US Semiconductors and Semiconductor Capital Equipment

Fall Series 2026 Update

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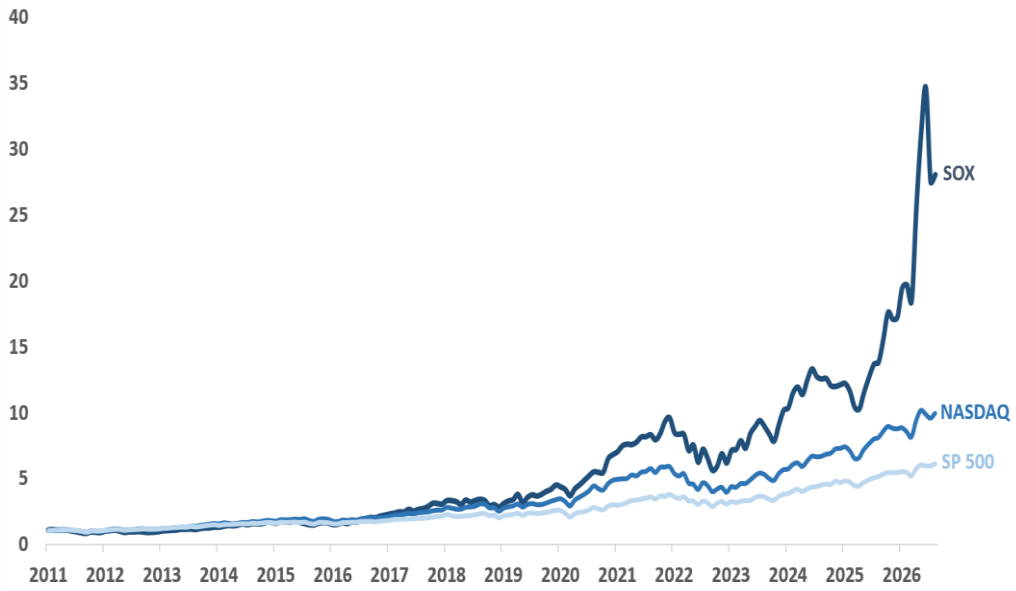
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See the end pages of this presentation for analyst certification and important disclosures, including non-US analyst disclosures.
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Semiconductor/Semicap Stocks Have Outperformed the Market over the Past 1, 3, 5, 10, 15, 20 Years; Four Full Semiconductor Cycles over the Past 12 Years



Note: SOX 2010 year-end value indexed to 1

Annual Stock Returns (CAGR%)	1-year	3-year	5-year	10-year	15-year	20-year
SOX (Semi) Index	**84%**	**48%**	**26%**	**30%**	**25%**	**17%**
Semicap Equipment	**132%**	**57%**	**36%**	**36%**	**26%**	**19%**
Chip Design Software (EDA)	**3%**	**8%**	**15%**	**26%**	**22%**	**16%**
SP500 Index	15%	19%	11%	13%	13%	9%
NASDAQ Composite Index	16%	24%	11%	17%	17%	13%

*Pricing as of 9/16/2026 intra-day

Source: Bloomberg Finance L.P.

Drivers of the Strong Stock Performance

- Realization that semiconductors (~$795B industry in CY25; ~$1.73T in CY26 per JPMe) are the foundational building blocks for all innovation in the tech sector – applications/devices/appliances are getting more intelligent and requiring higher levels of semiconductor $ content
- Emergence of new semiconductor drivers: cloud datacenter, EV, IoT, AI/Deep learning
- Lower cyclicality in the industry driven by end-market diversification and disciplined supply growth
- Lower cyclicality drives more focus on profitability/free cash flow expansion – strong capital return to shareholders
- Industry consolidation (M&A) drives diversification, R&D scale, and enhanced profitability / capital returns
- We expect long-term positive fundamental trends to continue this year

2026 Outlook: Semis/Semicap Fundamentals Strengthening; Focus on AI ASICs, Cyclical Recovery in Analog, Chip Complexity, and Capacity Expansions

- Cyclical dynamics in semis over the past 10 years have been demand driven, not supply driven. The last ~4 down-cycles have specifically been demand-driven, as the value chain (supply-side) has become more disciplined on supply expansion…
  - 2010/2011: Auto/consumer/PC slowdown
  - 2015/2016: China, PC, Communications infrastructure slowdown
  - 2018/2019: China/US trade war and tariffs, weak industrial and smartphone demand (ahead of 5G upgrade cycle), weak cloud spending, weak auto demand
  - 2022/2023/2024: Post-COVID demand slowdown/global macroeconomic deceleration

- **We currently model the semi industry growing +118% Y/Y (+32% Y/Y ex-memory) in 2026 and +35% Y/Y in 2027 (+18% Y/Y ex-memory); Additionally, we model WFE up +31% Y/Y in 2026 and +38% Y/Y in 2027.**

- In our view, key risks and potential drivers of sector volatility include AI infrastructure spending sustainability, uncertainty around frontier-lab investment and AI development timelines, elevated valuations, and geopolitical/supply-chain risks…

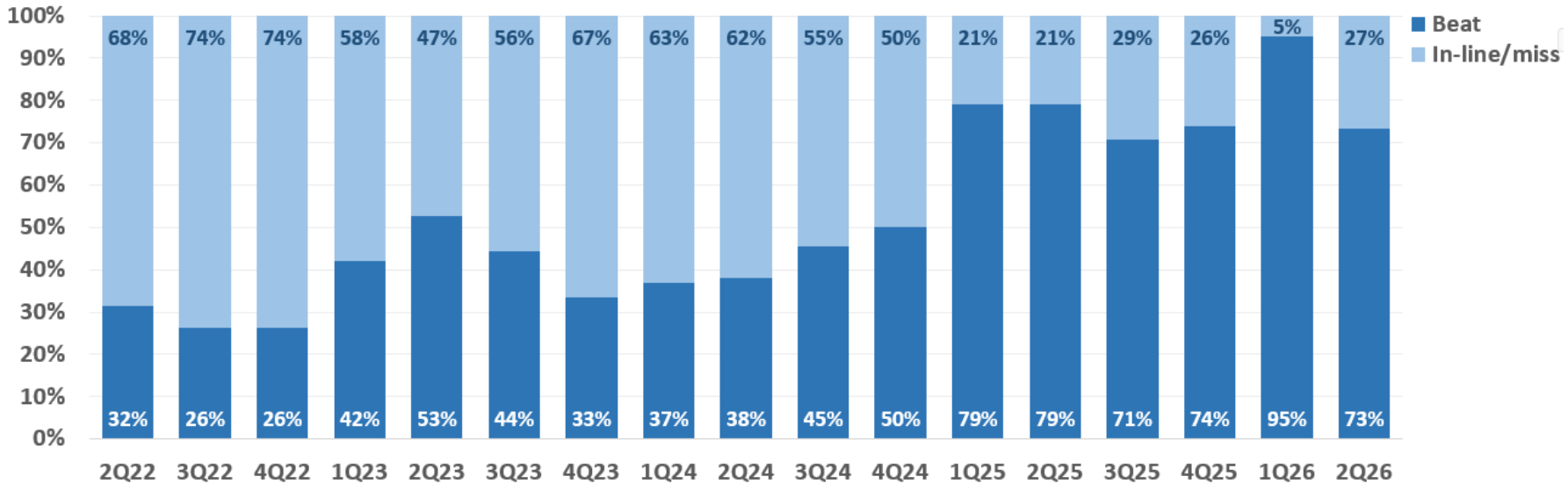
- Nonetheless, we think underlying demand and supply fundamentals remain robust, and in many cases, are strengthening. Hence, we view the recent pull-back/consolidation in the group as highly constructive…

- **Top large-cap picks include: AVGO, ADI, MRVL, MU, KLAC; We also highly favor NVDA, AMAT, LRCX.**

- **Top SMID-cap picks include: ALAB, AMKR, and MKSI.**

Continued Positive Cyclical Recovery Trends and AI Spending Tailwinds Driving Sustained Period of Positive Earnings Revisions

- Positive earnings revisions have remained in recent quarters, with **~80%** of our covered semi/semicap companies delivering better-than-expected guidance over the **past 6 quarters** (and **~73%** in 2Q26).



Post-quarter 90D returns:	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25	3Q25	4Q25	1Q26	2Q26
SOX	-6%	10%	28%	14%	-7%	22%	17%	10%	-6%	-1%	-14%	30%	16%	9%	7%	83%	-17%
SP 500	-6%	7%	7%	8%	-4%	11%	10%	4%	5%	3%	-5%	10%	8%	2%	-5%	14%	2%
SOX vs SP 500	9bps	269bps	2,057bps	539bps	-285bps	1,035bps	732bps	615bps	-1,080bps	-392bps	-966bps	1,937bps	774bps	697bps	1,176bps	6,855bps	-1,847bps

*Based on company's out-quarter guidance vs consensus
Source: Bloomberg Finance L.P., company reports

2Q26 Earnings Recap: Compute/Networking + Memory

Compute/Networking

- **AI infrastructure-led growth remains supply-constrained rather than demand-constrained**, with NVDA framing its FY28/CY27 +70% Y/Y growth outlook as a "comfortable" base case with room for revenue to more than double absent supply constraints; AVGO also sees room for upside as supply and deployment constraints ease.
- **Custom silicon (XPUs/ASICs) continues to take share of the AI accelerator TAM**, with strengthening design-win pipelines and program ramps, and a rapidly diversifying customer base.
- **Server CPU TAM now seen growing at 50%+ CAGR through 2030**, led by CPU-heavy agentic inference; competitive dynamics favor AMD and ARM; INTC product roadmap remains challenged, though TAM expansion is helping fuel server CPU growth.
- **Robust networking demand spans scale-up/out/across opportunities**, with strong orders for high-performance switch, routing, and optical products (AVGO, MRVL, ALAB) as attach rates for networking content within AI DC infrastructure continue to escalate.
- **Financing is now part of the AI infra debate**, with companies framing revenue-share agreements, campus initiatives and private-capital platforms as measured, capped tools to support AI infrastructure demand rather than circular financing.

