31.04x at modeled EPS versus 28.80x normalized current and 24x frozen exit
9. Flawless execution needed for today's price	FAIL FOR 20% RUBRIC	Frozen Bull earns only 14.16% gross and 15.70% net SGD; 20% requires above-Bull outcomes
10. Moat cannot be explained	PASS	Neutrality, qualification, yield learning, scale, ecosystem, and packaging form one coherent loop
11. Accounting/governance trust impaired	PASS	Statutory bridges reconcile; no material restatement/control failure; official overrides are explicit
12. Balance-sheet risk can wipe out equity	PASS	Net cash is substantial; the principal wipeout risk is geopolitical discontinuity, not leverage

The price-contingent valuation failures do not negate business quality. They mean the diagnostic 20% case is not investable now and that a much lower entry price is required. Taiwan discontinuity remains outside the smooth scenarios; the reviewed severity diagnostic of TWD0-TWD484 per share with zero distributions is not blended into the 35%/50%/15% set.

11. Final Decision

Score-implied classification: Buy only at lower price. TSMC clears the 65/80 business-quality threshold and the ROIIC-plus-runway threshold at 40/45. It fails the 15/20 valuation threshold, Base 20% hurdle, Bear-return hurdle, and no-hard-veto condition. The score-implied classification is diagnostic and does not override the formal Production ER2 PASS

caused by the P/E-15 gate failure.

Compounder Score note: 71/100 - exceptional adjusted ROIC/ROIIC and runway are outweighed by a current-price failure of the diagnostic 20% hurdle; diagnostic only. **Business Quality Score note:** 69/80 - five-year median adjusted ROIC is 35.1% and adjusted ROIIC is 46%-49%, capped for Taiwan concentration, customer/AI concentration, capex reflexivity, and overseas-fab dilution. **20% Return UW Score note:** 2/20 - Base gross IRR is 4.86% and even Bull is 14.16%; the 20% case requires a materially lower entry price or above-Bull earnings/multiple.

Monitoring / upgrade conditions: a lower price must independently restore the chosen return hurdle without changing VP assumptions; Base terminal EPS must improve above TWD146.40 through source-bound operating evidence; overseas-fab dilution should remain within the disclosed 3-4-point later-stage range; FCF conversion should recover despite USD60-64bn capex; and major customers should not validate rival frontier/packaging alternatives across two generations. None is a trade trigger or capital instruction.

12. Machine-Readable JSON

The companion `compounder_score.json` contains full-precision valuation-preflight binding, score detail, scenario terminal equity values, finite distributions, constant-current net-cash diagnostics, gross local-TWD and net-SGD bridges, probability-weighted wealth calculations, reverse-return/max-buy diagnostics, CIO status, and immutable authority flags. Unknown SBC ratios remain `null`; fields inapplicable under P/E remain `null` rather than being invented.


```
{"primary_valuation_method":"PE","gross_irr":{"bear":-0.10551785312729212,"base":0.04859554585322967,"bull":0.141627021
```

Appendix CSA - Scoring Audit

Taiwan Semiconductor Manufacturing Company Limited — Independent Scoring Audit

Security: XTAI:2330 ordinary common share, ISIN TW0002330008 **Run / report:** `pulse-cio-20260830T000151+0800` / `ER2-2330-TW-20260830T000151+0800` **Price anchor:** TWD2,420 close on 2026-08-28 **Operating horizon:** 2026-06-30 to 2031-06-30, exactly 5.0 years **Audit conclusion: DEPENDENT AUDIT CLEARED — SCORE, RETURN, METHOD, AND ACTIONABILITY BRIDGES PASSED.**

This audit independently replays the CompounderScorer evidence, rubric mapping, P/E shareholder bridge, probability weighting, net-SGD overlay, portfolio-fit conclusion, and authority flags. It does not modify the scorer or any upstream artifact. The security-return package is arithmetically and methodologically sound. One scoring-map error is corrected: item 6B receives 0/4, not 1/4, because achieving the diagnostic 20% return requires major Base-case multiple expansion to 40.18x from a 28.80x normalized current P/E. The audited score is therefore 70/100 rather than 71/100. The diagnostic classification remains **Buy only at lower price**.

1. Original vs Audited Scores

Item	Original	Audited	Notes
Business Quality Score / 80	69	69	Strong dream-business evidence; no quality-point inflation found
Valuation / 20% Return UW Score / 20	2	1	Item 6B reduced from 1/4 to 0/4
Total Score / 100	71	70	One-point valuation correction
Classification	Buy only at lower price	Buy only at lower price	Strong quality, but current price fails the diagnostic return hurdle

The audited score is diagnostic only. It does not override the Production ER2 decision rule. Management is PASS, Moat is PASS, and the P/E <= 15 gate is FAIL because Base terminal EPS of TWD146.400019 supports only TWD2,196.000289 at 15x versus TWD2,420 today, a **-9.2562%** cushion. The formal ER2 verdict is therefore **PASS**. This is an underwriting label, not permission to rank, size, trade, message, or mutate a portfolio.

2. Score Reductions and Reasons

The only score reduction is rubric item **6B — Conservative exit multiple**, from 1/4 to 0/4.

The frozen Bear/Base/Bull exits of 16x/20x/24x are independently justified, selected before returns, and all compress from the normalized current P/E of 28.798966x. That makes the modeled valuation conservative in an ordinary sense, but item 6B is explicitly a **20% hurdle** subscore. The modeled Base terminal wealth is TWD3,068.000380 per share and produces only a 4.859555% gross local IRR. A 20% five-year return from TWD2,420 requires TWD6,021.734400 of terminal wealth. Holding Base terminal EPS and distributions fixed, it needs a 40.175776x exit P/E, 39.5% above the normalized current multiple and more than double the frozen 20x Base exit. That is major, not mild, expansion. Under the rubric, major expansion earns zero.

The remaining one valuation point is item 6F. Dividends contribute TWD120/TWD140/TWD160 per share to terminal wealth and modestly improve returns, but they do not rescue the current price. Base five-year distributions equal only 5.8% of entry price before withholding and timing effects.

3. Unsupported Claims

No material unsupported claim is allowed to carry score or return value.

- TTM stock-based compensation is not separately disclosed. The scorer correctly leaves SBC/revenue and SBC/FCF null rather than setting them to zero. Statutory EPS already includes compensation expense, and all three terminal share paths include explicit employee/other issuance. The audit therefore preserves 4C for conservative treatment, not for proving a low SBC burden.
- The report does not claim disclosed platform margins, node profits, node ASPs, node yields, utilization, backlog, or wafer-start capacity. Platform and node data explain growth but do not create unsupported profit rows.

- The five-year dividend schedules and terminal TWD/SGD FX paths are clearly labelled conservative research diagnostics, not issuer guidance or executable quotes.
- The constant-current cash, debt, and net-cash amounts are diagnostics only. They are not presented as forecast terminal balances and are excluded from P/E-derived terminal equity value.

4. Calculation Errors

4.1 Business-quality calculation audit

Reported NOPAT equals statutory operating income times one minus the official consolidated effective tax rate. FY2021-FY2025 reported ROIC uses common equity plus interest-bearing debt less cash/short-term investments, with average beginning/ending invested capital where available. The adjusted calculation capitalizes R&D on a five-year straight-line life, adds after-tax current R&D less amortization to NOPAT, and includes the R&D asset plus leases in invested capital. Goodwill plus intangibles was only TWD24.953bn at FY2025, so goodwill removal does not manufacture the result.

The five-year median R&D/lease-adjusted ROIC is 35.1%, above the rubric's 30% full-score threshold for 1A. Recomputed ROIIC is:

Window	Delta adjusted NOPAT, TWD bn	Cumulative reinvestment, TWD bn	Recomputed ROIIC	No-NWC-funding sensitivity
FY2022-FY2025	672.2	1,458.9	46.0758%	43.9174%
FY2020-FY2025	1,180.0	2,387.7	49.4199%	43.5135%

The no-NWC-funding sensitivities add back TWD71.7bn and TWD324.1bn of working-capital funding to the respective reinvestment denominators. Both remain comfortably above the 35% full-score threshold for 1B. Acquisition-inclusive ROIIC is unchanged within rounding because cumulative net acquisitions are only about TWD2.9bn. The 3-year and 5-year windows overlap and end near a demand/margin peak, so 1C remains 2/3 rather than full credit.

Five-year FCF/NOPAT is 58.2%; TTM CFO/parent NI is 117.8%, FCF/parent NI 51.1%, CFO/normalized NOPAT 126.2%, and FCF/normalized NOPAT 54.8%. Cash conversion is real but capital-intensive, supporting 1E at 2/3. The official FY2025 OCF of TWD2,274.976bn controls over the FMP value, avoiding a TWD83.766bn overstatement.

Historical diluted shares are essentially flat: FY2021 25,930.380m and FY2025 25,930.557m. The scenario paths reconcile from 25,932m starting shares to 26,050m/25,950m/25,850m. No scenario ignores dilution. The absence of separately disclosed TTM SBC remains a confidence limitation, not an excuse to invent zero expense.

