

SK hynix Inc.

More to go – initiate at OW

We initiate on SK hynix (GDR) with an OW rating and ~40% upside. We expect AI to keep supply/demand tight as our supply model shows wafer growth of 'only' 10-13% in '26/27. We see limited risk from China near term. We expect SKH to maintain its tech lead and continue to benefit from positive trends.

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Structurally more profitable. AI performance is intrinsically linked to memory bandwidth with the memory wall garnering ever more attention. Customised HBM also supports the hope that the industry can move away from its historically commoditised dynamic. The industry also appears more rational today. One key question from here is how much better profitability could be in the next downturn. HBM, DRAM and NAND content is increasing meaningfully from generation to generation in AI servers, meaning Datacentre is set to become the biggest consumer of all memory types (inc NAND). Hence, we expect pricing to hold throughout 2026 and model meaningful ASP increases in 1Q and 2Q. We show an example that, for an AI cloud, extending a contract by just one year can mitigate current memory price increases to retain a positive NPV. The key uncertainty, in our view, is just how much over-ordering is happening right now.

Accelerating supply. Our supply model shows that wafer growth in 2026/2027 will be 11%/13%, respectively. Node conversions mean bit growth could be 20%/14%, in our view. Current fab plans suggest an acceleration in capacity additions in 2028, but two years is a long time in memory. SK's Yongin cluster should give it material flexibility to accelerate capacity additions over 2028-30, in our view, providing it the opportunity to capture more market share as well as compensate for stranded capacity in China. In the meantime, we model SK adding 80k/110k greenfield capacity in 2026/2027E vs Samsung's 60k/80k. We have shown previously (see [here](#)) that for a run rate of 1GW of datacentre capacity addition we need c300k DRAM wafer capacity. Thus, given that we see memory content in servers increasing 2-5x for future generations, the supply/demand gap looks unlikely to narrow in the nearer term.

China is coming. China has made impressive progress in memory, particularly in NAND. China DRAM share now stands at c10% and NAND at c15%. We think DRAM is 2-3 generations behind

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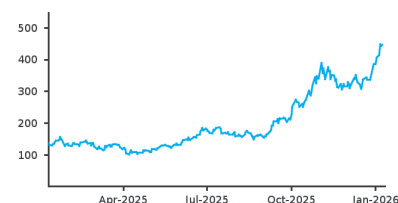
★ SIGNATURE

Initiating Coverage

HY9Hy.F/HY9H GR	OVERWEIGHT from Not Rated
European Technology Hardware	NEUTRAL Unchanged
Price Target	EUR 615.00 from N/A
Price (12-Jan-26)	EUR 443.00
Potential Upside/Downside	+38.8%
Source: Bloomberg, Barclays Research	

Market Cap (EUR mn)	310857
Shares Outstanding (mn)	728.00
Free Float (%)	N/A
52 Wk Avg Daily Volume (mn)	0.0119
Dividend Yield (%)	0.21
Return on Equity TTM (%)	43.20
Current BVPS (EUR)	N/A
Source: Bloomberg	

Price Performance **Exchange-FWB**
52 Week range **EUR 457.00-94.00**



Source: IDC
[Link to Barclays Live for interactive charting](#)

European Technology Hardware

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global peers while NAND is almost equivalent. However, semicap restrictions will likely hamper progress, at least in the nearer term. We see more risk to NAND than DRAM, but don't expect China to change the supply/demand imbalance any time soon (remaining c14% of global DRAM wafer supply in YE26/27 for example). Comments from some PC/SP makers that they are considering using China-made memory due to supply tightness elsewhere could help accelerate China's progress, but it remains relatively early days.

Initiate at OW. Our estimates are well ahead of Bloomberg consensus on more positive pricing assumptions. We value SK using a P/E multiple of 7x (similar to our US team's 8x P/E for Micron), which implies ~40% upside potential. This is equivalent to c2.2x 2027E book. We model capex of KRW36trn/\$25bn in 2026. We see positive potential catalysts ahead supported by SK's continued tech leadership and innovation, such as continued supply tightness, a possible ADR listing, potential better financing access and further AI driven demand growth. We expect SK to retain its lead for a number of generations yet in HBM, but Samsung has made progress and that is the biggest risk in our view, along with any slowdown in datacentre spending. We see SK hynix as well positioned to meet its 2030 climate goals, but it is trending behind on water goals and has greater exposure than peers to high water stress risk areas, as discussed in [Asia semiconductors: A tale of two risks \(water and power\)](#), 11 September 2025.

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HY9Hy.F: Financial and Valuation Metrics EPS (KRW)

FY Dec	2023	2024	2025	2026	2027
EPS	-13244.00A	28419.00A	60692.70E	149581.46E	177730.72E
Previous EPS	N/A	N/A	N/A	N/A	N/A
Consensus EPS	N/A	28419.00A	56153.65E	104630.72E	118139.47E
P/E	N/A	26.7	12.5	5.1	4.3

Consensus numbers are from Bloomberg received on 13-Jan-2026; 13:50 GMT
 Source: Barclays Research

European Technology Hardware

NEUTRAL

SK Hynix Inc. (HY9Hy.F)