Memory (DRAM/NAND)

- **Structural supply tightness and pricing power continue to drive record results and guidance;** We forecast industry DRAM blended pricing increasing ~250% in CY26 and ~30% in CY27; NAND pricing is forecast to grow ~250%/~25% in 2026/2027
- **Long-term/strategic customer agreements (LTAs/SCAs) have emerged as the key cycle-shaping catalyst**, locking in pricing and supply across both DRAM and NAND and improving visibility.
- **Capex remains disciplined** (capital intensity below historical averages), limiting oversupply risk; principal demand-side risk is BOM-inflation-driven destruction, particularly in client/consumer markets.

2Q26 Earnings Recap: Semicaps + Analog

Semiconductor Capital Equipment

- **WFE upcycle is strengthening and lengthening…** AI-led fab buildouts and tight tool supply are pulling demand forward and strengthening visibility, driving a stronger 2H26 and acceleration into CY27–28.
- **Upside risk to our WFE forecasts is building…** We model +31% Y/Y WFE growth in 2026 and +38% in 2027, with potential upside driven by new fab capacity announcements and accelerated tool procurement.
- **Top pick is KLAC; also favor AMAT/LRCX/MKSI…** We think KLAC has the best risk/reward given underperformance, rising exposure to 2027 F/L spend, and potential for CY27 revenue revisions; AMAT, LRCX, and MKSI also remain well positioned across DRAM, etch/deposition, and early-cycle subcomponents.

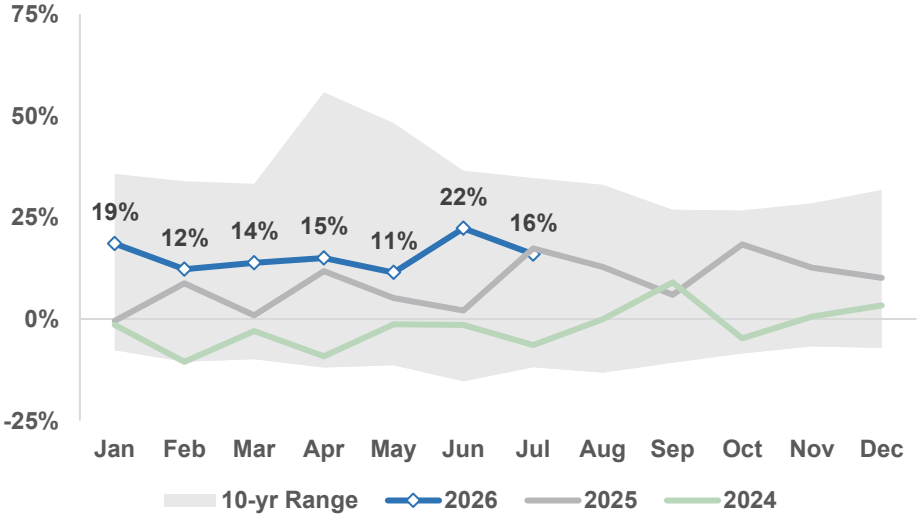
Analog / MCU

- **Recovery is broadening into a more durable upcycle…** TXN, ADI, and MCHP all pointed to improving industrial demand, accelerating AI/data-center exposure, stronger A&D, and resilient auto content growth.
- **Forward demand signals are improving…** Companies are noting healthier channel inventories, stronger order activity, and better lead times, supporting the case for continued revenue/margin recovery.
- **Pricing, lead times, and margins are improving across the group…** TXN, ADI, and MCHP all indicated that demand is strengthening, lead times are lengthening, pricing is becoming more supportive, and higher utilization/mix should help margins as the recovery continues.

Analog/Broad-Based Semis: Improving Demand, Stabilizing Inventories And Firming Pricing Support Upcycle

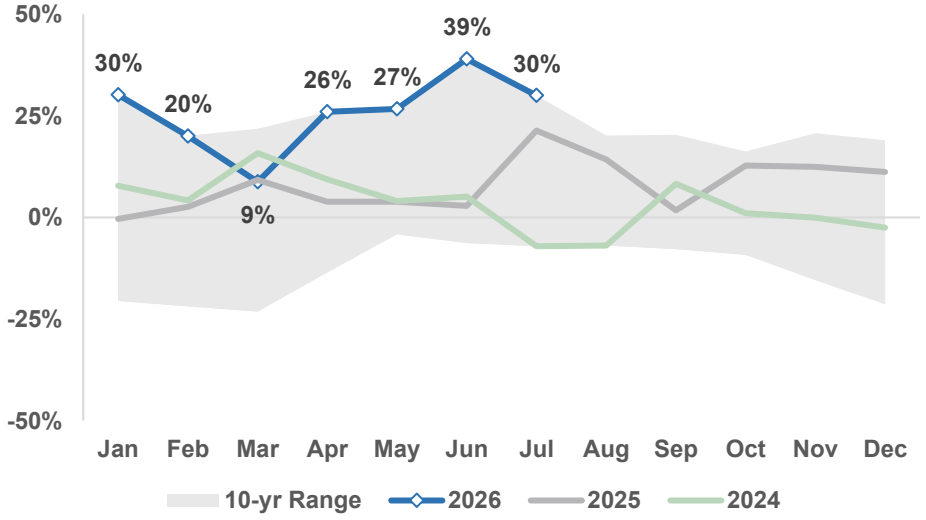
- Analog recovery continues to broaden, with YTD 2026 Y/Y sales growth positive every month as industrial, auto, AI / data-center, and A&D demand improve.
- Microcomponents are now showing stronger momentum than analog, with Y/Y growth accelerating sharply since March and running well above 2024/2025 levels.
- **Company commentary points to a more durable upcycle, as inventory conditions stabilize, demand strengthens, lead times lengthen, and pricing improves – all of which should create revenue/EPS upside.**

Monthly Y/Y Analog Sales Growth (%)



Source: WSTS and J.P. Morgan estimates

Monthly Y/Y Microcomponent Sales Growth (%)



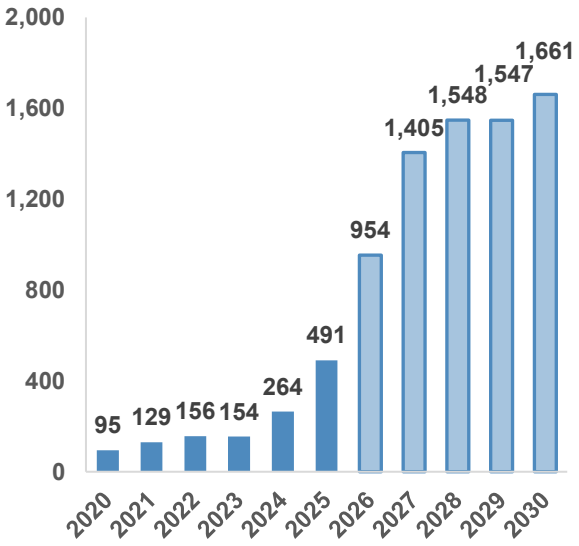
Note: Microcomponent category encompasses MCUs, MPUs, and DSPs
Source: WSTS and J.P. Morgan estimates

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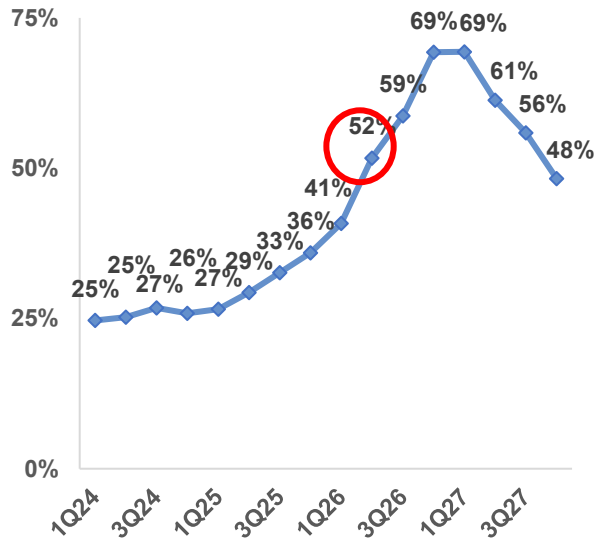
Cloud Capex: We Think Improving AI Economics Support Higher-For-Longer Spending Environment and Stronger Semi Fundamentals