4.2 Rubric evidence and caps

Category / subcategory	Evidence status	Original	Audited	Audit judgment
1A Normalized ROIC	Supported	5/5	5/5	35.1% five-year median adjusted ROIC clears full threshold
1B ROIIC	Supported	8/8	8/8	46.08%/49.42% independently recomputed
1C ROIIC trend	Partly supported	2/3	2/3	High but overlapping, peak-ending windows
1D Unit economics	Supported	3/3	3/3	Margin resilience, mix, breadth and downcycle outcomes support returns
1E Cash conversion	Partly supported	2/3	2/3	Positive multi-year FCF; heavy capex prevents perfection
1F Not accounting artifact	Supported with limits	2/3	2/3	R&D/lease adjustment preserves returns; net cash/NWC still matter
2A Market opportunity	Supported	5/5	5/5	Observed HPC/advanced-node mix and roadmap support runway beyond TAM rhetoric
2B Reinvest at scale	Supported	5/5	5/5	TWD5.117tn capex and TWD0.921tn R&D produced organic growth

Category / subcategory	Evidence status	Original	Audited	Audit judgment
2C Organic opportunity	Supported	4/4	4/4	M&A immaterial; growth engines are organic
2D Repeatable playbook	Supported	3/3	3/3	Repeated node, yield-learning, ecosystem and packaging ramps
2E Market structure	Partly supported	1/2	1/2	Neutrality/scale help, but rival qualification remains credible
2F Growth without ROIC collapse	Partly supported	0/1	0/1	Overseas dilution and capex reflexivity prevent proof
3A Clear advantage	Supported	4/4	4/4	Neutrality, qualification, scale and learning loop cohere
3B Pricing power	Partly supported	2/3	2/3	Outcomes support value capture; contract/node pricing is undisclosed
3C Competitive evidence	Supported	3/3	3/3	Mix, breadth and FY2023 resilience provide outcome evidence
3D Customer stickiness	Supported	2/2	2/2	Design, qualification and launch risks create switching friction
3E Stress resilience	Supported	2/2	2/2	FY2023 margin/ROIC held through contraction
3F Low disruption risk	Unsupported	0/1	0/1	Taiwan discontinuity and rival alternatives are material
4A Earnings quality	Supported	2/2	2/2	Statutory bridges reconcile and VIS gain is normalized
4B Cash support	Supported	2/2	2/2	Multi-year FCF positive; official OCF override controls
4C SBC/dilution	Partly supported	2/2	2/2	No low-SBC claim; statutory expense and explicit issuance retained
4D Balance sheet	Supported	2/2	2/2	TWD2,486.333bn current net cash
4E Disclosure	Missing data	0/1	0/1	Physical KPI, profit-by-platform and SBC gaps remain
4F Governance	Supported	1/1	1/1	No material control/restatement issue identified
5A Reinvestment priority	Supported	2/2	2/2	Technology/capacity investment reinforces the moat
5B Acquisition discipline	Supported	2/2	2/2	Acquisition use is immaterial
5C Buyback discipline	Partly supported	1/2	1/2	No destructive buybacks, but little positive price record
5D Incentive alignment	Partly supported	1/2	1/2	Alignment exists but owner/value links are incomplete
5E Owner mentality	Unsupported	0/1	0/1	Evidence does not earn the point
5F Decision record	Supported	1/1	1/1	Node investment and organic scaling record support credit
6A Base IRR	Supported	0/6	0/6	4.86% is below 10%
6B Conservative exit / 20%	Calculation error	1/4	0/4	Required Base 40.18x is major expansion from 28.80x
6C Bear case	Supported	0/3	0/3	-10.55% gross is unacceptable for the stretch rubric
6D Reverse return	Supported	0/3	0/3	27.80% Base EPS CAGR or 40.18x exit required
6E Price not perfection	Supported	0/2	0/2	Current price discounts substantial operating success
6F Cash returns	Partly supported	1/2	1/2	Dividends help modestly, not decisively

No cap is triggered by missing ROIIC, missing acquisition-inclusive ROIIC, absent multi-year FCF testing, ignored dilution, a method mismatch, denominator incomparability, or an uncleared exit-multiple challenge. The only rubric correction is 6B.

4.3 Valuation preflight, method, and multiple integrity

`valuation_preflight.json` independently validates at SHA-256 `02a04760af3a8126666c11ac41a15afbbf5fe27381134d025355c747504cd6ac`, status CLEARED, five of five foundations passed, zero blockers, with evidence-file checks enabled. CS copies the same path, hash, normalized anchor, P/E method, capital-structure treatment, and 16x/20x/24x exits.

Reported current P/E is `2,420 / 86.27079557286645 = 28.0512076413623x`. TTM EPS includes a source-bound TWD2.24 per-share Vanguard International Semiconductor disposal/mark gain. The comparable denominator removes it: `2,420 / 84.03079557286645 = 28.7989657065846x`. Reported and normalized denominators use the same XTAI:2330 ordinary share, TWD currency, 1:1 split/unit basis, and parent-common claim perimeter as terminal statutory diluted EPS.

P/E is the only complete primary method. Statutory diluted EPS is reconciled and positive in all scenarios. EV/NOPAT is rejected because no complete source-bound terminal cash/debt/lease/senior-claim path exists. P/B-ROE is rejected because no zero-residual five-year parent-common-equity roll-forward exists. The P/E formula is used unchanged for every scenario, probability weighting, reverse-return/max-buy diagnostics, and net-SGD.

The multiple evidence is economically coherent. Bear 16x sits near FY2018's 16.21x and within the historical lower band, but above the FY2022 11.44x trough for a profitable, net-cash survivor. Base 20x is close to the 20.73x ten-observation historical median and 19.43x UMC cross-check, with maturity, concentration and Taiwan haircuts. Bull 24x is below the 24.45x historical upper-quartile midpoint, 26.73x historical maximum and 28.80x normalized current premium. The exits were frozen before return calculation and were not reverse-engineered from a desired score, IRR, verdict or no-expansion rule.

The optimism challenge passes because Bull requires correlated high utilization, AI breadth, N2/A16/A14 execution, packaging relief, 59% margin and 24x valuation; it is only 15% weighted and still earns less than 20%. The excessive-bearishness challenge passes because Bear keeps the company profitable, gives it a nonzero 16x multiple and distributions, and does not turn a smooth downturn into a zero-equity Taiwan catastrophe. The separate Taiwan discontinuity remains outside the smooth scenario set and constrains actionability.

4.4 Terminal equity and gross local returns

Under P/E, `terminal equity value per share = terminal statutory diluted EPS × exit P/E`; `terminal shareholder wealth = terminal equity value per share + cumulative distributions`. Cash, debt, leases, NCI, non-operating assets and repurchases are not added again after EPS × P/E.

Case	Probability	EPS	Exit P/E	Diluted shares, bn	Equity value / share	Aggregate equity value, TWD bn	Distributions / share	Terminal wealth / share	Gross TWD IRR
Bear	35%	79.107154	16x	26.050	1,265.714464	32,971.861787	120	1,385.714464	-10.5517853%
Base	50%	146.400019	20x	25.950	2,928.000380	75,981.609861	140	3,068.000380	4.8595546%
Bull	15%	188.868701	24x	25.850	4,532.848824	117,174.142100	160	4,692.848824	14.1627021%

Aggregate value independently ties as per-share equity value times diluted shares and as terminal parent net income times exit P/E. The current source-bound capital diagnostic is cash/securities TWD3,518.013bn less interest-bearing debt TWD1,031.680bn, or TWD2,486.333bn net cash. It is held constant only to provide a finite endpoint diagnostic and is excluded from all P/E values. The no-double-count check passes.

Probability-weighted terminal equity value is TWD2,586.927576 per share and weighted distributions are TWD136.000000. Therefore weighted terminal shareholder wealth is:

`35% × 1,385.714464 + 50% × 3,068.000380 + 15% × 4,692.848824 = TWD2,722.927576`.

The audited probability-weighted gross IRR is `(2,722.927576 / 2,420)^(1/5) - 1 = 2.3868413%`. It is the CAGR of probability-weighted terminal wealth, not an arithmetic average of scenario IRRs.

4.5 Net-SGD return audit

The net-SGD overlay preserves the P/E-derived terminal values. The entry FX anchor is Bank of Taiwan's 2026-08-27 midpoint of 24.94 TWD/SGD from 24.85/25.03 spot buy/sell quotes. The diagnostic applies 21% dividend withholding, 0.3% Taiwan stock sale tax, 0.1425% broker commission on entry and exit, and 0.05% FX friction on each conversion. Terminal FX is 27.50/24.94/23.00 TWD per SGD in Bear/Base/Bull.

Entry SGD cost is `2,420 × 1.001425 × 1.0005 / 24.94 = SGD97.2197363372` per share.

Case	Sale value after tax/commission, TWD	Distributions after withholding, TWD	Terminal SGD wealth after FX friction	Net-SGD IRR
Bear	1,260.113677	94.800000	49.2449534785	-12.7186493%
Base	2,915.043978	110.600000	121.2562612802	4.5177247%
Bull	4,512.790968	126.400000	201.6031031509	15.7040484%

Probability-weighted terminal SGD wealth is `35% × 49.2449534785 + 50% × 121.2562612802 + 15% × 201.6031031509 = SGD108.1043298302`. Its CAGR from SGD97.2197363372 is **2.1451452%**. The model does not average net-SGD IRRs.

4.6 JSON-Markdown consistency

The source Markdown and JSON agree on price, exact horizon, weights, primary method, normalized current denominator, exits, EPS, shares, terminal equity values, distributions, gross IRRs, weighted wealth, net-SGD assumptions, net-SGD IRRs, CIO status and authority flags. Full-precision recomputation reproduces every published return. The one-point 6B change affects only the audited score and companion audit artifact; it does not change any terminal value or return.

5. Missing Data

The most important missing evidence is physical capacity economics: no company-wide utilization, node yield, wafer-start, capacity, node ASP, backlog, book-to-bill, cancellation or platform/node profit series. This constrains confidence in the smooth five-year operating scenarios and supports the existing caps on trend, runway certainty, pricing and disclosure.

TTM SBC is not separately disclosed. SBC ratios remain null; no low-SBC inference is allowed. Scenario issuance and statutory EPS prevent the missing disclosure from becoming ignored dilution.