OVERWEIGHT

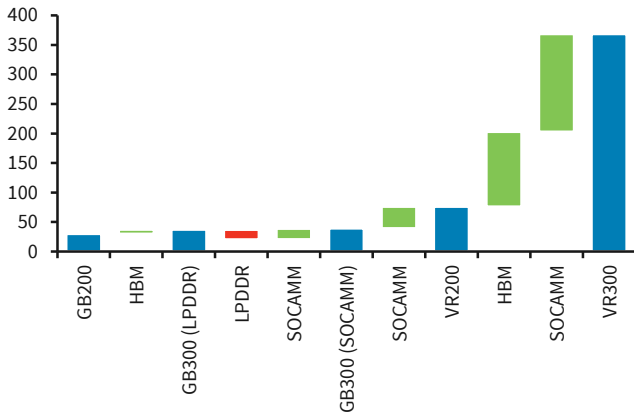
Income statement (€bn)	2024A	2025E	2026E	2027E	CAGR	Price (12-Jan-2026)	EUR 443.00
Revenue	66,193	96,677	209,247	250,763	55.9%	Price Target	EUR 615.00
EBITDA (adj)	36,013	59,395	143,879	173,027	68.7%	Why OVERWEIGHT?	
EBIT (adj)	23,467	46,351	125,696	147,950	84.7%	We see positive catalysts ahead supported by continued tech leadership such as continued supply tightness, a possible ADR listing, potential better financing access and further AI driven demand growth.	
Pre-tax income (adj)	23,885	51,026	125,296	148,876	84.0%	Upside case EUR 1,000.00	
Net income (adj)	19,796	43,184	106,502	126,544	85.6%	Our upside case assumes continued strength from memory prices and AI demand, AI model scaling continues, peers struggle to compete, better access to financing, and HBF adoption where SK Hynix takes the lead.	
EPS (adj) (€)	28,419.00	60,692.70	149,581.46	177,730.72	84.2%	Downside case EUR 350.00	
Diluted shares (€mn)	709.83	711.52	712.00	712.00	0.1%	Our downside case assumes a loss of market share to peers, customer double ordering, and a slower-than-expected deployment of capacity.	
DPS (€)	599.89	1,589.46	4,000.00	4,000.00	88.2%	Upside/Downside scenarios	
Margin and return data							
Gross margin (adj) (%)	48.1	59.4	69.2	68.0	61.2		
EBITDA (adj) margin (%)	54.4	61.4	68.8	69.0	63.4		
EBIT (adj) margin (%)	35.5	47.9	60.1	59.0	50.6		
Pre-tax (adj) margin (%)	36.1	52.8	59.9	59.4	52.0		
Net (adj) margin (%)	29.9	44.7	50.9	50.5	44.0		
ROCE (%)	15.7	25.4	56.2	57.5	38.7		
ROA (%)	17.7	27.7	49.4	37.9	33.2		
ROE (%)	31.1	45.7	63.7	45.0	46.4		
Cash flow and balance sheet (€bn)							
Change in working capital	-2,146	-3,088	-1,329	-4,739	N/A		
Cash flow from operations	29,796	50,785	124,613	144,040	69.1%		
Capital expenditure	-15,946	-26,002	-36,171	-39,065	N/A		
Equity free cash flow	6,475	26,701	84,442	104,975	153.1%		
Change in cash	3,618	6,611	79,933	99,966	202.3%		
Tangible fixed assets	60,157	75,262	93,507	112,000	23.0%		
Intangible fixed assets	4,019	4,261	4,668	5,222	9.1%		
Cash and equivalents	11,205	17,816	97,749	197,715	160.3%		
Working capital	17,089	20,176	21,505	26,244	15.4%		
Inventories	13,314	12,659	12,518	17,588	9.7%		
Accounts receivable	13,019	15,957	22,468	24,046	22.7%		
Accounts payable	9,244	8,439	13,481	15,389	18.5%		
Total assets	119,855	163,638	268,692	394,775	48.8%		
Short and long-term debt	25,014	26,270	22,270	22,270	-3.8%		
Total liabilities	45,940	48,409	49,672	51,922	4.2%		
Shareholders' equity	73,903	115,202	218,984	342,809	66.8%		
Valuation and return metrics							
P/E (adj) (x)	26.7	12.5	5.1	4.3	12.2		
EV/sales (x)	8.3	5.5	2.1	1.4	4.3		
EV/EBITDA (adj) (x)	15.3	9.0	3.1	2.0	7.3		
EV/EBIT (adj) (x)	23.5	11.5	3.6	2.4	10.2		
P/FCF (x)	80.8	19.6	6.2	5.0	27.9		
Equity FCF yield (%)	1.2	5.1	16.1	20.0	10.6		
P/BV (x)	7.1	4.5	2.4	1.5	3.9		
Dividend yield (%)	0.1	0.2	0.5	0.5	0.3		

Note: FY End Dec

Source: Company data, Bloomberg, Barclays Research

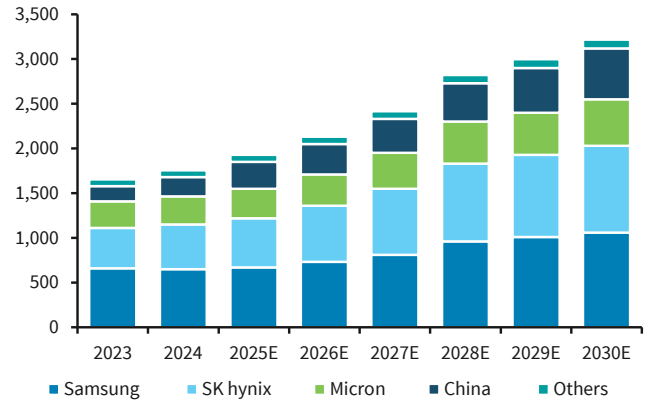
Story in 6 charts

FIGURE 1. Memory content in servers is increasing significantly



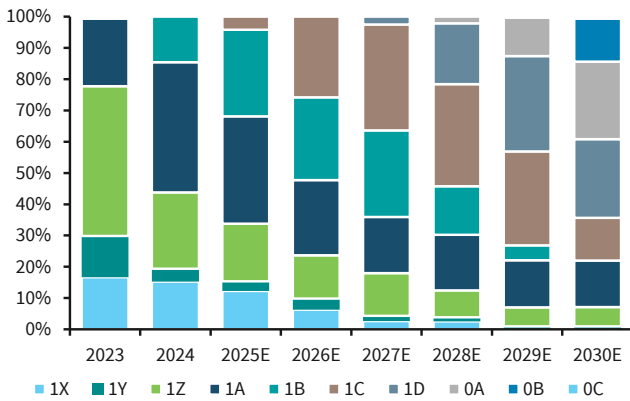
GB in server architectures
Source: Company data, Barclays Research estimates

FIGURE 2. Supply will take time to come online



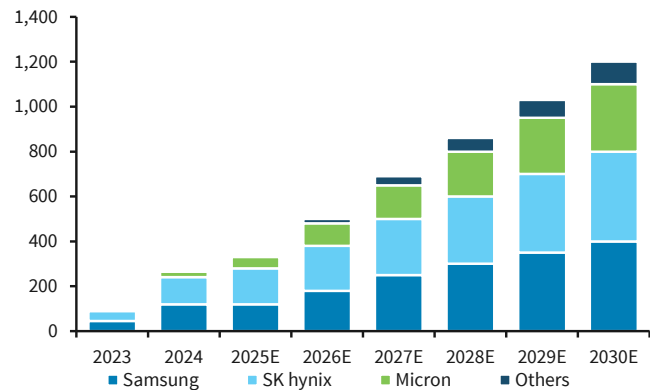
DRAM wspm
Source: Company data, Barclays Research estimates