- Cloud capex expectations continue to be revised materially higher YTD (+DD %), with CY26-28 cloud capex estimates now at $953B/ $1.41T/ $1.54T, reinforcing a strong demand backdrop for semis.
- Early AI monetization / ROI signals are becoming more visible. Our dataset shows points to accelerating cloud/AI revenue growth, larger backlogs, long-term contracted capacity, and improving cloud/AI business profitability.
- **If these trends remain intact, we believe CSPs will have a strong economic rationale to sustain their elevated levels of spending on AI infrastructure…**

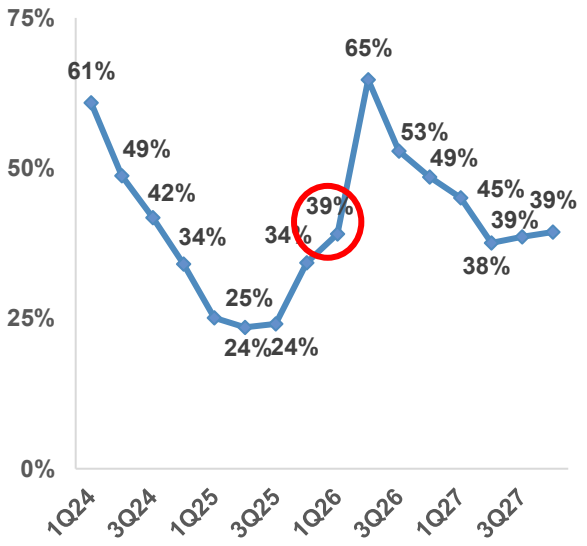
Cloud Capex ($B)



Y/Y Change in Cloud Revs (%)



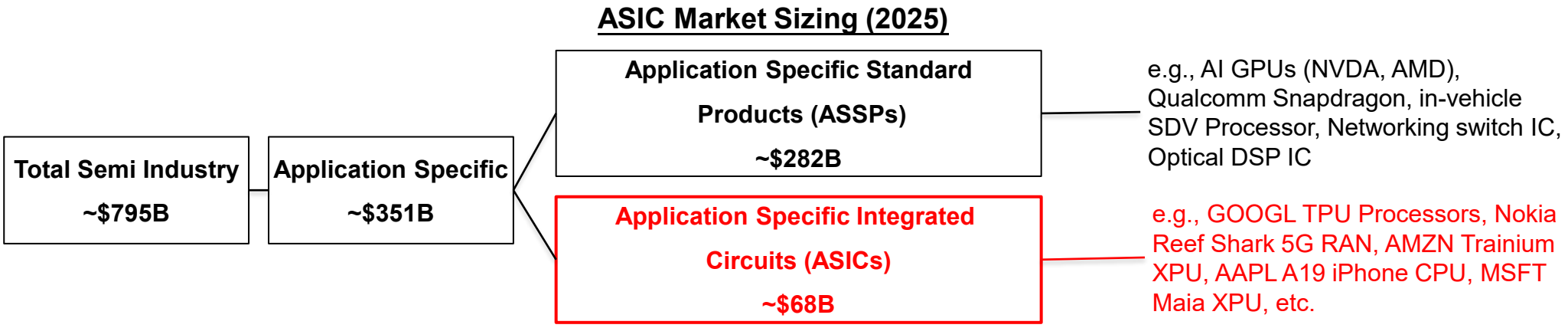
Y/Y Change in Cloud Operating Profits (%)



Note: Our Cloud Capex dataset accounts for several cloud/neocloud operators including Amazon, Google, Microsoft, Meta, Oracle, CoreWeave, Nebius, IREN, and SpaceX; All forward estimates are based on median consensus estimates; Operating margin growth data above tracks Amazon (AWS), Google (GCP), and Microsoft (MSFT Intelligent Cloud; includes Azure) as they are the only three hyperscaler co's that provide detailed cloud business disclosures
Source: J.P. Morgan Cloud Capex Dataset, Bloomberg Finance L.P.

Custom Chip (ASIC) Market: AI Workload Specialization Is Expanding The TAM and Reinforcing AVGO/MRVL Leadership

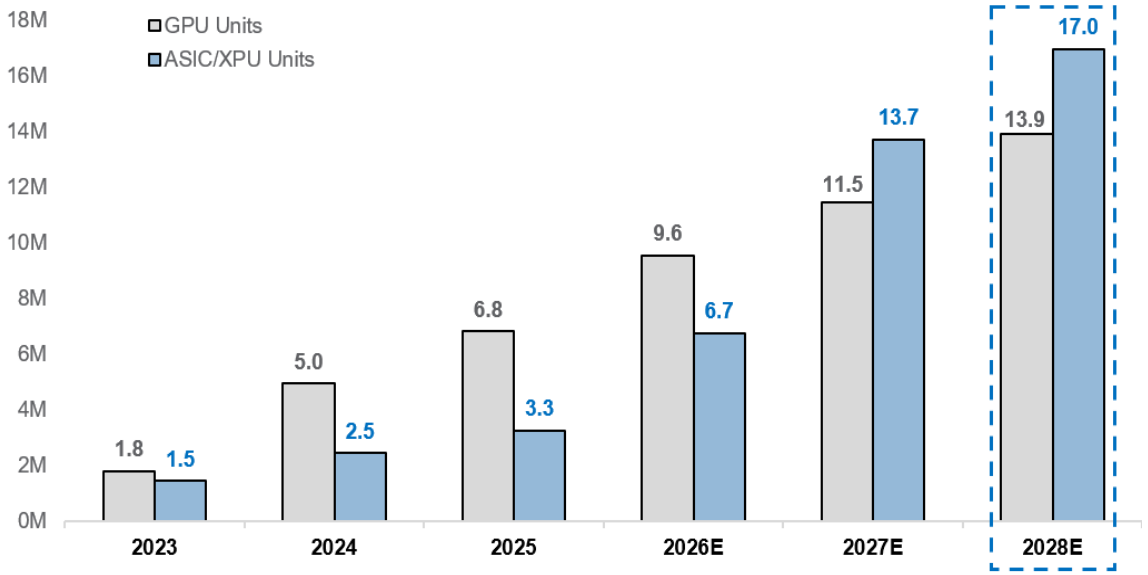
- **Demand for custom ASICs is accelerating as AI workloads become more specialized, with hyperscalers/frontier model builders increasingly seeking workload-optimized silicon to improve performance, reduce power consumption, lower cost per token, and secure supply beyond merchant GPU availability.**
- **Custom AI ASICs require deep expertise across multi-die SoC design, high-speed SerDes, HBM / memory interfaces, advanced packaging, networking, and system-level productization. These are capabilities most customers cannot replicate internally at scale.**
- **We estimate the Custom AI ASIC market to be ~$60-70B in CY26, with a 40–50%+ CAGR over the next several years.**
- **AVGO and MRVL dominate high-end ASIC market, with differentiated IP, proven execution, and estimated market shares of 80–85% and 10–12%, respectively.**
- **AVGO AI revenue should scale from ~$58B in FY26 to ~$135B / ~$245B in FY27 / FY28, led by META, GOOGL, Anthropic, OAI, and SoftBank/ARM program ramps. MRVL data center revenue should grow from ~$10B in CY26 to ~$16B in CY27,to $28B in CY28 driven by optical DSP strength, AMZN Trainium 3+4, MSFT Maia, and GOOGL XPU-attach ramps.**



Source: J.P. Morgan Research, WSTS

AI ASICs: Unit Shipments Forecast to Exceed GPU Units by 2027

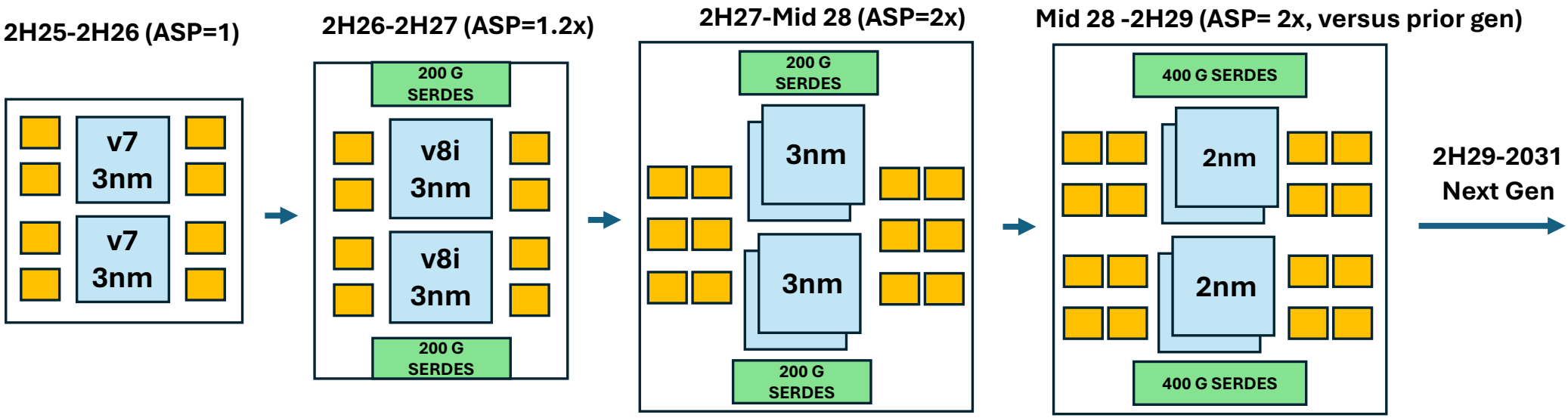
AI accelerators units (MM)	2023	2024	2025	2026E	2027E	2028E
NVIDIA GPUs	1.7	4.5	6.2	8.9	10.0	11.6
AMD GPUs	0.1	0.5	0.7	0.7	1.5	2.3
Google TPUs	1.2	1.7	1.8	4.4	8.9	11.6
AWS Inferenta + Tranium	0.3	0.8	1.5	1.9	3.5	3.5
Meta MTIA	0.0	0.0	0.0	0.3	0.5	1.1
Microsoft MAIA	0.0	0.0	0.0	0.2	0.8	0.8
Total	**3.3**	**7.4**	**10.1**	**16.3**	**25.2**	**30.9**
Growth Y/Y%		*128%*	*36%*	*62%*	*54%*	*23%*
GPU % total units	55%	67%	68%	59%	46%	45%
ASIC/XPU % total units	45%	33%	32%	41%	54%	55%