There is no source-bound terminal cash/debt schedule. The audit therefore accepts P/E, rejects EV/NOPAT as primary, and keeps the constant-current net-cash diagnostic outside terminal equity value. There is no PB_ROE common-equity roll-forward, so P/B-ROE is not used.

6. Hard-Veto and Threshold Test Audit

Test	Audited result	Reason
Total score >= 80/100	FAIL	70/100
Business Quality >= 65/80	PASS	69/80
Valuation / 20% UW >= 15/20	FAIL	1/20
ROIIC plus runway >= 35/45	PASS	40/45
Base gross IRR >= 20%	FAIL	4.86%
Bear gross IRR acceptable	FAIL	-10.55%
Modeled exits require expansion	PASS / no	All locked exits compress from normalized current P/E
20% hurdle avoids expansion	FAIL	Base needs 40.18x versus 28.80x normalized current
No current-price hard veto	FAIL	Price requires beyond-Bull earnings and/or valuation for 20%

The price-contingent hard veto does not negate the quality score. It explains why the diagnostic classification is Buy only at lower price and why current actionability is PASS.

7. Final 20% Hurdle Pass/Fail

FAIL. Base gross local IRR is 4.859555%, Bear is -10.551785%, Bull is 14.162702%, and the probability-weighted gross IRR is 2.386841%. None reaches 20%. Base needs terminal EPS of TWD294.086720 at the locked 20x P/E, a 27.80% CAGR

from reported TTM EPS, or a 40.175776x P/E at modeled EPS. The Base maximum entry price for a 20% return is TWD1,232.960544, 49.05% below TWD2,420.

8. Dream Business / Dream Investment Classification

Dream business, not dream investment at the current price. The 69/80 quality score is supported by high adjusted ROIC/ROIIC, organic reinvestment, process and ecosystem advantages, downcycle resilience, clean statutory reconciliation, flat historical shares and a strong balance sheet. Taiwan discontinuity, customer/AI concentration, capital-cycle reflexivity, overseas-fab economics, incomplete physical KPI disclosure and limited ownership alignment keep the business short of perfection.

The security is not a dream investment at TWD2,420 because the current price turns excellent operating outcomes into low expected shareholder returns. The single biggest reason is valuation: Base gross return is 4.86%, Base net-SGD return is 4.52%, and probability-weighted net-SGD return is 2.15%.

9. Stage 7 Scorecard Notes

- **Compounder Score note:** Audited 70/100 — strong quality is offset by a 1/20 current-price return score; buy-only-lower territory under the diagnostic rubric.
- **Business Quality Score note:** Audited 69/80 — exceptional adjusted ROIC/ROIIC and organic runway support dream-business evidence, capped by Taiwan, concentration, capex reflexivity and overseas-fab economics.
- **20% Return UW Score note:** Audited 1/20 — Base earns 4.86% gross and even Bull 14.16%; only modest dividends score, while 20% needs a materially lower entry or major multiple expansion.

10. CIO Actionability and Authority Audit

CIO status: PASS. This is separate from the formal ER2 verdict and the diagnostic score classification. Base and probability-weighted net-SGD returns of 4.52% and 2.15% fail both the 10% mandate hurdle and 15% stretch hurdle. Bear is -12.72%. The prior-date portfolio snapshot is hash-bound and disclosed under the scheduled freshness advisory. It shows AVEM at 6.2253% weight with an 11.6874% modeled Base return, EWY at 4.8005% with 14.7860%, and whole-portfolio expected return of 12.4352%. Direct XTAI:2330 would add Taiwan, foundry, semiconductor-cycle and AI-capex overlap while trailing each relevant return reference. Downside and portfolio fit are therefore FAIL.

Proposed sizing is null. Trade execution, broker, ranking, sizing, portfolio mutation, owner action and messaging authority are all **false**. No audited field authorizes a trade or capital action.

11. Auditor JSON

The companion `compounder_score_audit.json` preserves full precision for the audited score, all input hashes, the 36-item rubric audit, reported and normalized denominators, scenario exit evidence, terminal equity and distribution bridges, gross and net-SGD returns, probability-weighted wealth-before-CAGR calculations, portfolio-fit comparisons, authority flags, and the single 6B score reduction.