FIGURE 3. Despite accelerating conversions



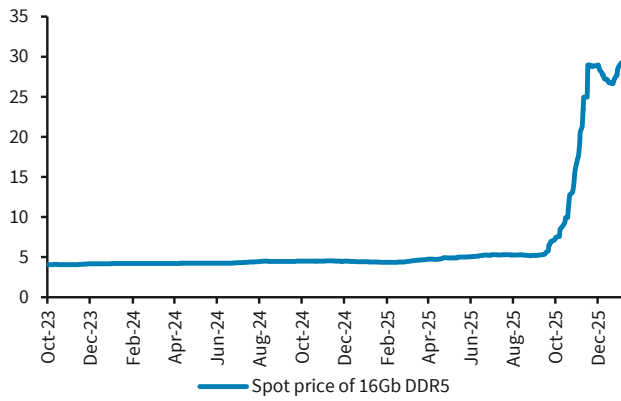
Bit mix
Source: Company data, Barclays Research estimates

FIGURE 4. HBM capacity is also increasing



HBM wspm
Source: Company data, Barclays Research estimates

FIGURE 5. Meaning pricing should continue to move up



Source: Bloomberg

FIGURE 6. Hence we are well ahead of consensus

Won Bn, Dec FY	Barclays Estimates		Delta	
	2026	2027	2026	2027
Revenue	209,247	250,763	33%	32%
Gross margin	69%	68%	2.1pp	3.4pp
EBIT	125,696	147,950	34%	43%
Net income	106,502	126,544	37%	54%
Capex	36,171	39,065	48%	21%

Barclays vs Bloomberg consensus
 Source: Barclays research estimates, Bloomberg

AI wall of demand

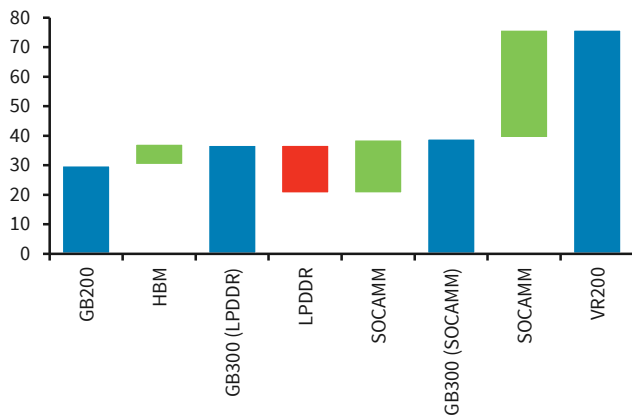
As AI models increase in size and complexity, the memory demand is increasing exponentially. Servers are therefore piling on fast-access DRAM memory to address memory bottlenecks in AI applications. This has been well observed with tight high-bandwidth memory (HBM) supply as AI GPUs and ASICs try to pack as much HBM on a single chip as possible. However, this is also spilling into traditional DRAM as well and even NAND. We estimate total bit demand for DRAM from AI servers could grow 9x over the next five years, with HBM continuing to drive the majority of incremental wafer demand given larger die sizes. As the leader in HBM but also strong player for eSSDs, we expect SK hynix to continue to benefit from these trends.

How AI server memory requirements are changing

Training and inference benefit from having as much DRAM as possible as close to the GPU as possible, and this has been viewed as a bottleneck to AI compute, as we wrote in [Dissecting hybrid bonding demand by end customer](#) (2 December 2024). Demands on memory capacity and bandwidth have only grown with the introduction of multi-modal and reasoning models. In response, AI servers are being loaded with more and more DRAM.

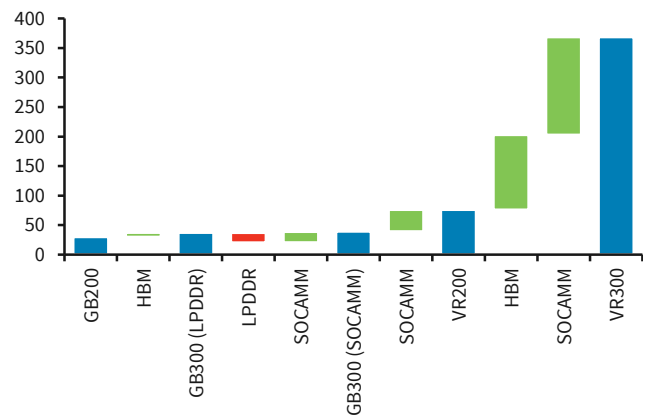
NVIDIA (covered by Tom O'Malley) has outlined its server roadmap out until 2027, including how much HBM and DRAM each server will use. From Blackwell GB200 in 2024 to Vera Rubin Ultra in 2027, DRAM content is increasing 12x, from 30TB to 365TB per server. Within the mix, HBM is increasing from c13TB per server to c150TB, and conventional DRAM from c17TB to c215TB. Thus, conventional DRAM is seeing the largest gain in bit demand. Nearer term, with the transition from Blackwell Ultra (2025) to Vera Rubin (2026), HBM content per server is flat, while we calculate that an extra c38TB of conventional DRAM will be added, doubling its entire DRAM content.

FIGURE 7. DRAM evolution by NVDA rack (TB) - up to Rubin



Source: Company data, Barclays Research Estimates

FIGURE 8. DRAM evolution by NVDA rack (TB) - up to Rubin Ultra



Source: Company data, Barclays Research Estimates

DRAM requirements increasing

To pack more conventional DRAM into AI servers, chip designers are turning to SOCAMM (small outline compression attached memory module), which stacks conventional LPDDR5X dies into a modular form factor. Unlike HBM, no modification is needed to stack DRAM dies, since dies are stacked and connected together using wire bonding, rather than with through-silicon Vertical Interconnect Accesses (VIAs). This enables more and higher bandwidth memory to be added directly to server compute boards, without the cost hurdle that comes with HBM. SOCAMM is

not being used as an HBM replacement, but instead replaces the traditional DRAM typically used in servers.