Source: Company reports, J.P. Morgan research

AVGO: We See No Gaps in the TPU Roadmap and No Slowdown in Revenue Growth Through CY31

- **5-yr agreement with GOOGL guarantees increasing TPU revenues every year to AVGO over CY26-CY31; Agreement spans 3nm, 2nm, sub 2nm and 2.5D, 3.5D advanced packaging architectures**
- **Our checks suggest AVGO will retain majority TPU volume/revenue share, anchoring AVGO as GOOGL's primary supplier and reinforcing our view that GOOGL's most strategic/performant TPU programs remain with AVGO.**
- **Don't be misled by "supply chain checks"… May not see AVGO TPU in the supply chain (advanced substrate/ 3.5D advanced packaging done internally), especially for 2nm and below TPU programs.**



Near-Term Updates on AVGO and MRVL's ASIC Pipelines

AVGO ASIC Pipeline:

- **GOOGL TPU orders CY27 backlog; currently around 6M+ V7/V8 shipments….~$90- $100B in revenues (+100% Y/Y).**
- **Meta ramping first 3nm program (Athena) NOW; "Iris" 3nm Mid-CY26; "Arke" 1H27; "Astrid" 2H27; "Apollo" 2028.**
- **OpenAI (2nm/3nm) and Softbank/ARM XPU first silicon both out of fab and functionality looks good; on track for YE26/CY27 ramp…..Tape-out 2nd gen OpenAI ASIC this month…..commenced design of 3rd gen OpenAI ASIC.**
- **GOOGL/AVGO assessing v8i "next-gen" (4 compute die, 12 HBM stacks); extends life of TPUv8i for 6 more mos, then ramp next gen v9/v10 2nm TPU (4 compute, 16 HBM stacks)…either strategy will NOT result in revenue "air-pocket" in CY28 (70%+ growth CY28).**
- **ASIC wins with up-and-coming start-ups: Softbank/ARM, SambaNova, FuriosaAI, Etched….**
- **Early discussions with Anthropic for an XPU ASIC engagement for CY29/CY30 XPU launch….both teams scoping out architecture of the XPU program**

MRVL ASIC Pipeline:

- **XPU ASIC Trainium 3 (3nm) production shipments commenced last Qtr…..Trainium 4 (2nm) on track**
- **Celestial NPO/CPO solution (Tied to Trainium 4) have seen upside to 2H27 orders.**
- **XPU ASIC Microsoft Maia 3nm – program set to ramp beginning CY27 (full ASIC engagement - FE/BE**
- **XPU-attach: multi-billion dollar /multi-year win for Google SmartNIC/DPU ASIC – ramp CY27 - CXLco 2H26; early engagement on Google "LPU" offload inference engine (recall MRVL did 1st gen Groq LP SRAM memory IP) – CY28 ramp.**



AI Custom Chip (ASIC) Beneficiaries: Broadcom and Marvell

Broadcom AI ASIC Pipeline

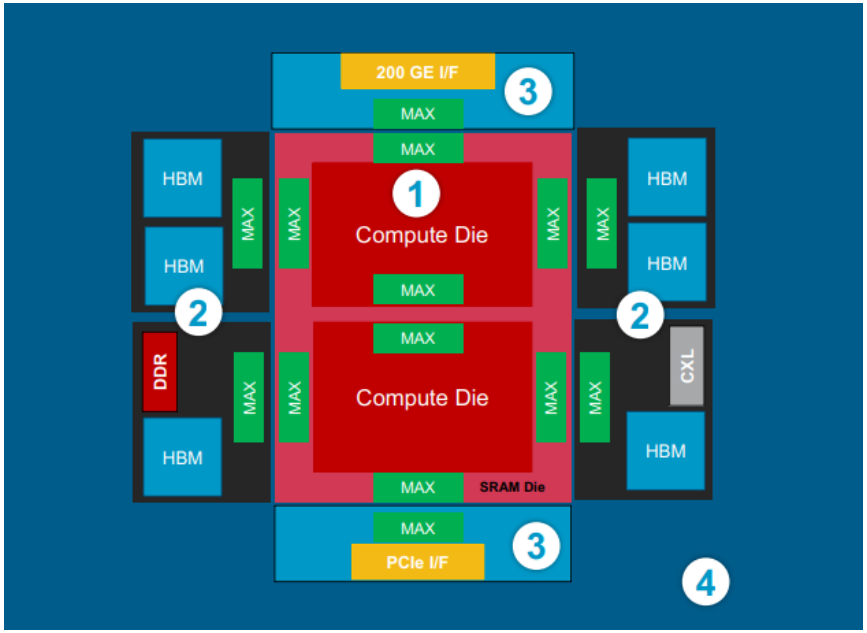
	ASIC Supplier	Generations Won	Ramp Timing/Duration
Google TPU AI ASIC processor family	Broadcom 7nm, 5nm, 3nm, 2nm	V1, V2, V3, V4, V5, V6, V7, V8	Ramping now through CY28
Meta MTIA AI ASIC processor family	Broadcom 7nm, 5nm, 3nm, 2nm	Gen 1, Gen2, Gen 3 and follow-ons	Ramping now through CY28
Bytedance AI Video/AI Networking	Broadcom 5nm, 3nm	Gen 1, Gen2 and follow-ons	Ramping now through CY28
OpenAI XPU AI ASIC processor family	Broadcom 2nm and 3nm	Gen1 and Gen 2 on 3DSOIC pkging	Ramping CY26-CY29
SoftBank/Arm XPU AI ASIC processor family	Broadcom 2nm and 3nm	Gen 1 and Gen 2 on 3DSOIC pkging	Ramping CY26-CY29
Anthropic/TPU Rackscale	Broadcom 3nm	TPUv6p - Ironwood	Ramp 2H CY26
Customer #7 AI ASIC XPU (Asia Hyperscale Customer	Broadcom 3nm, 2nm	Gen 1, Gen 2	Ramping End 26
Customer #8 AI ASIC XPU (Asia Hyperscale Customer	Broadcom 3nm, 2nm	Gen 1, Gen2	Ramping CY27

Marvell AI ASIC Pipeline

Amazon AI ASIC processor family	Marvell 5nm/3nm/2nm	Gen 2, Gen 3, Gen 4 and follow-ons	Ramping Now
Microsoft Maia AI ASIC processor family	Marvell 3nm/2nm	Gen 2 and follow-ons	Ramping End CY26
Google AI ARM CPU processor family	Marvell 5nm/3nm	Gen 1 and follow-ons	Ramping Now
Cloud/Hyperscale FBNIC (SmartNic)	Marvell 5nm/3nm	Gen 1 and follow-ons	Ramp 2H25
Other XPU Attach (SmartNIC, Fabric, Memory)	Marvell 3nm/2nm	Gen 1 and follow-ons	Ramping CY26

Source: JP Morgan Research

Broadcom's Powerful 3D SOIC ASIC Reference Platform / Marvell Custom HBM Designs

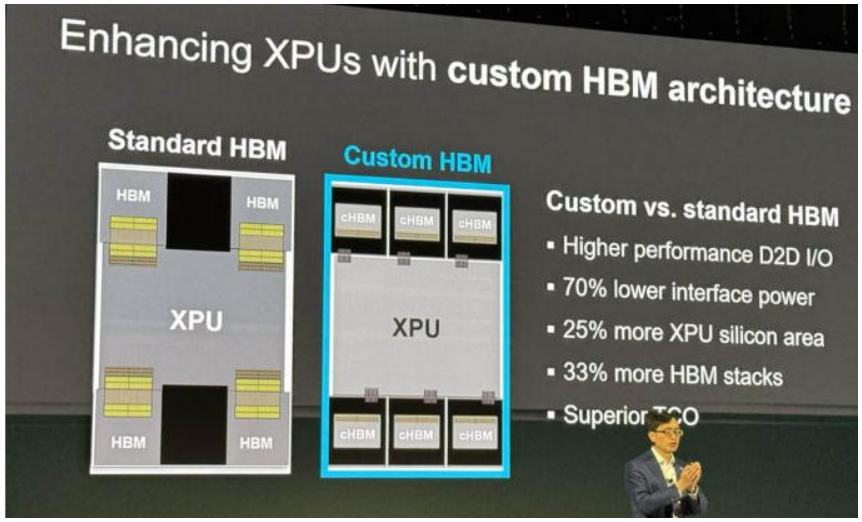


Source: Broadcom and J.P. Morgan Research

Broadcom Has Developed a 2nm/3nm AI ASIC Reference Platform to Enable Customers Fast Time to Market:

- 2nm/3nm/5nm compute die
- 100/200Gbps/400Gbps I/O die
- 2.5D/3D SOIC (chip stacking)
  - 2nm/3nm chip stacking
  - **Advanced substrate manuf capability in CY26**
- Chip-to-Chip I/O connectivity
- AI/Compute/IO/Memory/Interface IP
- **3.5D Adv Pkg capability CY28 (target 16x logic die)**

Broadcom is working with 4 of its 6 AI ASIC customers on next-gen 3D SOIC chip stacking ASIC programs



Source: Marvell and J.P. Morgan Research

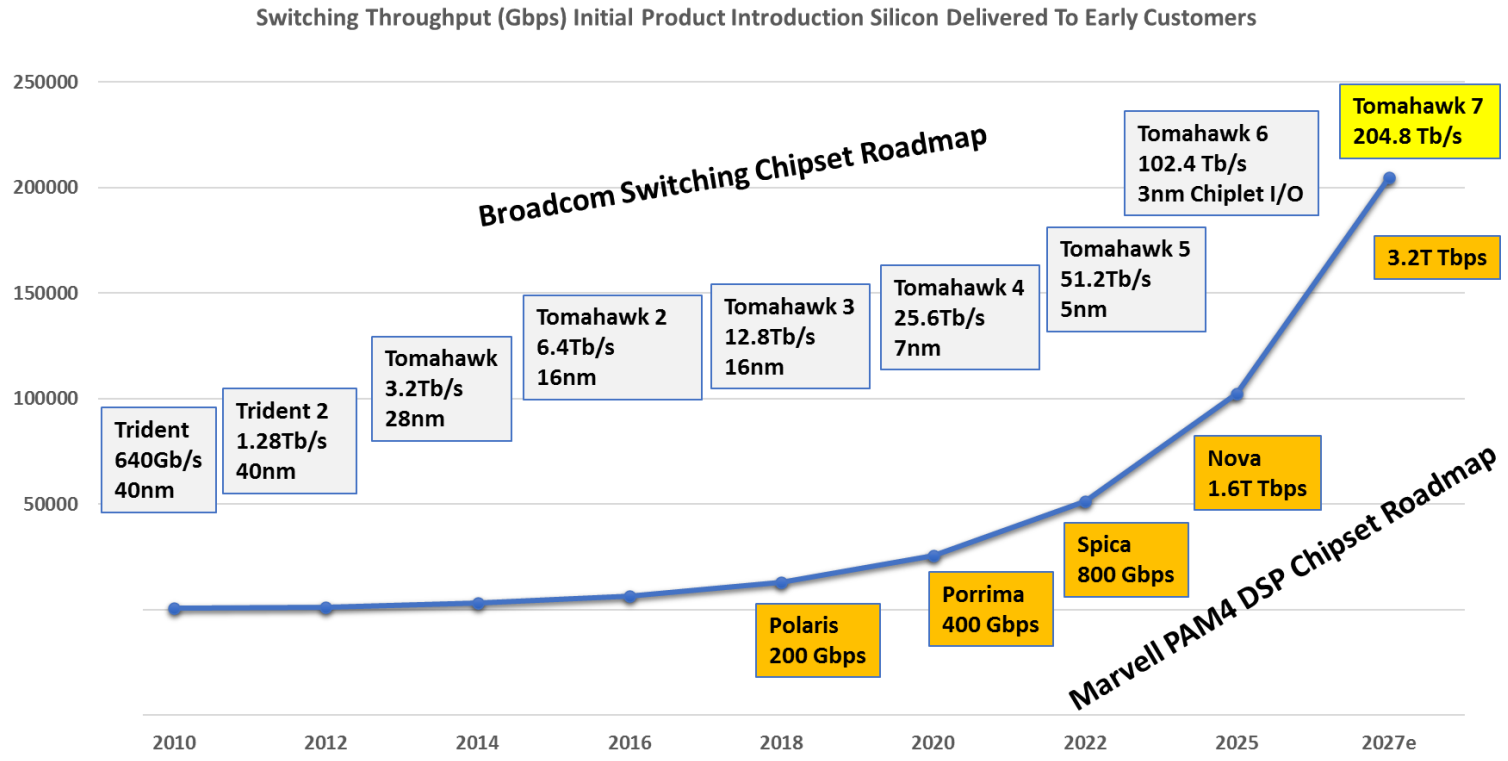
Marvell has a strong IP portfolio of 5nm, 3nm, and 2nm

Recently unveiled HBM memory IP differentiation that drives:

- 33% more HBM stacks per package
- 70% lower interface power
- 25% more XPU silicon area
- Marvell has won numerous HBM4 ASIC logic base die programs with DRAM suppliers

Broadcom (AVGO) and Marvell (MRVL): AI/Cloud Networking Silicon Continues to Drive Moore's Law Performance in Datacenter Networking

- **Broadcom strong 2-year cadence on new switching products – doubling switching throughput**
- **Broadcom Tomahawk 5 (51.2Tb/sec) – 5nm, taped out in Dec-21 – ramp 2H23 primarily for AI compute clusters – drives the 800G optical PAM4 DSP cycle**
- **Broadcom Tomahawk 6 (102.4Tb/sec) – 3nm, taped out Jan-24 – ramping NOW – drives the 1.6T optical PAM4 DSP cycle……AVGO currently sold out of T6 for CY27 on significant demand - assessing qualifying Samsung 3nm**
- **Broadcom Tomahawk 7 (204.8Tb/sec) – 2nm, taping out this quarter - we expect the team to continue its 2-year product cycle and ramp in 2028 – drives the next-gen 3.2T optical PAM4 DSP cycle – 400G SERDES…CY28/29 initial CPO adoption**

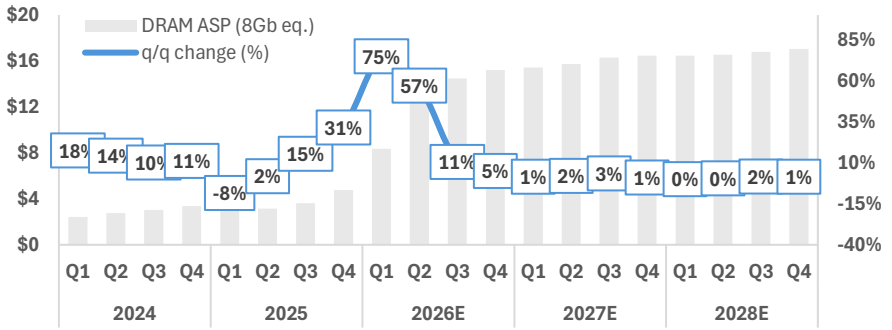


Source: Company reports and J.P. Morgan estimates.

AI-Driven Memory Upcycle Continues in 2026, Driving Positive EPS Revisions

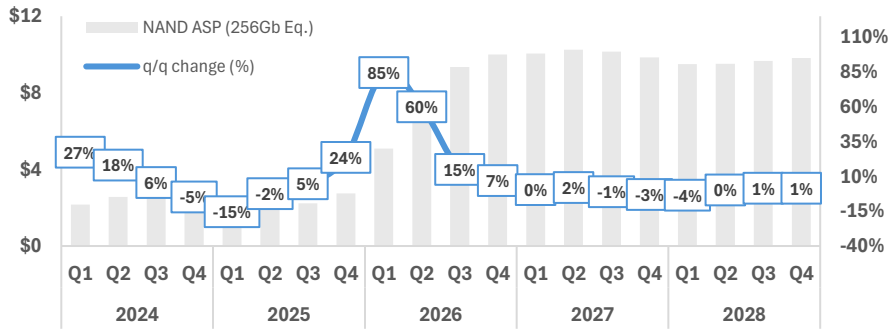
- **Outlook for bit demand in DRAM/NAND remains solid for 2026 and 2027**
  - DRAM bit demand should increase +29% Y/Y in CY26E and +32% Y/Y in CY27E, led by strong AI server demand and normalization of excess inventories
  - NAND bit demand should also increase +24% Y/Y in CY26E and +29% Y/Y in CY27E, led by eSSD
  - **Improving memory fundamentals, increasing LTA % mix especially in DRAM, positive for OW-rated MU in 2026**