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{
  "status": "CLEARED",
  "audited_business_quality_score": 69,
  "audited_valuation_underwriting_score": 1,
  "audited_total_score": 70,
  "audited_classification": "Buy only at lower price",
  "audited_primary_valuation_method": "PE",
  "audited_bear_gross_local_irr_pct": -10.551785312729212,
  "audited_base_gross_local_irr_pct": 4.859554585322967,
  "audited_bull_gross_local_irr_pct": 14.162702133858085,
  "audited_probability_weighted_gross_local_irr_pct": 2.3868412771002934,
  "cio_actionability": "PASS",
  "trade_execution_authorized": false
}
```


Final auditor verdict: DEPENDENT AUDIT CLEARED — SCORE, RETURN, METHOD, AND ACTIONABILITY BRIDGES PASSED. One score point is removed from 6B; no return field, valuation-method lock, CIO status, or authority boundary changes. There are zero unresolved blockers and zero nested delegations.

Appendix RT - Red Team

Taiwan Semiconductor Manufacturing Company Limited — Production ER2 Red Team

Security attacked: XTAI:2330 ordinary common share, ISIN TW0002330008, in TWD **Report / run:** ER2-2330-TW-20260830T000151+0800 / pulse-cio-20260830T000151+0800 **Price and horizon:** TWD2,420 at the 2026-08-28 close; 2026-06-30 to 2031-06-30, exactly 5.0 years **Mandate boundary:** Research only. No trade, broker, ranking, sizing, portfolio mutation, owner-action, or messaging authority.

This review begins from the proposition that TSMC can remain the best foundry in the world and still be a poor security at TWD2,420. That distinction is decisive. The audited operating package is coherent, but the market price already capitalizes a large portion of the AI, advanced-node, and packaging opportunity. The red team therefore attacks both the commercial forecast and the conversion of that forecast into common-shareholder wealth. It preserves the audited 70/100 score, the 69/80 Business Quality score, the 1/20 Return Underwriting score, all audited return fields, the formal ER2 **PASS**, and CIO **PASS**.

1. The most fragile assumption

The load-bearing assumption is **Base HPC revenue growing at a 15.32% five-year CAGR**, from an estimated TWD2,669.857bn TTM platform base to TWD5,445.508bn in 2031. HPC already represented 66% of Q2 2026 revenue. TSMC's ten largest customers generated 78% of FY2025 revenue, and the largest two generated 36%. Thus the forecast is not diversified growth: it is a concentrated bet that accelerator, custom-ASIC, server-CPU, networking, and advanced-packaging spending compounds together through an enormous base.

The model does fade annual HPC growth from 22% to 10%, well below the 53.15% FY2023-FY2025 CAGR, but that does not make 15.32% low risk. Power availability, data-center construction, accelerator capital productivity, HBM and substrate bottlenecks, or one large customer's product-cycle delay can all interrupt wafer and packaging demand at the same time. Customer diversification by product count does not offset revenue concentration when the same AI infrastructure budget drives multiple customers.

The reviewed segment appendix estimates that a five-percentage-point reduction in HPC CAGR cuts terminal HPC revenue by roughly TWD1.26tn. Holding Base Foundry margin, tax, shares, 20x P/E, and TWD140 distributions constant, my replay reduces terminal EPS from TWD146.400019 to about TWD124.17 and terminal wealth from TWD3,068.00 to about TWD2,623.36. Gross Base IRR falls from **4.86% to about 1.63%**, a **3.23 percentage-point** deterioration. This is a material sensitivity, but not an unmodeled defect: the 35%-weighted Bear case explicitly includes an HPC plateau and contraction.

2. The Stage 5 number most likely to be optimistic

The single Stage 5 number most likely to be revised down is the **55.5% Base terminal operating margin** on Foundry Income from operations. It is only 0.6 points below the 56.1% TTM margin, yet the terminal business is much larger and more geographically duplicated. Management has identified N2 start-up dilution of roughly 3-4 gross-margin points in second-half 2026 and overseas-fab dilution of 2-3 points initially and 3-4 points later. The base case assumes advanced-node and packaging mix, utilization, yield learning, and cost improvement offset nearly all of those burdens.

That may prove right, but the evidence does not disclose platform margins, node yields, utilization, wafer-start capacity, CoWoS profitability, or customer contracts. A 55.5% consolidated operating margin therefore embeds successful N2, A16, A14, A13/A12, advanced-packaging, Arizona, Japan, and Germany execution without a prolonged demand gap. The figure is not fabricated; it is simply the most ambitious operating endpoint hiding behind a modest-looking 0.6-point decline from a peak TTM anchor.

The sensitivity is less explosive than HPC growth. Each 100 basis points changes Base EPS by about TWD2.51. Reducing the terminal margin to 50.0% lowers EPS to about TWD132.60 and Base gross IRR to about **2.90%**, versus 4.86%. The roughly 1.96-point decline is just below the formal materiality threshold by itself. Growth and utilization are not independent, however: an HPC miss would also pressure absorption, so combining lower revenue with lower margin would be much worse than either one-variable sensitivity.

3. Strongest bear case, in its strongest form

TSMC is over-earning at the intersection of an AI capital-spending surge, frontier-node scarcity, and high utilization just as it commits record capital across Taiwan and structurally higher-cost overseas fabs. HPC is 66% of quarterly revenue, North American customers are 78%, and the top two customers were 36% of FY2025 revenue. If accelerator economics disappoint or hyperscaler infrastructure digestion begins after committed ramps, revenue can pause while depreciation from N2, packaging, Arizona, Japan, and Germany continues to arrive.

Within two years, that mechanism can turn today's scale advantage into negative operating leverage: inventory rises, leading-edge utilization falls, mature-node pricing weakens, operating margin moves below 50%, and free-cash-flow conversion deteriorates despite high statutory earnings. Subsidized Samsung, Intel, Rapidus, or successor capacity does not need to displace TSMC broadly; a credible dual-source path for one or two flagship customers can reduce bargaining power and strand the marginal unit of capacity. The security then suffers twice—terminal EPS misses and the P/E de-rates—while a Taiwan discontinuity remains outside the smooth scenarios.

4. Cross-examination of management commentary

The current data package uses live official TSMC materials and appropriately treats management statements as anchors rather than guarantees.

Management statement	Skeptical cross-examination	First observable failure
“full-year 2026 revenue growth to be slightly above 40%” — C.C. Wei, Q2 2026 call	This is a near-term USD guide during a capacity-constrained AI ramp, not evidence for five more years of mid-teens HPC growth. It can front-load customer inventory and capex.	Platform-derived HPC revenue turns flat or negative year over year after the guided year while inventory days exceed 100.
“steep ramp-up of our 2-nanometer technology” — Wendell Huang, Q2 2026 release	A steep ramp brings revenue and learning, but also the disclosed 3-4-point start-up dilution, scrap, depreciation, and qualification risk. N2 share alone does not prove economic yield.	N2 share rises while company operating margin remains below 54% for two quarters and inventory keeps rising.
“continue to invest in technology and capacity” — FY2025 annual report	Reinvestment has historically earned high returns, but the USD60-64bn 2026 budget and overseas duplication raise the capital at risk before demand is known.	TTM capex/revenue exceeds 40% while FCF/parent net income stays below 40% for four quarters.

Management's record remains strong: numerical guidance has generally been met, capex was flexed during the 2023 downturn, R&D was protected, and diluted shares stayed nearly flat. The challenge is not honesty. It is whether even an honest management team can see correlated AI over-forecasting early enough when fab lead times exceed the demand cycle. Succession is also concentrated: C.C. Wei combines chairman and CEO roles, and the co-COO bench has not yet demonstrated equivalent authority through a severe node or capital-cycle decision.

5. Stage 5 tie-out reverification

The recency anchor is valid. Q3 2025 through Q2 2026 are four non-overlapping quarters. Revenue sums to TWD4,440.492bn, operating income to TWD2,491.157bn on the governed rounded basis, parent net income to TWD2,237.088bn, and diluted EPS is recomputed rather than summed. Q2 revenue growth accelerated to 36.0% year over year and operating margin to 60.3%; the model is not starting from stale deterioration. Its vulnerability is the opposite: the anchor may be close to an AI-cycle and utilization peak.

The share path is realistic and not a hidden return engine. Starting diluted shares are 25.932bn and terminal shares are 26.050bn / 25.950bn / 25.850bn. Base is effectively flat; Bull's 122m repurchases are small relative to projected cash generation and are not added again as distributions. TTM stock compensation is not separately disclosed, but statutory EPS includes the expense and every scenario includes issuance. No buyback assumption rescues the valuation.

No platform CAGR silently creates a second accounting segment or profit line. The model uses one Foundry segment and one issuer-disclosed metric, Income from operations. Still, Base HPC at 15.32% is the one product growth rate that exceeds what can be validated from disclosed physical capacity, utilization, backlog, or node profit. The named structural reason is AI compute plus packaging; the missing proof is five-year capital productivity.

6. The 20% return claim

The audited score already says the 20% return case **does not clear**, and the red team agrees. At TWD2,420, Base gross local return is 4.86%, Bull is 14.16%, and probability-weighted gross return is 2.39%. A 20% five-year return requires TWD6,021.7344 of terminal wealth. With Base EPS and distributions frozen, that requires a **40.1758x** exit P/E versus a

28.7990x normalized current P/E and the locked 20x Base exit. Alternatively, Base terminal EPS must reach TWD294.09 at 20x. Neither is supported by the reviewed operating path.

The score-derived claim most likely to be misread is therefore not that 20% is plausible, but that a strong 69/80 quality score creates sufficient price protection. It does not. The audited 1/20 valuation score correctly prevents business quality from masquerading as shareholder return.

7. Two-sided valuation and return-model challenge

I independently reproduced the audited P/E bridge. Terminal equity value per share is statutory diluted EPS times one locked exit P/E; distributions are added once; current net cash is excluded from P/E-derived value; and probability weighting uses terminal wealth rather than scenario IRRs.