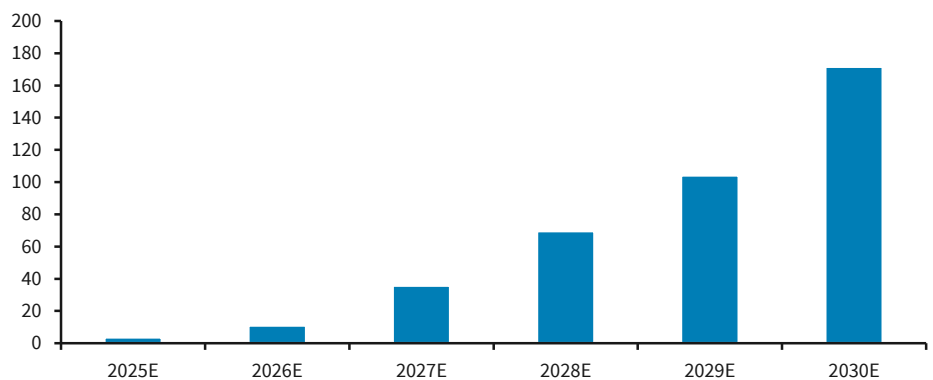
Micron (covered by Tom O'Malley) announced that it had developed its SOCAMM solution in collaboration with NVIDIA to support the Blackwell Ultra, demonstrating 2.5x the bandwidth and a third of the power consumption compared with standard DDR5 modules ([press release](#), 18 March 2025). Its solution used 16-die stacks of LPDDR5X to create a 128GB module. NVIDIA's GB300 was set to entirely replace its conventional DRAM with SOCAMM, with each rack having 18TB, per NVIDIA's spec sheets. Though Micron was first to announce this, press reports indicate that future allocations of SOCAMM2 could be more equal between Samsung, SK hynix and Micron ([TrendForce](#), 1 October 2025).

NVIDIA seemingly delayed the introduction of SOCAMM to Rubin, however, with Blackwell Ultra reverting to LPDDR5X and Rubin using next-gen SOCAMM2, according to press reports ([Tom's Hardware](#), 15 May 2025). We think we could therefore see up to 55TB of SOCAMM used per Vera Rubin rack, which is being launched next year. At its recent AI Infra Summit, NVIDIA launched its Rubin CPX, tailored for massive-context inference and video generative models. Each rack features c100TB of DRAM, of which c55TB is SOCAMM, but this could double in its dual rack solutions. We think this implies that both more and higher capacity SOCAMM modules could be added to the GPU boards at Rubin compared with what was proposed at Blackwell (4x128GB modules per CPU).

SOCAMM use could increase 4x with Vera Rubin Ultra, in our view. SOCAMM attaches to the CPUs, rather than GPUs where HBM is attached, and Vera Rubin Ultra NVL576 servers are set to use 4x the number of CPUs per rack than Vera Rubin NVL144. As discussed above, each rack could use up to c215TB of non-HBM DRAM, based on NVIDIA specs, which we think could all be SOCAMM.

As a result, we estimate that bit demand from LPDDR/SOCAMM could increase from c4 billion Gb in 2025 to c165 billion Gb by 2030, just from AI servers alone. SK hynix has positioned itself well to serve this demand through its HBM and DRAM portfolios, and we expect it to capture at least its fair share of the market growth we forecast ahead.

FIGURE 9. Potential bit demand from LPDDR/SOCAMM from NVDA servers (Gb, billions)



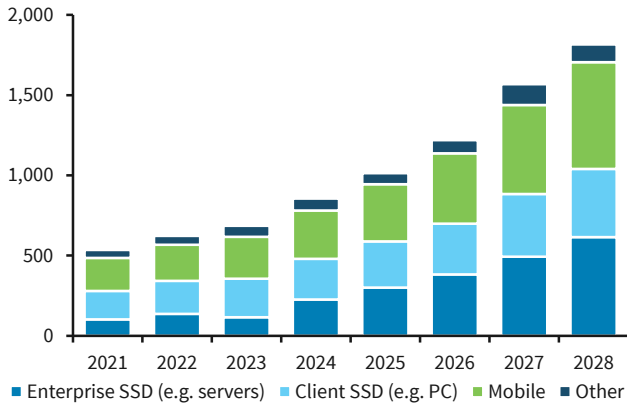
Source: Barclays Research Estimates

NAND demand also stepping up

NAND is primarily used for more permanent storage of data at much larger capacities than DRAM, and does not require power to store information (non-volatile). However, NAND offers slower access to data than DRAM. Applications of NAND include hard drives for PCs, smartphone

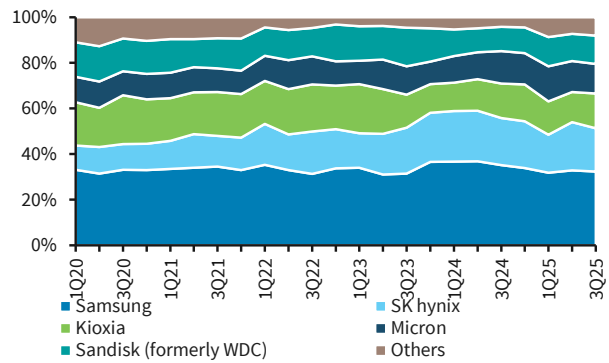
storage, flash USB sticks and memory cards. Due to its lower performance to DRAM, it is not typically found in chips for HPC/AI. Like traditional DRAM, NAND is seen as a commodity, and suppliers tend to act cautiously when adding supply to not upset tight pricing dynamics.