Q/Q Change in DRAM ASPs



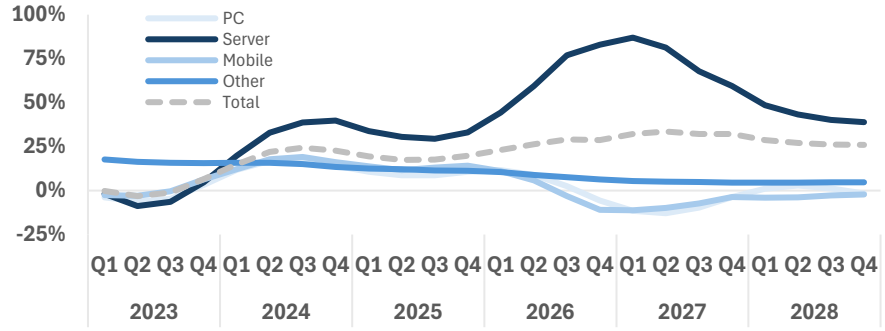
Source: WSTS and J.P. Morgan estimates

Q/Q Change in NAND ASPs



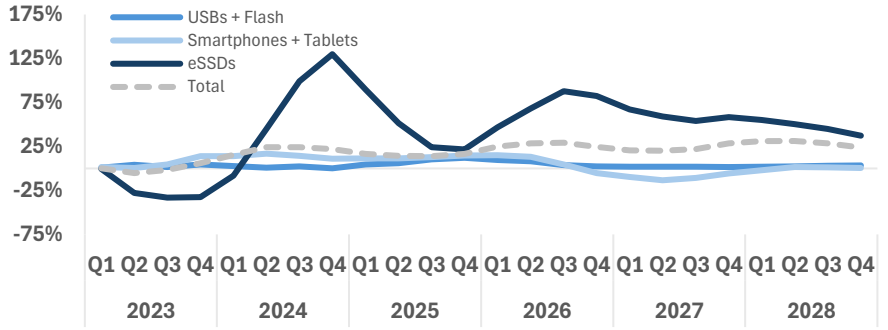
Source: WSTS and J.P. Morgan estimates

Y/Y Change in LTM DRAM Bit Demand by Market



Source: Gartner and J.P. Morgan estimates.

Y/Y Change in LTM DRAM Bit Demand by Market



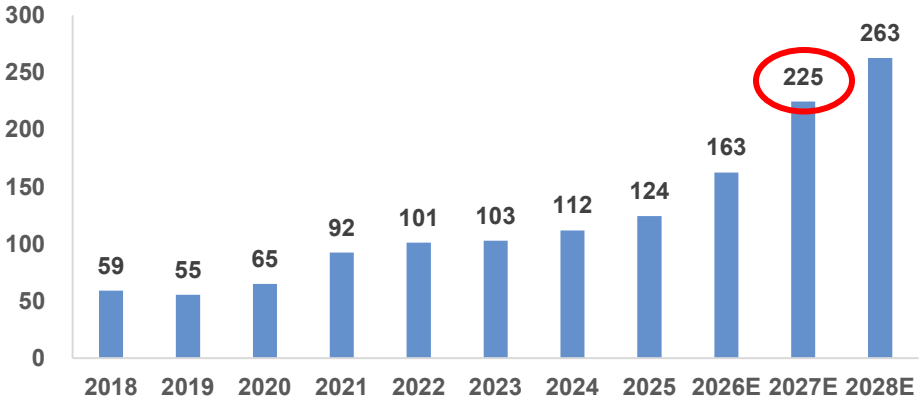
Source: Gartner and J.P. Morgan estimates.

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WFE: Cleanroom Constraints Remain the Primary Bottleneck; Robust Demand Extends Visibility into CY27 and Beyond

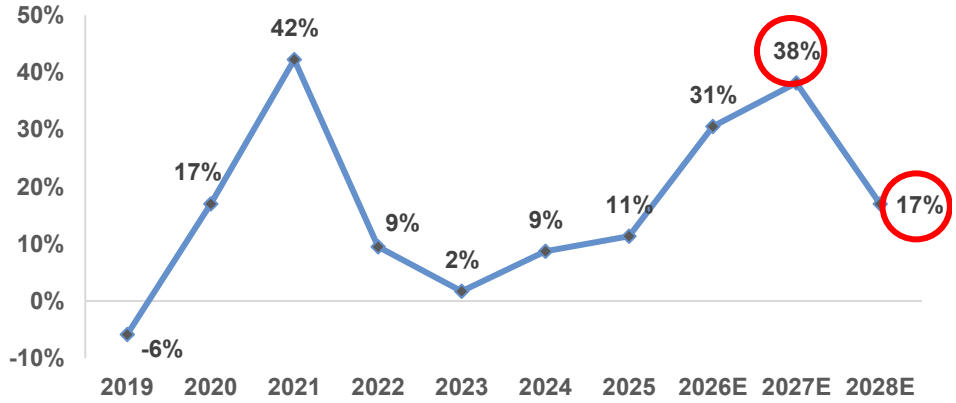
- **We now model WFE growth of +31% Y/Y in 2026E and +38% Y/Y in 2027E, as broadening AI demand pulls tool procurement forward ahead of multi-year greenfield/brownfield expansions.**
- F/L spend should be anchored by TSMC's N2/N3 buildout and incremental upside from INTC. Asia checks show a more aggressive TSMC roadmap, with multiple 1H26 fab shell starts, and rising equipment orders from 2Q26 onward.
- Memory WFE is broadening, led by DRAM capacity additions, while NAND spend should remain more conversion/migration-led until potential greenfield upside in 2H28+.
- **We see the most attractive risk/reward in KLAC, given YTD underperformance and underappreciated 2027 F/L WFE exposure, with upside to CY27 consensus as INTC increases engagement and capex around yield/cost improvement.**

WFE Spending ($B)



Note: Data excludes wafer bonders and other wafer-level packaging equipment
Source: Gartner and J.P. Morgan estimates

Y/Y Growth in WFE (%)



Note: Data excludes wafer bonders and other wafer-level packaging equipment
Source: Gartner and J.P. Morgan estimates

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SMID Cap Semis: Selective on Opportunities Within The Group

AMKR (OW; $85 PT)

- **Record 2Q, record 3Q guide** - beat driven by AI compute and auto, not handset seasonality.
- **Comms air-pocket is by design** - trading SiP volume for higher-margin advanced packaging capacity in Korea.
- **AZ Phase 2 (nearly doubling the campus, $12B total)** - confirms demand > supply and answers the "will it fill?" question.
- **OW thesis***: the only U.S. HVM advanced-packaging OSAT, levered to the one of the tightest links in the AI supply chain.*

MKSI (OW; $380 PT)

- **Strong 2Q beat and meaningful raise, broad-based across Semi, E&P, and Specialty Industrial**
  - Semi accelerating to >50% Y/Y growth on etch/dep subsystem demand
  - E&P inflecting on AI advanced-packaging and PCB chemistry, with equipment orders at all-time highs and visibility through 2027
  - Operating leverage is materializing and deleveraging is ahead of plan
- **OW thesis**: high-beta way to play the WFE upcycle, with a secular AI packaging kicker
  - Semi has historically grown 2-3x WFE in upcycles
  - E&P's laser + chemistry + plating stack addresses ~70% of critical advanced-substrate steps
  - Potential for multiple to re-rate toward large-cap semicap as balance sheet normalizes