Case	EPS	Exit P/E	Terminal equity value / share	Distributions	Terminal wealth	Replayed gross TWD IRR
Bear	79.107154	16x	1,265.714464	120	1,385.714464	-10.5517853%
Base	146.400019	20x	2,928.000380	140	3,068.000380	4.8595546%
Bull	188.868701	24x	4,532.848824	160	4,692.848824	14.1627021%

The weighted wealth replay is `35% × 1,385.714464 + 50% × 3,068.000380 + 15% × 4,692.848824 = TWD2,722.927576`. Annualizing that wealth from TWD2,420 produces **2.3868413%**. The probability-weighted arithmetic average of scenario IRRs would be only 0.8611%; it was correctly not used.

Strongest reason the valuation may be too optimistic. A 20x Base exit is economically supportable but far from harmless. An 18x sensitivity—inside the preflight's 17.57x-24.06x central historical band—reduces Base terminal wealth to TWD2,775.20 and Base IRR to **2.78%**, a **2.08-point** reduction. The frozen 20x is justified by the 20.73x ten-observation TSMC median and a 19.43x UMC cross-check, but those historical native P/Es are not individually normalized for every cycle or one-off. The preflight resolves the denominator issue for current versus terminal EPS; it cannot make the future market's Taiwan, maturity, or concentration discount observable today.

Strongest reason the valuation may be too bearish. Bear combines a five-year HPC stagnation/dip, a 49% terminal margin, mild dilution, and a 16x exit despite a profitable, net-cash survivor. Raising only the Bear exit to 18x increases terminal wealth by TWD158.21 and improves gross IRR by about **1.94 points**, to roughly -8.61%. In addition, the model places all five annual dividend payments at the horizon. That is conservative relative to actual interim cash receipt; deleting distributions entirely reduces Bear/Base/Bull IRRs by only 1.61/0.97/0.79 points, confirming that dividends do not manufacture the conclusion.

The constant-current TWD2,486.333bn net-cash diagnostic is correctly excluded from terminal equity value under P/E. Adding it would double count balance-sheet economics already reflected in EPS and the selected equity multiple. The finite TWD120/140/160 dividend paths extend beyond explicit guidance, but they are transparently labelled diagnostics and cannot change the PASS conclusion.

The net-SGD replay also passes. Applying 21% dividend withholding, 0.3% stock-sale tax, 0.1425% commission each side, 0.05% FX friction, and terminal FX of 27.50/24.94/23.00 TWD per SGD reproduces -12.7186493% / 4.5177247% / 15.7040484%, with 2.1451452% from probability-weighted terminal SGD wealth. Relative to flat 24.94 FX, the scenario FX paths move Bear and Bull returns by about -1.72 and +1.86 points—large, but below the 2-point threshold and disclosed rather than hidden.

Return-model objection	Classification	Resolution
Base HPC CAGR can miss by 5 points and reduce Base IRR by more than 3 points	MATERIAL_RESOLVED	Bear explicitly models HPC stagnation/contraction; audited price conclusion is already ER2 PASS and CIO PASS.
18x rather than 20x Base exit reduces Base IRR by 2.08 points	MATERIAL_RESOLVED	VP locked 20x before returns using historical-median and peer evidence; CSA challenged both directions and the verdict does not improve.
55.5% Base margin may understate overseas and ramp drag	IMMATERIAL	A 50% sensitivity lowers Base IRR about 1.96 points; combined growth/margin stress is represented in Bear.
Distribution schedule extends beyond explicit guidance	IMMATERIAL	Zero distributions move every scenario by less than 2 points and cannot change ER2/CIO PASS.

Return-model objection	Classification	Resolution
Smooth probabilities exclude Taiwan discontinuity	MATERIAL_RESOLVED	The package labels the 2.39% result conditional on enterprise continuity, publishes a 0%-20% recovery severity range, and constrains actionability to CIO PASS. A purely illustrative 10% zero-recovery overlay would lower PW gross IRR by about 2.13 points, but no source-bound probability is fabricated.
Net-SGD FX, withholding, and cost overlay	IMMATERIAL	Same P/E wealth is preserved; arithmetic reconciles; scenario FX effects are under 2 points; mandate conclusions remain failed.

RETURN_MODEL_OBJECTION_STATUS: MATERIAL_RESOLVED

No foundational normalization, method, denominator, dilution, claim-perimeter, terminal-equity, or probability-weighting defect requires a VP, CS, or CSA repair. The material objections are transparently bounded in the audited package and cannot turn the current PASS into an actionable result.

8. Competitive moat, Taiwan discontinuity, and equity survival

The commercial moat survives this red team. TSMC's pure-play neutrality, high-volume yield learning, design ecosystem, process cadence, capacity certainty, and advanced packaging remain harder to replicate than a subsidized fab shell. Samsung, Intel, Rapidus, or Chinese mature-node capacity can compress economics or create dual-source options, but a rival must deliver external-customer yield, confidentiality, packaging integration, capacity, and economics across multiple generations. The evidence supports Moat PASS and the 2046 commercial test.

The **equity thesis does not survive at TWD2,420**. Base and probability-weighted returns are too low before any unconditional Taiwan-discontinuity probability is assigned. A blockade, conflict, or severe sanctions event is not a smooth operating case; it can break listing access, production, customer continuity, distributions, and terminal recovery simultaneously. Commercial moat survival and common-share survival are therefore separate propositions. The former is strong; the latter is conditional, and the current price does not compensate for that conditionality.

9. The observable signal that invalidates the thesis

The security-thesis exit trigger is: **two consecutive reported quarters in which platform-derived HPC revenue is non-growing or declining year over year, consolidated operating margin is below 50%, and trailing capex/revenue remains at or above 35%**. TSMC discloses total revenue and platform mix, so the HPC revenue series is reproducible even though percentages are rounded.

This combination—not one soft quarter—would show that AI/customer demand weakened while committed capacity and overseas duplication still consumed capital, exactly the reflexive failure the Base case assumes away. It would invalidate the 15.32% HPC CAGR, make 55.5% terminal margin untenable without a rapid repair, and raise the probability of simultaneous EPS and multiple compression. This is a research kill criterion only; it does not authorize a sale, message, broker instruction, or portfolio mutation.

10. Final red-team conclusion

Commercial thesis survives; security thesis at TWD2,420 does not. TSMC remains an exceptional business with a credible management and moat PASS. The model is arithmetically sound, method-consistent, and appropriately conservative in several presentation choices. Its strongest vulnerability is the joint dependence on five more years of HPC-led growth, high utilization, successful overlapping node/packaging ramps, and near-peak margin retention. At today's price, even the audited Base outcome yields only 4.86% gross TWD and 4.52% net SGD; the probability-weighted results are 2.39% and 2.15%.

The red team therefore supports the formal ER2 **PASS**, CIO **PASS**, null proposed sizing, and the audited diagnostic classification **Buy only at lower price**. No audited score or return is revised. Taiwan discontinuity remains an explicit conditional-survival stress, not a fabricated probability. Trade execution authorized: **NO**.

Provenance and integrity record

All frozen inputs hash-match the orchestrator's dispatch: post-R Foundry `249c6f46...d775d62e`; Synthesis `7fb3fc16...8715594`; Valuation Preflight `02a04760...cd6ac`; Compounder Score Markdown/JSON `dc4341e3...561f66` / `ba3372a0...00cec`; Scoring Audit Markdown/JSON `a27ebc63...168060` /

e0c40115...eba392. QF/QFR, data package, Management, and Moat were also consumed at current hashes 431bfc7b...a612f, 41c48ac2...9a4e5, 5d286e13...247b, 6b6c76a4...acbf, and 36486f19...9163. The quote packet 238ea5f5...92453 and statutory bridge 1d6c522f...374e1 match their QFR seals. The prior-date 2026-08-29 portfolio context is used only under its disclosed freshness advisory. Zero nested delegation was used.

Appendix D - Data Package (raw historicals)

Taiwan Semiconductor Manufacturing Company Limited — Production ER2 Data Package

Security: XTAI:2330 ordinary share, ISIN TW0002330008 **Reporting currency / scale:** New Taiwan dollars; tables state either TWD billions or TWD millions **ER2 run / report:** `pulse-cio-20260830T000151+0800` / `ER2-2330-TW-20260830T000151+0800` **Information cutoff:** 2026-08-30 SGT **Latest reported period:** Q2 FY2026 ended 2026-06-30 **TTM base:** Q3 FY2025 + Q4 FY2025 + Q1 FY2026 + Q2 FY2026, ended 2026-06-30 **Valuation anchor supplied to downstream work:** TWD 2,420 close on 2026-08-28; exact terminal date 2031-06-30; 5.0 years **Evidence rule:** all FMP and TSMC evidence cited below was fetched live in this ER2 run. No data-warehouse file or prior ER2 report was used as a research source.

0a. Industry classification and disclosure inventory

TSMC is a foreign private issuer, Taiwan-listed pure-play semiconductor foundry reporting under TIFRS with an SEC Form 20-F reconciliation framework and a December 31 fiscal year. The controlling source set is TSMC's FY2025 Form 20-F and annual report, official quarterly financial statements, management reports, earnings releases and transcripts. Live FMP annual and quarterly income, balance-sheet, cash-flow and key-metric endpoints were used as vendor cross-checks. Both live FMP product-segmentation endpoints returned an empty array; official TSMC platform, technology-node, geography, wafer-shipment, customer-concentration and capacity disclosures therefore control.

The industry checklist was triggered because TSMC is a semiconductor manufacturer, a foreign issuer and an issuer whose economic disclosure is richer than FMP's empty segment/product fields. Search terms applied to official materials included: `operating segment`, `foundry`, `income from operations`, `wafer shipment`, `wafer revenue by technology`, `net revenue by platform`, `geography`, `customer concentration`, `capacity`, `utilization`, `advanced packaging`, `CoWoS`, `capital expenditure`, `research and development`, `inventory days`, `backlog`, `book-to-bill`, ASP, `wafer starts`, and `design wins`.

Source inventory

Source family	Live source checked in this run	Period / purpose	Current-run evidence
Annual filing	https://investor.tsmc.com/sites/ir/sec-filings/2025_20F%20Report.pdf	FY2025 statutory, segment, platform, geography and concentration	`qf_live/official_tsmc_2025_20F.pdf`, SHA-256 `923117acae9536fa30629f87573e6f976fb6e678ad46070c1e68520eb375de29`