FIGURE 10. NAND demand by end market (EB)



Source: Sandisk, TechInsights, Barclays Research

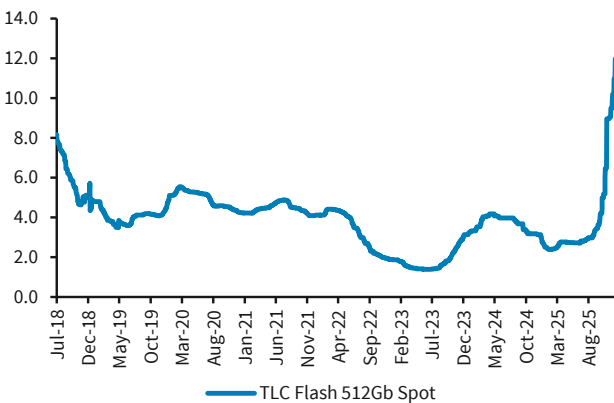
FIGURE 11. NAND market share by revenue (%)



Source: TrendForce, Barclays Research

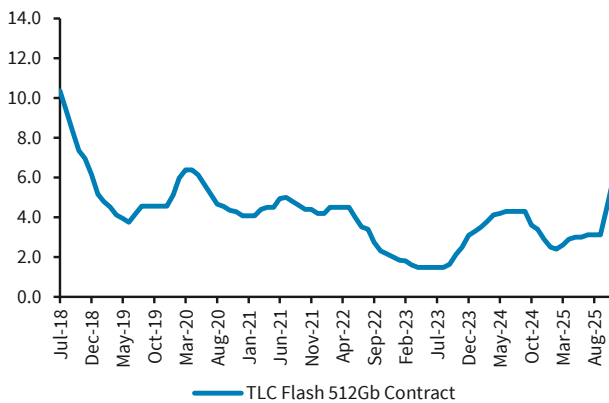
NAND demand has historically been primarily driven by consumer applications, with smartphones and PC's driving c65% of demand in 2025E. With modest demand growth for smartphone and PC units, and NAND demand driven through increasing storage amounts in these devices (e.g. the base storage in an iPhone increased from 128GB in iPhone 13 to 256GB in iPhone 17), the prevailing logic has been that demand can be met through upgrading NAND lines to higher density processes, rather than building new fabs, especially in the era of 3D NAND. We are now starting to see an inflection in demand driven by AI servers. This was first due to tight supply in HDD market, and so as an alternative hyperscalers turned to NAND for storage. Going forwards, NAND should play an increasingly important role during inference, which should lead to large incremental gains in NAND capacity in AI servers. If sustained and widely adopted, we could see tighter capacity dynamics. In response, we've seen a sustained increase in the price of NAND over the last 6 months. SK hynix has benefited from this demand with its eSSD business growing strongly to become the major driver of its NAND business and reducing mobile exposure to 30% compared to 75-80% in 2021.

FIGURE 12. NAND spot prices (\$)



Source: Bloomberg, Barclays Research

FIGURE 13. NAND contract prices (\$)



Source: Bloomberg, Barclays Research

AI's growing need for memory is now extending to NAND storage as companies look for ways to free up scarce, high-bandwidth memory, especially during inference. To address this, NVIDIA has introduced a new approach to deal with key-value (KV) cache, its Inference Context Memory Storage (ICMS) platform providing large amounts of SSD capacity to the rack. KV cache stores results from previous inference steps, known as context, so the model can quickly reference them instead of recalculating everything from scratch each time new inference requests come in from the same user. KV cache has become a bottleneck as context becomes larger, and NVIDIA is offloading this to SSDs through its ICMS platform, freeing up precious HBM capacity in the rack. NVIDIA claims this implementation can boost tokens per seconds generated by up to 5x and deliver up to 5x power efficiency compared to traditional storage. At CES, Nvidia's CEO Jensen Huang highlighted that Rubin racks have four ICMS platforms, each with c150TB of storage, supported by its BlueField DPUs. This implies a potential incremental 600TB of SSD storage per rack, which for reference is 8x the amount of DRAM a Rubin rack has. If for example 100k server racks are shipped in a year, with 600TB of ICMS storage and 500TB of additional PCIe SSD storage, this could imply demand for 110EB (exabytes) of NAND, that is c10% of current NAND supply or c20% of SSD shipments in 2025 on our estimates. This could spur the need for more capacity, especially if these new memory architectures are adopted outside of the NVIDIA ecosystem as well.

NAND use in AI servers could also follow a similar pathway to DRAM as AI demands from memory outpace the capabilities from existing commoditised solutions. High-Bandwidth Flash (HBF) is a proposed NAND based, HBM-like, memory architecture that could offer 8-16x the capacity of HBM at a similar bandwidth and cost, designed for inference workloads. The architecture mirrors HBM, stacking NAND core dies, connecting them with through-silicon-VIAs (TSVs) and controlling them with a base logic die. Sandisk (covered by Tom O'Malley) first announced HBF development, and envisages HBF replacing some HBM usage on HPC chips. Sandisk expects to have samples available to customers in early 2027, though we believe adoption is likely to be later. SK hynix has signed an MOU with Sandisk to define and standardize an HBF specification and presented its HBF product strategy at OCP in October 2025.

How could memory pricing impact the AI ROI?

This is the multi-trillion dollar question and not a simple answer. AI spending has been insatiable and there have been rising concerns on whether companies will be able to monetise these investments to generate a suitable return. With memory pricing exploding, the BoM for the likes of Nvidia are seeing material increases which if passed on (we note Tom O'Malley models gross margins increasing c4pp for Nvidia in 2026) will also see the cost to deploy AI infrastructure increase. At the same time, Nvidia's new chips are lowering the cost to generate tokens materially, so whilst costs are increasing customers will still see scope for more revenue generation as well.

Nvidia has given various nuggets around the revenue opportunity from using its chips. At its 2Q26 earnings call, CEO Jensen Huang detailed that "a \$3 million investment in GB200 infrastructure can generate \$30 million in token revenue, a 10x return". Similarly, in a recent [press release](#), Nvidia details that 'Companies can monetize at an unprecedented scale, with \$5B in token revenue for every \$100M invested', although this was alongside Nvidia's CPX announcement and so it's not clear how this includes initial investment for associated GPUs. Either way, the first example would suggest that increased memory pricing can be absorbed and passed on to AI players and their returns can still look attractive.