J.P. Morgan Semiconductor Universe Comp Sheet

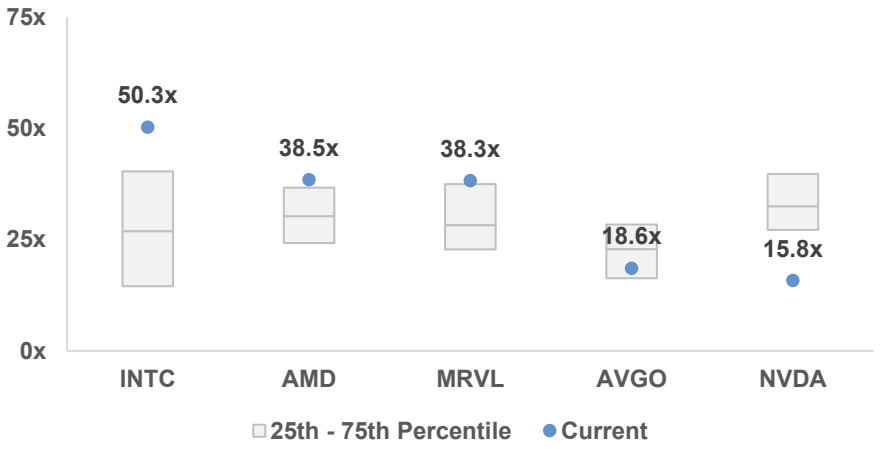
	JPM Rating	Market Cap	9/16/26 Price	Non-GAAP EPS C25	Non-GAAP EPS C26E	P/E C25	P/E C26E	Revenues C25	Revenues C26E	P/S C25	P/S C26E	Consensus Non-GAAP EPS C25	Consensus Non-GAAP EPS C26E	Consensus Non-GAAP EPS C27E	Consensus Revenues C25	Consensus Revenues C26E	Consensus Revenues C27E	Consensus P/E C25	Consensus P/E C26E	Consensus P/E C27E	Consensus P/S C25	Consensus P/S C26E	Consensus P/S C27E
Harlan Sur, Lead Coverage																							
phone: 415-315-6700, email: harlan.sur@jpmchase.com																							
PC Semiconductors																							
INTC	UW	$516,933	$101.28	$0.43	$1.58	237.6x	64.2x	$52,853	$63,336	9.8x	8.2x	$0.43	$1.53	$2.07	$52,853	$63,325	$72,627	237.6x	66.0x	49.0x	9.8x	8.2x	7.1x
NVDA	OW	$5,221,032	$214.99	$4.77	$9.24	45.1x	23.3x	$215,938	$408,700	24.2x	12.8x	$4.77	$8.93	$15.09	$215,938	$395,190	$677,750	45.1x	24.1x	14.2x	24.2x	13.2x	7.7x
AMD	N	$865,840	$521.91	$4.18	$7.25	124.9x	72.0x	$34,639	$50,533	25.0x	17.1x	$4.18	$7.47	$15.46	$34,639	$51,509	$89,012	124.9x	69.8x	33.8x	25.0x	16.8x	9.7x
Memory																							
MU	OW	$1,061,930	$927.45	$11.21	$103.46	82.7x	9.0x	$42,244	$172,887	25.1x	6.1x	$11.21	$112.97	$168.03	$42,244	$185,429	$264,626	82.7x	8.2x	5.5x	25.1x	5.7x	4.0x
Enterprise/Networking/Datacenter Semiconductors																							
MRVL	OW	$213,626	$231.90	$2.85	$4.24	81.4x	54.6x	$8,195	$12,067	26.1x	17.7x	$2.85	$4.02	$6.52	$8,195	$11,511	$17,623	81.4x	57.7x	35.6x	26.1x	18.6x	12.1x
AVGO	OW	$1,671,115	$341.95	$7.28	$13.60	47.0x	25.1x	$68,282	$123,585	24.5x	13.5x	$7.28	$13.02	$20.64	$68,282	$117,337	$186,890	47.0x	26.3x	16.6x	24.5x	14.2x	8.9x
ALAB	OW	$40,833	$262.42	$1.84	$3.89	142.7x	67.5x	$853	$1,872	47.9x	21.8x	$1.84	$3.99	$6.50	$853	$1,886	$3,111	142.6x	65.8x	40.4x	47.9x	21.7x	13.1x
Mobile Devices																							
SWKS	N	$13,338	$88.10	$5.87	$4.87	15.0x	18.1x	$4,054	$4,006	3.3x	3.3x	$5.87	$4.85	$5.14	$4,054	$3,959	$4,090	15.0x	18.2x	17.1x	3.3x	3.4x	3.3x
QRVO	N	$10,405	$116.44	$6.73	$7.98	17.3x	14.6x	$3,740	$3,479	2.8x	3.0x	$6.73	$7.57	$8.29	$3,740	$3,454	$3,694	17.3x	15.4x	14.0x	2.8x	3.0x	2.8x
IoT																							
SLAB	N	$7,301	$219.86	$0.92	$2.88	238.2x	76.4x	$785	$926	9.3x	7.9x	$0.92	$2.92	$4.45	$785	$925	$1,081	238.2x	75.2x	49.4x	9.3x	7.9x	6.8x
SYNA	NR	$3,768	$97.13	$4.22	$5.11	23.0x	19.0x	$1,144	$1,251	3.3x	3.0x	$4.22	$4.93	$5.91	$1,144	$1,243	$1,341	23.0x	19.7x	16.4x	3.3x	3.0x	2.8x
Analog/Microcontrollers																							
TXN	OW	$243,984	$265.20	$5.45	$8.68	48.7x	30.6x	$17,682	$22,109	13.8x	11.0x	$5.45	$8.51	$10.50	$17,682	$21,868	$24,963	48.7x	31.2x	25.3x	13.8x	11.2x	9.8x
ADI	OW	$178,626	$365.41	$7.79	$12.86	46.9x	28.4x	$11,020	$15,110	16.2x	11.8x	$7.79	$13.82	$17.23	$11,020	$15,869	$18,884	46.9x	26.4x	21.2x	16.2x	11.3x	9.5x
NXPI	N	$57,752	$227.35	$11.81	$14.93	19.2x	15.2x	$12,269	$14,169	4.7x	4.1x	$11.81	$15.13	$18.22	$12,269	$14,286	$15,950	19.2x	15.0x	12.5x	4.7x	4.0x	3.6x
MCHP	OW	$39,708	$72.13	$1.18	$3.22	61.2x	22.4x	$4,372	$6,035	9.1x	6.6x	$1.18	$3.20	$4.39	$4,372	$6,023	$7,240	61.2x	22.5x	16.4x	9.1x	6.6x	5.5x
Diversified/Consumer/Standard Components/Other																							
ON	NR	$29,412	$72.73	$2.35	$3.24	31.0x	22.5x	$5,995	$6,570	4.9x	4.5x	$2.35	$3.22	$4.55	$5,995	$6,563	$7,431	31.0x	22.6x	16.0x	4.9x	4.5x	4.0x
VSH	N	$4,718	$31.90	$34.49	$74.87	0.9x	0.4x	$3,069	$3,712	1.5x	1.3x	$34.49	$0.84	$1.78	$3,069	$3,707	$4,290	N/A	37.8x	17.9x	1.5x	1.3x	1.1x
MTSI	N	$19,559	$249.45	$3.71	$6.63	67.3x	37.6x	$1,021	$1,500	19.2x	13.0x	$3.71	$6.46	$8.76	$1,021	$1,475	$1,875	67.3x	38.6x	28.5x	19.2x	13.3x	10.4x
Foundries																							
GFS	N	$24,364	$43.82	$1.73	$1.97	25.4x	22.3x	$6,791	$7,317	3.6x	3.3x	$1.73	$1.95	$2.60	$6,791	$7,311	$8,240	25.4x	22.4x	16.9x	3.6x	3.3x	3.0x
OSAT																							
AMKR	OW	$11,745	$46.99	$1.51	$2.73	31.2x	17.2x	$6,708	$7,689	1.8x	1.5x	$1.51	$2.56	$2.77	$6,708	$7,642	$8,642	31.2x	18.4x	17.0x	1.8x	1.5x	1.4x
Semiconductor Capital Equipment																							
AMAT	OW	$338,720	$423.40	$9.44	$14.52	44.9x	29.2x	$28,233	$37,856	12.0x	8.9x	$9.44	$14.05	$19.74	$28,233	$36,997	$48,650	44.9x	30.1x	21.4x	12.0x	9.2x	7.0x
LRCX	OW	$342,834	$272.95	$4.90	$7.65	55.7x	35.7x	$20,561	$28,914	16.7x	11.9x	$4.90	$7.79	$10.62	$20,561	$29,346	$37,903	55.7x	35.0x	25.7x	16.7x	11.7x	9.0x
KLAC	OW	$223,982	$170.33	$3.54	$4.39	48.1x	38.8x	$12,745	$15,307	17.6x	14.6x	$3.54	$4.54	$6.14	$12,745	$15,615	$20,031	48.1x	37.6x	27.8x	17.6x	14.3x	11.2x
MKSI	OW	$17,307	$238.06	$7.88	$13.46	30.2x	17.7x	$3,930	$5,100	4.4x	3.4x	$7.88	$13.14	$17.55	$3,930	$5,085	$6,141	30.2x	18.1x	13.6x	4.4x	3.4x	2.8x
Chip Design Automation Software																							
ARM	OW	$268,675	$249.24	$1.72	$2.11	145.1x	118.1x	$4,671	$5,728	57.5x	46.9x	$1.72	$2.08	$2.83	$4,671	$5,687	$7,601	145.1x	120.1x	88.1x	57.5x	47.2x	35.3x
CDNS	OW	$76,746	$277.90	$7.14	$8.10	38.9x	34.3x	$5,297	$6,300	14.5x	12.2x	$7.14	$8.15	$9.52	$5,297	$6,315	$7,173	38.9x	34.1x	29.2x	14.5x	12.2x	10.7x
SNPS	OW	$71,637	$372.49	$13.73	$15.64	27.1x	23.8x	$8,008	$9,914	8.9x	7.2x	$13.73	$15.47	$18.04	$8,008	$9,838	$10,879	27.1x	24.1x	20.6x	8.9x	7.3x	6.6x
Large Cap Semi Average						**79.5x**	**34.5x**			**17.8x**	**10.9x**							**79.5x**	**34.7x**	**23.0x**	**17.8x**	**11.0x**	**7.8x**
Small-Mid Cap Semi Average						**48.0x**	**24.6x**			**5.4x**	**4.4x**							**53.2x**	**28.6x**	**20.7x**	**5.4x**	**4.5x**	**3.8x**
Semi Group Average (ex-outliers)						**45.2x**	**25.4x**			**11.9x**	**9.0x**							**39.5x**	**29.1x**	**23.2x**	**13.8x**	**8.6x**	**6.3x**
SOX Index			**11,381**	**185**	**447**	**61.6x**	**25.5x**			**9.4x**	**7.0x**							**61.6x**	**25.5x**	**16.7x**	**13.5x**	**9.4x**	**7.0x**
S&P500			**7,609**	**257**	**359**	**29.6x**	**21.2x**			**3.4x**	**3.2x**							**29.6x**	**21.2x**	**18.3x**	**3.7x**	**3.4x**	**3.2x**

Source: Company reports, Bloomberg Finance L.P., J.P. Morgan estimates.