Annual report	https://investor.tsmc.com/sites/ir/annual-report/2025/2025%20TSMC%20Annual%20Report.E.pdf	FY2025 operations, capacity, shipments and capital	`qf_live/official_tsmc_2025_annual_report.pdf`, SHA-256 `3fb7ae4ad972aa2bc6e45bb36635152ad89d52f4a7165f389bcb94eeb54a6abd`
Prior official annual history	https://investor.tsmc.com/static/annualReports/2021/english/index.html through https://investor.tsmc.com/static/annualReports/2024/english/index.html	FY2021-FY2024 platform, node, shipment, capacity, concentration and statutory backfill	Live official pages fetched during D/DR disclosure inventory
Quarterly result hubs	https://investor.tsmc.com/english/quarterly-results/2025/q3 through https://investor.tsmc.com/english/quarterly-results/2026/q2	Last four quarters	Four current-run statement, release, presentation and management-report packets
Earnings transcripts	Official transcript links on the four quarterly result hubs	Q3'25, Q4'25, Q1'26, Q2'26 call dates and forward comments	Four official PDFs fetched live; Q2 also independently checked through FMP transcript endpoint dated 2026-07-16
FMP financials	`/stable/income-statement`, `/balance-sheet-statement`, `/cash-flow-statement`, `/key-metrics`	FY2021-FY2025 and quarterly vendor cross-check	Current-run `qf_live/fmp_*` files; FY2025 official overrides disclosed where different
FMP product/geography	`/stable/revenue-product-segmentation` and `/revenue-geographic-segmentation` annual and quarterly	Availability test	All four live results were `[]`; official TSMC tables replace vendor detail

Completeness matrix

Dataset / table family	Official source searched	Search terms or table names	Years available	Included?	If excluded, why	Downstream relevance
Reportable-segment economics	FY2025 20-F Note 38; quarterly statements	operating segment; foundry; income from operations	FY2021-FY2025; TTM	Yes	None	Foundry appendix and statutory model
Platform revenue dollars	FY2025 20-F; FY2022/2023 annual reports	net revenue by platform; HPC; smartphone	Clean consolidated FY2023-FY2025; older perimeter differs	Yes	FY2021-FY2022 dollars used only as historical context because older annual-report table perimeter differs from later consolidated presentation	End-market mix and moat
Technology-node mix	Annual and quarterly management reports	wafer revenue by technology; advanced technologies	FY2021-FY2025; Q2'26	Yes	No node-level profit disclosed	Mix, cycle and margin analysis
Wafer shipments / capacity	FY2022-FY2025 annual reports; Q2'26 report	shipments; 12-inch equivalent; annual capacity	FY2021-FY2025; Q2'26 shipment	Yes	Utilization percentage not numerically disclosed	Capital intensity and cycle
Customer concentration	FY2025 annual report / 20-F	ten largest; largest customer; sales concentration	FY2023-FY2025	Yes	Customer names not disclosed in table	Durability and concentration risk
Gross margin / capacity	FY2021-FY2025 annual reports; quarterly management reports	gross margin; capacity plan; 12-inch equivalent	FY2021-FY2025; Q2'26	Yes	Numerical utilization is not disclosed	Margin durability and capital-cycle risk
Backlog / book-to-bill	Annual report, 20-F, four management reports	backlog; book-to-bill; cancellations	None	No	True non-disclosure in checked official sources	Forecast constraint
Capex / R&D / cash returns	FMP live statements with official override; annual report	capex; research and development; dividends; repurchase	FY2021-FY2025	Yes	None	Reinvestment and shareholder returns
Recent quarterly trend	Four official result packets	revenue; margin; platform; technology; geography	Q3'25-Q2'26	Yes	Platform dollar values derived only when explicitly tagged	Recency gate

Material semiconductor KPI history

KPI family	Granularity	FY2021	FY2022	FY2023	FY2024	FY2025	Latest interim	Source path
Advanced technology wafer-revenue share	7nm and below	50%	53%	58%	69%	74%	77% in Q2'26	FY2022-FY2025 official annual reports; Q2'26 management report
Wafer shipments	Million 12-inch-equivalent wafers	14.2	15.3	12.0	12.9	15.0	4.336 in Q2'26	Official annual reports and Q2'26 management report
Managed annual capacity	Million 12-inch-equivalent wafers	>13	>15	>16	~17	>17	17-18 FY2026 plan	Official FY2021-FY2025 annual reports; 2025 annual-report capacity plan
HPC platform share	Net revenue	37%	41%	43%	51%	58%	66% in Q2'26	FY2022 and FY2025 annual reports; Q2'26 management report
Smartphone platform share	Net revenue	44%	39%	38%	35%	29%	22% in Q2'26	Same official sources
Consolidated gross margin	Statutory	51.6%	59.6%	54.4%	56.1%	59.9%	67.7% in Q2'26	Official annual reports and Q2'26 earnings release
Ten-largest-customer share	Net revenue	71%	68%	70%	76%	78%	Latest annual anchor	FY2023 and FY2025 official annual reports / 20-Fs
Largest-customer share	Net revenue	26%	23%	25%	22%	19%	Latest annual anchor	Same official concentration disclosures
Second-largest-customer share	Net revenue	10%	<10%	11%	12%	17%	Latest annual anchor	Same official concentration disclosures

KPI family	Granularity	FY2021	FY2022	FY2023	FY2024	FY2025	Latest interim	Source path
Manufactured product breadth	Distinct products	12,302	12,698	11,895	11,878	12,682	12,682 latest annual anchor	Official annual reports / earnings-release profiles
Customer breadth	Customers served	535	532	528	522	534	534 latest annual anchor	Official annual reports / earnings-release profiles

This history establishes two opposing facts for forecasting: advanced-node/HPC mix has risen sharply, while wafer shipments remain cyclical. Mix, pricing and utilization must therefore be modeled separately rather than extrapolating shipment growth alone.

1. Reporting structure and taxonomy

TSMC has exactly one operating and reportable segment: **Foundry**. The FY2025 Form 20-F states that the chief operating decision makers focus on operating income generated by the foundry segment and that the company has only one operating segment. That segment manufactures customers' integrated-circuit designs across logic process nodes and provides related packaging, testing, mask-making, design-enablement and royalty services. All six commercial platforms—HPC, Smartphone, IoT, Automotive, Digital Consumer Electronics and Other—map to Foundry; they are revenue disaggregation, not separate accounting segments.

FY2025 Foundry revenue was TWD3,809.054 billion, 100% of consolidated revenue. The exact issuer-disclosed segment profit metric is **Income from operations**, TWD1,936.092 billion in FY2025. No platform or node profit line is disclosed, so no platform/node margin is inferred.

Reporting structure has remained one Foundry segment throughout FY2021-FY2025. No reportable-segment realignment was found in the FY2025 Form 20-F, FY2025 annual report or the four current quarterly packets. Disclosure granularity did change: N2 first appears as a separate 3% wafer-revenue row in Q2'26, and Q2'26 combines some mature-node buckets that earlier reports listed separately. That is a technology-table presentation change, not a segment change. Clean consolidated platform dollar history in the current 20-F begins FY2023; older platform schedules have a different reporting perimeter and are retained only as percentage context.

FY2025 geography by customer headquarters was North America 75%, Asia Pacific excluding China/Japan 9%, China 9%, Japan 4% and EMEA 3%. Q2'26 moved further toward North America at 78%, with Asia Pacific 8%, China 6%, Japan 4% and EMEA 4%. Geographic mix is customer-headquarters based, not wafer shipment or fab-location revenue.

Revenue / concentration disclosure	FY2023	FY2024	FY2025	Q2 FY2026	Controlling source
North America share	68%	70%	75%	78%	FY2025 20-F; Q2'26 management report
Asia Pacific share, excluding China/Japan	8%	10%	9%	8%	Same
China share	12%	11%	9%	6%	Same
Japan share	6%	5%	4%	4%	Same
EMEA share	6%	4%	3%	4%	Same
Ten-largest-customer share	70%	76%	78%	Not disclosed quarterly	FY2025 annual report / 20-F
Largest-customer share	25%	22%	19%	Not disclosed quarterly	Same
Second-largest-customer share	11%	12%	17%	Not disclosed quarterly	Same

2. Consolidated historicals — five years

All monetary values are TWD billions except per-share data and share counts. Live FMP statements are retained as vendor cross-checks, but official TSMC annual reports and financial statements control parent-attributable net income, diluted-share counts, tax, and the FY2023-FY2025 cash-flow rows where vendor classifications differ.

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue	1,587.415	2,263.891	2,161.736	2,894.308	3,809.054	Live FMP annual; FY2025 official 20-F

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Gross margin	51.6%	59.6%	54.4%	56.1%	59.9%	Official annual reports
Operating income	649.981	1,121.279	921.466	1,322.053	1,936.092	Live FMP annual; FY2025 official 20-F
Operating margin	40.95%	49.53%	42.63%	45.68%	50.83%	Calculated from preceding rows
Net income attributable to parent	596.540	1,016.530	838.498	1,173.268	1,717.883	Official annual reports / financial statements
Diluted EPS, TWD	23.01	39.20	32.34	45.25	66.25	Official annual reports / EPS notes
Diluted shares, millions	25,930.380	25,929.383	25,929.267	25,929.645	25,930.557	Official EPS notes
Capex	849.436	1,089.626	949.820	956.010	1,272.411	Live FMP; official FY2023-FY2025 management reports control
Free cash flow	262.724	520.973	292.150	870.170	1,002.565	OCF less capex; official FY2023-FY2025 management reports control
ROIC	37.75%	51.07%	32.34%	40.26%	52.29%	Calculated as described below

ROIC definition: NOPAT equals operating income multiplied by one minus the official consolidated effective tax rate; invested capital equals debt plus common shareholders' equity less cash and short-term investments. FY2021 uses year-end invested capital because the preceding comparison is outside the five-year table; FY2022-FY2025 use average beginning/end invested capital. Effective tax rates were 9.96%, 11.12%, 14.44%, 16.60% and 15.98%; corresponding NOPAT was TWD585.237bn, TWD996.538bn, TWD788.395bn, TWD1,102.557bn and TWD1,626.696bn. Average invested-capital denominators were TWD1,550.344bn, TWD1,951.336bn, TWD2,437.836bn, TWD2,738.569bn and TWD3,110.873bn.

The FY2025 official OCF of TWD2,274.976bn controls over FMP's TWD2,358.742bn; the TWD83.766bn vendor gap is explicitly retained in QF/QFR. This avoids overstating FY2025 FCF.

3. Foundry segment historicals

Foundry equals the consolidated company for reportable-segment purposes. The exact sealed metric is **Income from operations**; it is issuer-disclosed statutory segment operating income, not analyst-adjusted EBITDA.

Foundry	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, TWD bn	1,587.415	2,263.891	2,161.736	2,894.308	3,809.054	Live FMP / official annual statements
YoY growth	24.9%	42.6%	-4.5%	33.9%	31.6%	Calculated; official annual reports corroborate
Income from operations, TWD bn	649.981	1,121.279	921.466	1,322.053	1,936.092	Live FMP / FY2025 Form 20-F Note 38