Another way to assess this is with a bottom up approach to show how AI providers could be more inelastic to increased chip costs. Data Section (not covered), a Japanese AI and data company, helpfully provided a revenue model for 5k B200 GPUs. The details are as follows:

- 3 year contract with +2 year extension options
- ARR of cJPY20bn or contract value of cJPY60bn over 3 years
- Up to 80% project EBITDA margin
- GPU procurement costs of cJPY42bn

Based on the project financials disclosed, we estimate a positive NPV. If the contract is extended to five years, the NPV becomes material. Note that even if we assume the cost of the chips increases commensurate with where memory pricing has reached, the NPV remains positive, i.e. memory prices would need to increase materially more to turn the NPV negative. The caveats are that: 1) Data Section assumes a 30% residual value which could be optimistic, 2) this is just one example of what must be many different models, and 3) Data Section is a neo-cloud. If we remove the residual value, then the NPV is materially lower but still positive before any memory price increases. Post memory price increases the NPV turns negative. A price increase from the AI provider similar to the increase in BoM is needed to turn the NPV positive again, which may be possible given the benefits AI applications can bring. However, perhaps more importantly/ interestingly/unsurprisingly, even without a price increase, extending the contract by just one year ensures a positive NPV. We note this is for a cloud rental model; for a hyperscaler the economics should be even more attractive, in our view. We view SK hynix as more datacentre exposed than peers, and thus it should benefit significantly from the above dynamic.

Capacity constrained - DRAM supply model

Given the unprecedented demand from AI for DRAM and NAND the industry is now severely supply constrained. As a result, memory players are accelerating capacity additions and node conversions as quickly as they possibly can. However, due to stopping fab construction in late 2022/2023 and only restarting in 2024 at the earliest, there are limited new fabs coming online in 2026 that players can utilise for expansion. Thus supply growth will be somewhat limited in 2026 before accelerating in 2027, in our view. By 2028, there could be scope to add 400k wspm of capacity (330k ex China), equivalent to >20% of 2025 capacity, but this will depend on continued resilient demand.

Like its peers, SK hynix is cleanroom space constrained on DRAM and is expanding through new greenfield fabs and node upgrades. It completed its M15X fab in Cheongju late in 2025, adding new capacity for HBM (1b node), and we expect it to ramp over half the capacity in 2026 with the rest online in 2027. Hynix is also building a cluster of four fabs in Yongin, which has the potential to add substantial amounts of capacity; SK Group Chairman Chey Tae-won has been quoted in Korean media that Yongin will have 24 times the capacity of M15X when fully operational ([The Korea Times](#), 3 November 2025). The first phase is expected to enter production as early as March 2027, having been pulled in by two months per [The Elec](#) (5 January 2026). Based on recent satellite imagery of the site, progress on the other phases seems limited to groundwork, though we believe acceleration is more likely than delay. The press has reported an additional fab in Cheongju, M17, though this has been consistently denied by the company ([DigiTimes](#), 27 February 2025). On NAND capacity, SK hynix does not have any plans to add greenfield capacity, and is expanding capacity through node upgrades, in line with its peers.

We see SK hynix's Yongin cluster as key for the company to meet future demand but also to mitigate the difficulties it will likely face in keeping its Wuxi fab at relevant advanced nodes given restrictions around importing equipment. Recent press reports ([The Chosun Daily](#), 30/12/25) suggest that SK hynix and Samsung could get permission to ship equipment on an annual basis. Thus SK hynix could continue to upgrade Wuxi for another year (to an extent), but our concern is that this will reach a limit at which point it will be difficult to produce relevant nodes. This is likely still a couple of years away however, at which point material capacity could have been added in Yongin and Hynix could dispose of the China fab.

Samsung continues to build out its Pyeongtaek cluster, with the majority of capacity additions related to DRAM rather than foundry. Samsung is reportedly adding DRAM lines to the first phase of P4, and its third and fourth phases will also focus reportedly on DRAM ([DigiTimes](#), 15 November 2024). This coincides with Samsung's ramp of 1C, with reports that 1C lines are being added to P4 in 2025, with plans for further expansion on top of existing lines on older nodes being converted at other fabs ([TrendForce](#), 22 May 2025). Press reports also indicate Samsung is accelerating its ramp of P4, with a total capacity of c250kwspm ([DigiTimes](#), 25 September 2025), with Samsung's total HBM capacity to set to increase 50% in 2026, according to [ETnews](#) (30 December 2025). [The Elec](#) has written that construction is resuming at Samsung's delayed P5 fab, with it expected to enter production in 2028 (5 January 2026). Samsung has allegedly reserved land in Pyeongtaek for a P6 fab ([DigiTimes](#), 6 November 2025), and secured land for a large cluster in Yongin, potentially up to six fabs, which could start construction as early as 2H26 ([DigiTimes](#), 2 January 2026).

Micron has indicated it is constructing a new EUV DRAM fab (1 gamma) in Idaho, which is set to produce meaningful volumes in its 2027FY (September year-end). It plans to build four fabs in Clay, New York, spending up to \$100bn over 20 years. Micron announced that it will break ground at the site this month ([press release](#), 7 January 2026). The first fab had been expected to enter production in 2028, however this was reportedly delayed by 2-3 years ([TrendForce](#), 10

November 2025). It is also reportedly adding HBM capacity by expanding its fab in Hiroshima, Japan, with construction reportedly starting early in 2026 and first shipments in 2028 (Reuters, 29 November 2025).