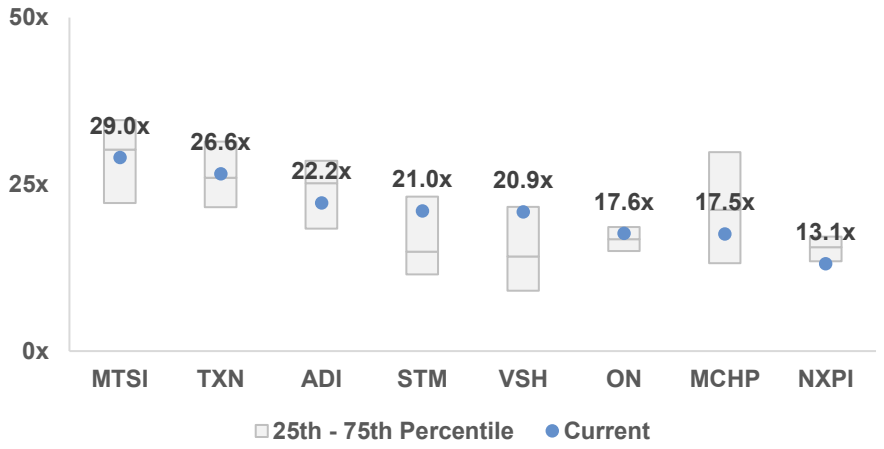
Note: Pricing as of 9/16/26 intra-day.

Current NTM PE Multiples Relative to Historical Range by Subsector

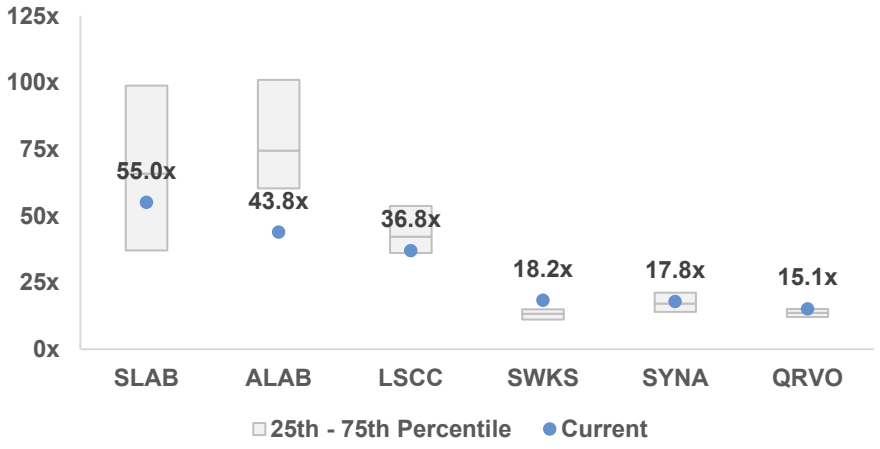
Processors / Computing



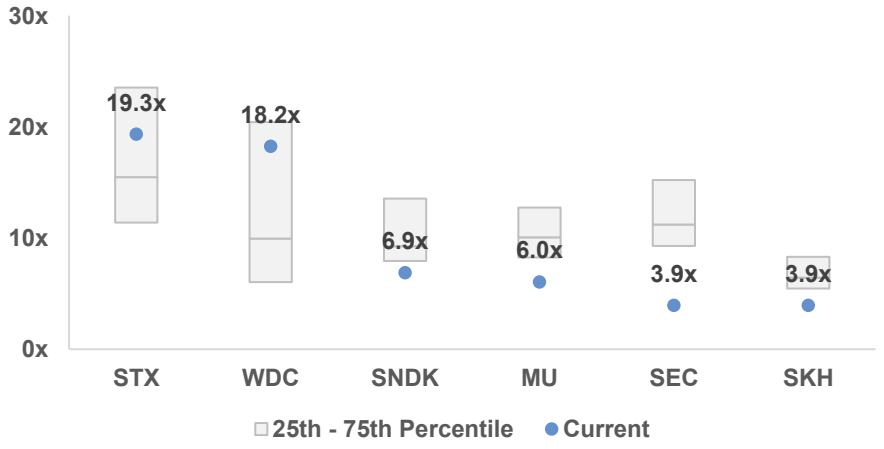
Analog / Broad-Based



Networking / Data Center / IoT



Memory / Storage



Source: Bloomberg Finance L.P.

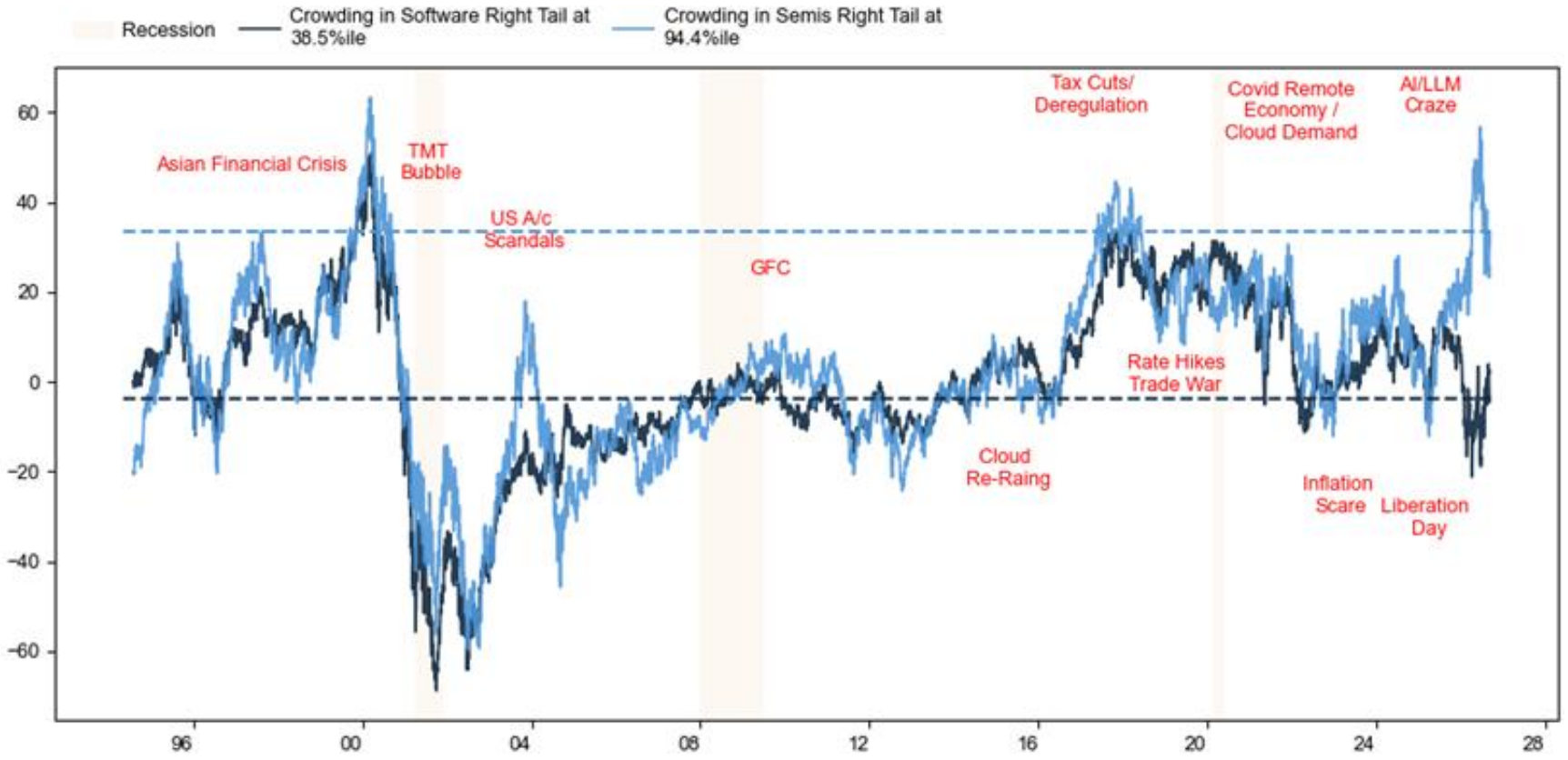
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Current NTM PE Multiples Relative to Historical Range by Subsector (cont.)



Source: Bloomberg Finance L.P.

Crowding in Semis Has Increased Since 2025, but Declined Recently



Source: J.P. Morgan Research

- Crowding has increased since 2025 as strong AI demand and sustained stock gains have drawn investors toward a concentrated group of semiconductor companies.
- The recent decline in semiconductor concentration appears to reflect profit-taking and rotation after the sector's strong run, rather than a reversal in the long-term AI thesis.
- Fund flows have reinforced exposure to the same basket of AI-linked semiconductor winners, increasing sensitivity to shifts in sentiment.

Disclosures

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