Margin on Income from operations	40.95%	49.53%	42.63%	45.68%	50.83%	Calculated

The TTM ended 2026-06-30 is TWD4,440.492bn revenue, TWD2,491.157bn Income from operations and a 56.10% operating margin. TTM parent net income is TWD2,237.088bn and TTM diluted EPS is TWD86.2708 using the TWD25,931m average diluted-share denominator.

3a. Historical statutory-profit bridge and forecast-driver ledger

Sealed packet: `statutory_bridge.json` **Sealed SHA-256:** `1d6c522fb7d1ec7f58c87043e87893756ca524834bf95fd2d36e4bc35e9374e1` **Packet schema / basis:** `1.0.0` / `issuer_disclosed` **Common segment profit metric:** `Income from operations` **Reporting currency / scale:** `TWD` / `millions`

The segment-profit basis is additive and statutory. Corporate/unallocated adjustment arrays and operating bridge adjustment arrays are empty in both periods; no zero placeholder or analyst plug is introduced.

FY2025 bridge — exact sealed values

Bridge line	Classification	Value, TWD m	Source ID	Running subtotal, TWD m
Foundry	segment profit	1,936,092	tsmc_2025_20f	1,936,092
Sum of reportable segment profit	segment profit subtotal	1,936,092	tsmc_2025_20f	1,936,092
Consolidated segment profit metric	subtotal	1,936,092	tsmc_2025_20f	1,936,092
Statutory operating income	statutory subtotal	1,936,092	tsmc_2025_20f	1,936,092
Total non-operating income and expenses	other_non_operating	105,571	tsmc_2025q4_fs	2,041,663
Pretax income	statutory subtotal	2,041,663	tsmc_2025q4_fs	2,041,663
Income tax expenses	tax	-326,266	tsmc_2025q4_fs	1,715,397
Noncontrolling interests adjustment to income attributable to shareholders of the parent	noncontrolling_interests	2,486	tsmc_2025q4_fs	1,717,883
Net income	statutory subtotal	1,717,883	tsmc_2025q4_fs	1,717,883

All five FY packet residuals are TWD0m; disclosed rounding unit is TWD1m and packet tolerance is TWD1,020.8m.

TTM ended 2026-06-30 bridge — exact sealed values

Bridge line	Classification	Value, TWD m	Source ID	Running subtotal, TWD m
Foundry	segment profit	2,491,157	ttm_official_workpaper	2,491,157
Sum of reportable segment profit	segment profit subtotal	2,491,157	ttm_official_workpaper	2,491,157
Consolidated segment profit metric	subtotal	2,491,157	ttm_official_workpaper	2,491,157
Statutory operating income	statutory subtotal	2,491,157	ttm_official_workpaper	2,491,157
Total non-operating income and expenses	other_non_operating	176,805	ttm_official_workpaper	2,667,962
Pretax income	statutory subtotal	2,667,962	ttm_official_workpaper	2,667,962
Income tax expenses	tax	-431,209	ttm_official_workpaper	2,236,753
Noncontrolling interests adjustment to income attributable to shareholders of the parent	noncontrolling_interests	335	ttm_official_workpaper	2,237,088
Net income	statutory subtotal	2,237,088	ttm_official_workpaper	2,237,088

All five TTM packet residuals are TWD0m; disclosed rounding unit is TWD1m and packet tolerance is TWD1,333.9m. The QFR exact-source recomputation differs from displayed-quarter sums by at most TWD1m, inside one disclosed rounding unit; the sealed displayed-quarter convention is preserved.

Forecast-driver schedule

Historical bridge line	FY value, TWD m	TTM value, TWD m	Forecast treatment	Driver and source	Bear / base / bull rule
Foundry Income from operations	1,936,092	2,491,157	Independently forecast operating profit	Revenue by platform/node, utilization, price/mix, cost improvement, N2 and overseas-fab dilution; official four-call evidence	Bear applies lower utilization and full overseas/N2 dilution; base balances mix and dilution; bull requires sustained advanced-node demand and productivity
Total non-operating income and expenses	105,571	176,805	Independently forecast below-line schedule	Net cash yield, associates, grants and realized/mark-to-market items; Q2'26 included TWD63bn Vanguard disposal/mark-to-market gain	Bear excludes exceptional gains and uses conservative cash yield; base normalizes exceptional gain; bull may use higher yield but may not repeat disposal gains without evidence
Income tax expenses	-326,266	-431,209	Tax-rate schedule on pretax income	Historical effective rate; Q1'26 call guided FY2026 tax rate to 17%-18%	Bear 18.5%; base 17.5%; bull 17.0%, subject to future statutory evidence

Historical bridge line	FY value, TWD m	TTM value, TWD m	Forecast treatment	Driver and source	Bear / base / bull rule
Noncontrolling interests adjustment to income attributable to shareholders of the parent	2,486	335	Small separately forecast post-tax line	Exact statutory history; no consolidation shortcut	Bear zero positive adjustment; base holds near TTM run-rate; bull caps at recent FY scale unless ownership evidence changes

STATUTORY_BRIDGE_STATUS: VERIFIED — CLEARED FOR FORECASTING

4. Product and sub-segment historicals

TSMC separately discloses platform dollars for FY2023-FY2025. These platforms are commercial demand categories inside Foundry; they are not reportable segments and no platform profit is disclosed.

Segment	Platform	What it is	Dollar disclosure?	FY2023 / FY2024 / FY2025 revenue, TWD bn and source
Foundry	HPC	AI accelerators, CPUs, GPUs, servers, PCs, tablets, consoles, base stations	Yes	934.769 / 1,476.891 / 2,192.931; FY2025 20-F platform table
Foundry	Smartphone	Application processors, modems and related mobile silicon	Yes	814.914 / 1,005.130 / 1,110.816; same source
Foundry	Internet of Things	Connectivity, low-power compute, MCU and edge devices	Yes	161.917 / 165.516 / 191.047; same source
Foundry	Automotive	ADAS, infotainment, MCU, power and connectivity silicon	Yes	133.654 / 139.323 / 186.667; same source
Foundry	Digital Consumer Electronics	TV, set-top-box, camera and related consumer silicon	Yes	47.000 / 47.961 / 47.997; same source
Foundry	Others	Packaging/testing, masks, design services, royalties and uncategorized applications	Yes	69.482 / 59.487 / 79.596; same source

The six FY2025 rows total TWD3,809.054bn exactly. FY2025 YoY growth calculated from the disclosed dollars was HPC +48.5%, Smartphone +10.5%, IoT +15.4%, Automotive +34.0%, DCE +0.1% and Other +33.8%. These are dollar-disclosed histories, not back-solves.

Technology-node revenue is disclosed only as a percentage of wafer revenue, not in TWD and not with node profit. Likewise, quarterly platform dollars are not directly disclosed; only mix percentages and sequential growth are provided. No back-solved dollar row is presented as disclosed.

Segment	Product / technology family	Disclosure method	Last four quarters	Source
Foundry	Advanced technologies, 7nm and below	Wafer-revenue share	Q3'25 74%; Q4'25 77%; Q1'26 74%; Q2'26 77%	Official management reports
Foundry	3nm	Wafer-revenue share	23%; 28%; 25%; 30%	Official management reports
Foundry	5nm	Wafer-revenue share	37%; 35%; 36%; 33%	Official management reports
Foundry	7nm	Wafer-revenue share	14%; 14%; 13%; 11%	Official management reports
Foundry	N2	Wafer-revenue share	Not separate; not separate; not separate; 3%	Q2'26 introduced separate row
Foundry	HPC	Platform share; QoQ growth disclosed	57%, flat; 55%, +2%; 61%, +20%; 66%, +20%	Official management reports
Foundry	Smartphone	Platform share; QoQ growth disclosed	30%, +19%; 32%, +13%; 26%, -11%; 22%, -4%	Official management reports
Foundry	IoT	Platform share; QoQ growth disclosed	5%, +20%; 5%, +12%; 6%, +12%; 5%, +4%	Official management reports
Foundry	Automotive	Platform share; QoQ growth disclosed	5%, +18%; 5%, +6%; 4%, -7%; 4%, +15%	Official management reports

Platform quarterly YoY dollar growth is a true non-disclosure in the four official management reports. The table therefore preserves the issuer's actual mix and QoQ disclosures rather than fabricating YoY platform dollars.

5. Most recent quarterly trend

TSMC FY ends December 31. Most recently completed fiscal quarter at time of writing: FY2026 Q2, covering April-June 2026, reported on 2026-07-16 via https://investor.tsmc.com/english/quarterly-results/2026/q2.

Because Foundry is the only segment, consolidated and segment revenue are identical.

Quarter	Foundry revenue, TWD bn	YoY growth	Operating margin	Source, release date
Q3 FY2025	989.918	30.3%	50.6%	Official earnings release, 2025-10-16
Q4 FY2025	1,046.090	20.5%	54.0%	Official earnings release, 2026-01-15
Q1 FY2026	1,134.103	35.1%	58.1%	Official earnings release, 2026-04-16
Q2 FY2026	1,270.381	36.0%	60.3%	Official earnings release, 2026-07-16

The Q2'26 headline 36.0% YoY revenue growth appears in the live-fetched official release. Revenue also grew 12.0% QoQ. Gross margin reached 67.7%, while operating margin reached 60.3%. Q2 advanced-node share was 77%; N2 was 3%, N3 30%, N5 33% and N7 11%. Q2 platform mix was HPC 66%, Smartphone 22%, IoT 5%, Automotive 4%, DCE 1% and Other 2%. Geography was North America 78%, Asia Pacific 8%, China 6%, Japan 4% and EMEA 4%.

Quarterly capacity-cycle indicators moved in both directions. Q2 wafer shipments were 4.336m 12-inch equivalents, up 16.6% YoY, while inventory days rose seven days sequentially to 87, attributed to the N2 ramp. Q2 OCF was TWD783.365bn, capex TWD496.002bn and FCF TWD287.363bn. The high advanced-node mix and improving margin are current positives; rising inventory and heavy capex require explicit cycle and ramp-risk scenarios.

6. Management commentary on forward growth

All quoted text below is short and verbatim from live-fetched official TSMC-hosted call transcripts, releases or the annual report. Call dates match the fiscal periods. Each interpretation is a modeling implication, not a forecast endorsement.

Foundry

Period / date	Speaker / source	Verbatim quote	Topic	Modeling implication
Q2 FY2026 / 2026-07-16	C.C. Wei, Chairman and CEO; official transcript	“we now expect our full-year 2026 revenue growth to be slightly above 40% year over year in US dollar terms.”	2026 demand	Near-term base revenue must incorporate the updated growth anchor but fade beyond the guided year
Q2 FY2026 / 2026-07-16	Wendell Huang, CFO; official earnings release	“continued strong demand for our leading-edge process technologies, including the steep ramp-up of our 2-nanometer technology.”	N2 ramp	N2 supports mix but brings explicit startup dilution and capex intensity
Q1 FY2026 / 2026-04-16	C.C. Wei, Chairman and CEO; official transcript	“we maintain strong confidence for our full-year 2026 revenue to now grow by above 30% in US Dollar terms.”	Guidance progression	The later Q2 upgrade supersedes this anchor; retaining it documents forecast revision direction
Q1 FY2026 / 2026-04-16	Wendell Huang, CFO; official earnings release	“continued strong demand for our leading-edge process technologies.”	Leading-edge demand	Supports positive utilization/mix assumptions only for the disclosed near term
Q4 FY2025 / 2026-01-15	Wendell Huang, CFO; official transcript	“In 2026, we expect our capital budget to be between USD52 billion and USD56 billion”	Capital budget	This was raised later to USD60-64bn; forecast must use the latest range and recognize revision risk