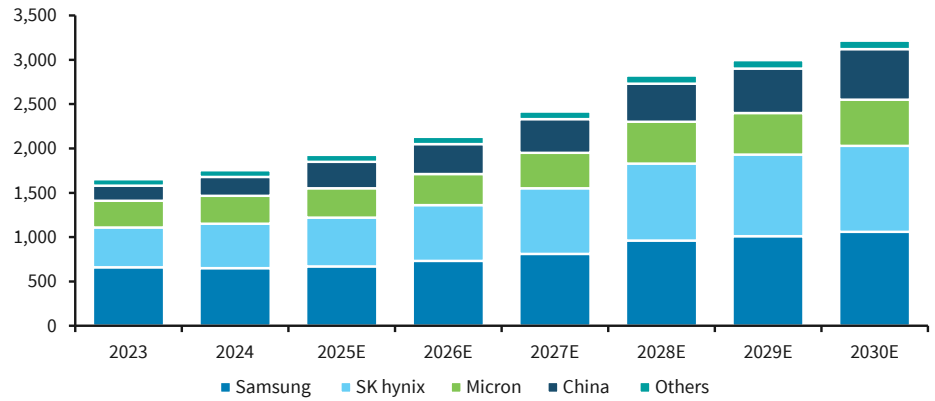
FIGURE 14. Barclays fab tracker, memory

Company	Fab	Phase	Location	Process	Construction start	Production start	Pulled in?
Samsung	Fab S5	P4 ph2	Pyeongtaek, SK	HBM4 DRAM	3Q23	2H26/1H27	
Samsung	Fab S5	P4 ph3	Pyeongtaek, SK	Mix	1H24	2026?	
Samsung	Fab S5	P4 ph4	Pyeongtaek, SK	DRAM 1C	1H24?	4Q26/1Q27	2 months
Samsung	Fab S5	P5	Pyeongtaek, SK	Mix	3Q24	2028?	
Samsung	Fab S5	P6	Pyeongtaek, SK	?	?	?	
Samsung	?	?	Yongin, SK	?	2H26?	2028/29?	
Micron	-	-	Boise, US	DRAM - EUV	4Q23	2H27	
Micron	-	-	Hiroshima, JP	DRAM - EUV	2Q26	2028	
Micron	-	-	Clay, US	DRAM - EUV	1Q26	2029?	Could be pulled into 2028
Micron	-	-	Clay, US	DRAM - EUV	2030	2034	
Micron	-	-	Clay, US	DRAM - EUV	2035	2037	
Micron	-	-	Clay, US	DRAM - EUV	2039	2042	
SK hynix	M15X	-	Cheongju, SK	DRAM - EUV?	2022	4Q25	
SK hynix	-	-	Yongin, SK	DRAM - ?	1Q25	1Q27	2 months
SK hynix	-	-	Yongin, SK	DRAM - ?	?	2027?	1 year
SK hynix	-	-	Yongin, SK	DRAM - ?	?	2028?	1 year
SK hynix	-	-	Yongin, SK	DRAM - ?	?	2029?	1 year
SK hynix	M17	-	Cheongju, SK	?	Delayed from 2023	?	

Source: Barclays Research estimates, company data

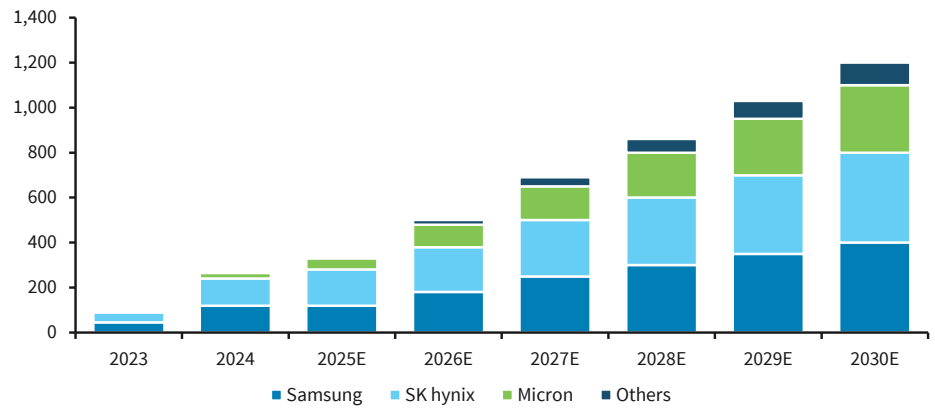
Based on our fab tracker and our discussions with the companies, we build a DRAM supply model shown in the following figures. We estimate global memory players will bring more capacity online in 2H26 and 2027, especially for SK hynix's phase 1 of Yongin, Samsung's P4 in Pyeongtaek and Micron's Idaho. We continue to model meaningful capacity expansion for the top 3 players until the end of the decade because more DRAM projects are in pipelines and the increasing memory-intensity of AI servers as we discussed above in [AI wall of demand](#). The Chinese leading DRAM player is also targeting large capacity expansion despite export controls and has been placing more equipment orders to the local vendors since 3Q25. Detailed info on China can be found in the next section.

FIGURE 15. Total DRAM wafer supply (WSPM)



Source: Barclays Research Estimates

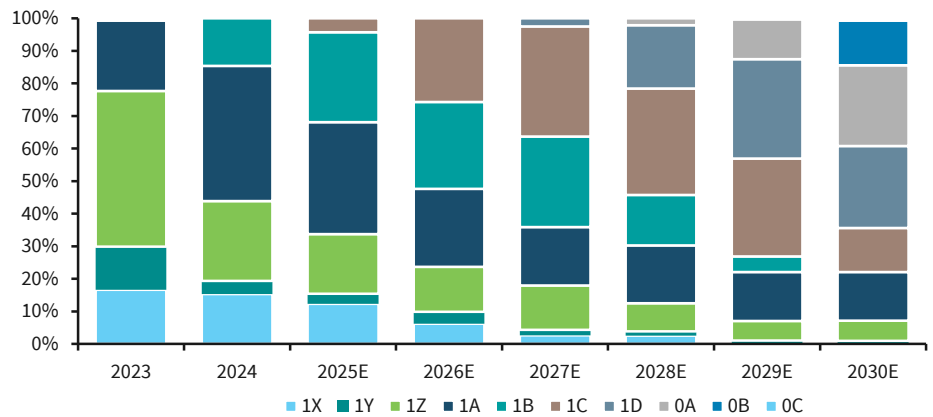
FIGURE 16. HBM DRAM wafer supply (WSPM)



Source: Barclays Research Estimates

Alongside greenfield expansions we expect material conversion activity to take place as the other lever available to expand supply. In 2026, most players will continue to update from 1a and legacy nodes to minimum 1b and start to migrate to 1c from LSD% to low 20s%, per [Figure 17](#). In 2026 we expect SK hynix to convert material amount of 1a capacity in Korea to 1c and similar actions to be taken by peers. In China, we believe SK hynix has virtually converted all of its capacity in Wuxi to 1a while CXMT (private, not covered) is still lagging behind at the equivalent to 1z node.

FIGURE 17. Global DRAM Node Transition by %



Source: Company data, Barclays Research Estimates

These conversions will help expand bit supply faster than implied by the wafer expansions modeled above, in our view.

In Dec, Micron expects '26 industry DRAM bit shipments to grow ~20% YoY (same expectation for its own DRAM bit shipments in '26). We model ~15%/20% YoY global bit supply growth for '25 and '26, respectively with SK expanding faster.