Q4 FY2025 / 2026-01-15	Wendell Huang, CFO; official earnings release	“continued strong demand for our leading-edge process technologies.”	Q1 setup	Provides contemporaneous support for the Q1 acceleration
Q3 FY2025 / 2025-10-16	C.C. Wei, Chairman and CEO; official transcript	“the AI demand actually continue to be very strong and more stronger than we thought three months ago”	AI accelerator demand	Supports HPC upside but also increases customer and capex concentration

Period / date	Speaker / source	Verbatim quote	Topic	Modeling implication
Q3 FY2025 / 2025-10-16	Wendell Huang, CFO; official earnings release	“continued strong demand for our leading-edge process technologies.”	Q4 setup	Supports the sequential Q4 revenue and margin trend without proving long-run persistence
FY2025 annual report	C.C. Wei, Chairman and CEO	“We will continue to invest in technology and capacity to support our customers’ growth”	Strategic capital allocation	Long-term moat reinforcement comes with sustained reinvestment and lower near-term distribution capacity

Additional source-bound forward items not quoted at length: at the Q2'26 call, Q3'26 guidance was USD44.6-45.8bn revenue, 65%-67% gross margin and 56%-58% operating margin. Management raised FY2026 capex to USD60-64bn, with roughly 70%-80% for advanced process, about 10% for specialty technology and 10%-20% for advanced packaging/testing/masks/other. Management expects N2 ramp to dilute second-half gross margin by roughly 3-4 percentage points, while overseas-fab dilution is expected at 2-3 points in early stages and 3-4 points later. These are explicit counterweights to AI demand.

Technology road map: N2 entered high-volume manufacturing in Q4'25 and was 3% of Q2'26 wafer revenue. A14 risk production is planned for 2027 and volume for 2028; A13/A12 are scheduled for volume production in 2029. Capacity planning takes more than five years. These dates support a five-year model but do not justify unbounded terminal growth.

The most recent investor-day-style technology material is embedded in the annual report and quarterly calls; no separate current capital-markets-day transcript was identified in the official event set. This is disclosed as a source constraint rather than filled with third-party commentary.

7. Capital allocation history

All amounts are TWD billions. Capex is shown as a positive use of cash. FY2025 capex and OCF use official TSMC values. FMP live cash-flow fields provide buyback, dividends and acquisition cross-checks; official FY2025 annual report corroborates TWD18.0 dividend per share and approximately TWD467bn paid.

Year	Capex	Capex / revenue	R&D	R&D / revenue	Buybacks	Dividends paid	M&A cash outflow	Source
FY2021	849.436	53.5%	124.735	7.9%	0.000	265.786	0.000	Live FMP annual statements
FY2022	1,089.626	48.1%	163.262	7.2%	0.872	285.234	0.000	Live FMP; official 2022 annual report buyback context
FY2023	949.820	43.9%	182.370	8.4%	0.000	291.722	0.000	Official management report; live FMP cross-check
FY2024	956.010	33.0%	204.182	7.1%	3.089	363.055	0.000	Official management report; live FMP cross-check
FY2025	1,272.411	33.4%	246.427	6.5%	0.000	466.779	0.000	Official annual report / live FMP

Five-year capex totaled approximately TWD5.117tn and R&D TWD0.921tn. The table shows why free cash flow is more volatile than earnings: capex was approximately one-third of revenue in the two latest high-growth years and exceeded half of revenue in FY2021. Share repurchases were immaterial; dividends are the principal recurring cash distribution. The Q2'26 call stated shareholders would receive TWD24 per share in 2026, up 33% from 2025, with a continued-increase objective for 2027. That is management policy, not a perpetual-growth guarantee.

8. Balance-sheet snapshot — FY2025

Item	TWD bn	Source
Cash and equivalents	2,767.856	Live FMP annual, ties to annual-report cash-flow ending balance
Short-term investments	300.738	Live FMP annual
Cash plus marketable securities	3,068.594	Official Q4'25 management report

Item	TWD bn	Source
Total interest-bearing debt	1,032.990	Official Q4'25 management report; controls over broader FMP TWD1,064.583bn debt field
Net debt / cash	Net cash 2,035.604	Official cash/securities less official interest-bearing debt
Net debt / EBITDA	-0.75x	Net cash divided by live FMP FY2025 EBITDA TWD2,724.262bn
Goodwill plus intangibles	24.953	Live FMP annual; goodwill TWD5.891bn and intangibles TWD19.062bn
Common shareholders' equity	5,419.596	Live FMP annual
Tangible book value	5,394.643	Equity less goodwill/intangibles

At 2026-06-30, the stronger current anchor was cash TWD3,134.218bn plus marketable securities TWD383.795bn, against interest-bearing debt TWD1,031.680bn, for net cash TWD2,486.333bn. Inventory was TWD385.525bn, total assets TWD9,375.655bn and parent equity TWD6,432.518bn. Downstream valuation should use a consistent date: FY2025 balance sheet for FY tables, and Q2'26 net cash for the TTM/valuation bridge.

9. Recent corporate actions — last 12 months

- **2026-07-16 — FY2026 capital budget raised:** management increased the capital budget to USD60-64bn from the Q1 high-end-of-USD52-56bn stance. Source: Q2'26 official transcript.
- **2026-07-16 — global capacity expansion:** management described an additional USD100bn Arizona investment, several additional sub-2nm logic/advanced-packaging fabs, and 13 leading-edge/advanced-packaging fabs in Taiwan over coming years. Timing remains demand-dependent. Source: Q2'26 official transcript.
- **2026-07-16 — Vanguard-related gain:** Q2 non-operating income included TWD63bn disposal and mark-to-market gain on Vanguard shares, contributing TWD2.24 to Q2 EPS. It is non-recurring for forecast normalization. Source: Q2'26 transcript and financial statements.
- **2026-04-16 — FY2025 Form 20-F filed:** the filing reaffirmed one Foundry segment, platform/geographic tables and the statutory operating-profit basis. No segment realignment was introduced.
- **2026 dividend policy update:** Q2 management stated 2026 cash dividend receipts of TWD24 per share and an expectation of continued increase in 2027. This is an announced distribution path, not sizing or trade authority.
- **Leadership:** C.C. Wei remained Chairman and Chief Executive Officer; Wendell Huang remained Senior Vice President and CFO through the latest result. No CEO/CFO transition was found in the four quarterly packets.
- **M&A and shares:** live FMP annual cash-flow data recorded zero acquisition cash outflow in FY2025 and no common-share repurchase; diluted shares remained approximately 25.931bn. No material transformative acquisition was identified in official FY2025/Q2'26 materials.
- **Geopolitical manufacturing footprint:** Arizona, Japan and Germany expansions continue alongside Taiwan investment. Overseas-fab cost dilution is an explicitly quantified margin headwind, while geographic diversification reduces single-location capacity risk only gradually.

10. Open data gaps and classification

Gap	Classification	Official sources and search terms checked	Treatment
Platform- and node-level profit	True non-disclosure	FY2025 20-F Note 38, annual report, four management reports; `platform profit`, `node margin`, `segment operating income`	Use only Foundry Income from operations; never invent platform/node margin
Quarterly platform dollar revenue and YoY growth	True non-disclosure	Q3'25-Q2'26 management reports and presentations; `net revenue by platform`, `YoY`	Preserve official share/QoQ growth; any derived dollars must be tagged estimated from rounded mix
Utilization percentage	True non-disclosure	Four calls/releases/management reports; `utilization rate`, `capacity utilization`	Use directional higher/lower commentary only; scenario ranges cannot be labeled issuer guidance

Gap	Classification	Official sources and search terms checked	Treatment
Backlog, book-to-bill and cancellation rate	True non-disclosure	FY2025 annual report/20-F and four quarter packets; exact terms searched	Constrain near-term demand to explicit guidance and customer signals; no backlog-based forecast
Wafer ASP	True non-disclosure as a reported consolidated series	Annual reports and management reports; ASP, `average selling price`	Revenue bridge separates shipment/mix/price conceptually but does not fabricate ASP
Customer identities	True non-disclosure in concentration table	FY2025 annual report `ten largest`, `largest customer`, `second largest customer`	Use disclosed shares only: top ten 78%, largest 19%, second largest 17% in FY2025
Clean platform dollar comparability before FY2023	Reporting-taxonomy / perimeter boundary	FY2022 annual-report platform schedule vs FY2025 20-F consolidated table	FY2021-FY2022 used for percentage context; clean consolidated platform dollars begin FY2023
Q2'26 platform dollars	Estimated if downstream computes them	Official whole-percent mix applied to TWD1,270.381bn revenue	Do not label as disclosed; rounding uncertainty is at least about one percentage point per row
P&C ownership perimeter	Not applicable	TSMC is a semiconductor foundry, not an insurer/reinsurer	No insurer schedule required

No open gap exists in the segment-profit-to-statutory-operating-income bridge. The one Foundry segment's disclosed Income from operations equals statutory operating income for FY2025 and TTM; both sealed bridges reach pretax and parent net income with zero residuals. All downstream conclusions must stay within the disclosed one-segment perimeter and the source limitations above.

D-stage self-verification and provenance

- **Latest-quarter headline:** the live official Q2'26 earnings release states TWD1,270.38bn revenue and 36.0% YoY growth; URL https://investor.tsmc.com/english/quarterly-results/2026/q2.
- **Load-bearing management quote:** live FMP `earning-call-transcript` for `2330.TW`, year 2026, quarter 2 returned date `2026-07-16`, matching the official call, and contained the slightly-above-40% FY2026 revenue-growth statement. Current-run file SHA-256 is `87882a86f7d06848cf7ca52172708f49a652a9d60a534e2ed8326902524bba18`.
- **Latest annual revenue:** a fresh live FMP annual income-statement pull returned FY2025 TWD3,809,054m, exactly tying the official annual revenue within the required 1% threshold.
- **FMP availability:** fresh D-stage annual and quarterly product-segmentation pulls both returned `[]`, confirming the official-source replacement rather than a cache fallback.
- **Warehouse copy:** only the newly pulled Q2'26 FMP transcript dataset was absent and copied without overwrite; source and destination hashes match. Log: `raw/pulse-cio-20260830T000151+0800/d_live/warehouse_copy_log.md`.

DATA PACKAGE CLEARANCE: Independent DR review completed. Official parent-income, diluted-share, tax, capex, FCF, capacity and concentration controls supersede bounded vendor/perimeter mismatches; no source, taxonomy or statutory-bridge blocker remains.

STATUTORY BRIDGE VERIFIED — CLEARED FOR FORECASTING

DATA PACKAGE VERIFIED — CLEARED FOR WAVE 2