Further up the supply chain, top Chinese memory module makers are raising more money for capacity expansion and future product development amid the AI memory super cycle. The largest memory module maker Longsys (301308.SZ, not covered) has stated it is raising RMB3.7bn to develop the next gen modules (including eSSD, RDIMM, consumer SSD, DIMM, etc)/ controllers and build high-end back-end projects. Shenzhen Techwinsemi, more commonly known as TWSC (001309.SZ, not covered), has stated it is raising RMB3.2bn to expand its SSD and DRAM projects.

How does this cycle compare?

The memory industry is notoriously cyclical given the commoditised nature of the product and how sensitive pricing is to supply and demand. The industry today is much more concentrated than it was 20 years ago and thus feels more rational; however, where demand sits vs supply remains the key driver of the outlook for the industry despite some products becoming more customised.

Memory pricing has exhibited pronounced cyclical, with alternating upturns and downturns typically lasting 5–8 quarters. Each upward cycle has been driven by structural demand catalysts. Since 2012, these include smartphone adoption, technology transitions (e.g., 3D NAND), or simply supply constraints, while downturns have reflected inventory corrections and oversupply. After stabilising in 2024–early 2025, the latest cycle was underpinned by accelerating AI-related demand, and we expect it to sustain pricing strength in the near term at least.

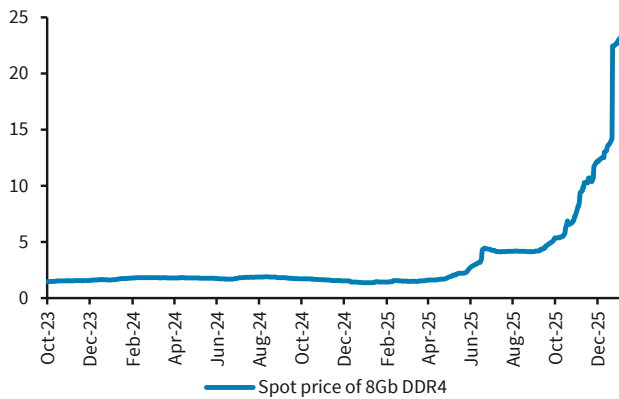
Looking at the previous few cycles, starting from 2012, we can see that:

- **First upcycle:** From late 2012 to mid-2014, the market experienced strong price increases lasting approximately 6–7 quarters. Prices rose by more than 100%, primarily driven by surging smartphone demand, which significantly boosted memory consumption and tightened supply.
- **Following down cycle:** This was followed by a prolonged correction from mid-2014 to early 2016, spanning around 7–8 quarters. Prices declined by roughly 70% from the previous peak as smartphone growth moderated and inventory levels normalised.
- **Next upcycle:** Beginning in early 2016 and continuing until late 2017, prices surged again over ~6 quarters, increasing nearly 200%. This cycle was supported by the industry's transition to 3D NAND technology and widespread DRAM shortages, which constrained supply and drove pricing strength.
- **Following down cycle:** From early 2018 to late 2019, the market entered another downturn lasting about 8 quarters. Prices fell by 60–70% from prior highs.
- **COVID-driven upcycle:** Early 2020 to mid-2021 marked a sharp recovery, lasting 5–6 quarters, with prices climbing nearly 100%. This was largely due to supply chain disruptions and component shortages during the COVID-19 pandemic, which created significant constraints across the industry.
- **Downward cycle:** The subsequent correction occurred from 2022 through 2023, spanning 7–8 quarters. Prices dropped approximately 70% from the previous peak as demand weakened following the COVID-induced boost, inventories built up and excess supply had to be managed.
- **Stabilisation phase:** From 2024 to early 2025, pricing stabilised following industry-wide inventory adjustments, and memory players reduced utilisations to better manage supply-demand dynamics.
- **Latest upward cycle:** Starting in 2025, the market entered a new uptrend started by the announcements that players would end the production of DDR4 before accelerating AI-related demand caused material tightness, which which we expect to underpin pricing strength going forward.

Why could this cycle be different to prior ones?

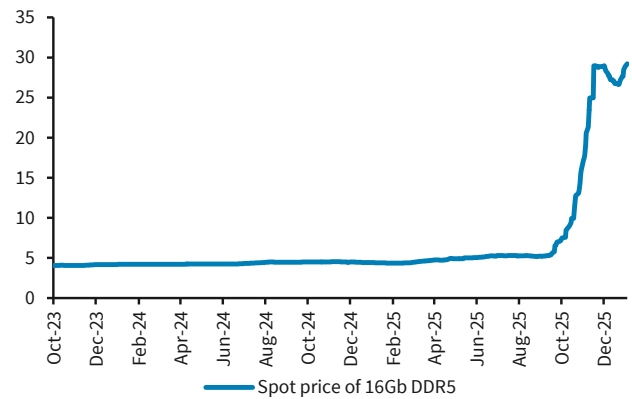
- Exponential demand growth from the next gen Rubin AI servers (see prior section) driving increased demand for both HBM and DRAM.
- Ever increasing HBM content in GPUs and ASICs.
- Supply constraints until at least 2H26, especially from a clean room perspective.
- Per top memory players, 2026 memory capacity has all been pre-booked. Majors CSPs are trying to secure multi-year long-term agreements to guarantee supply through 2027 & 2028.

FIGURE 18. DDR4 spot pricing (\$)



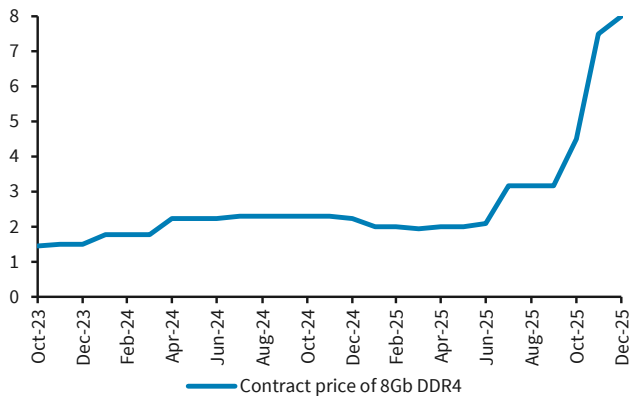
Source: Bloomberg, Barclays Research

FIGURE 19. DDR5 spot pricing (\$)



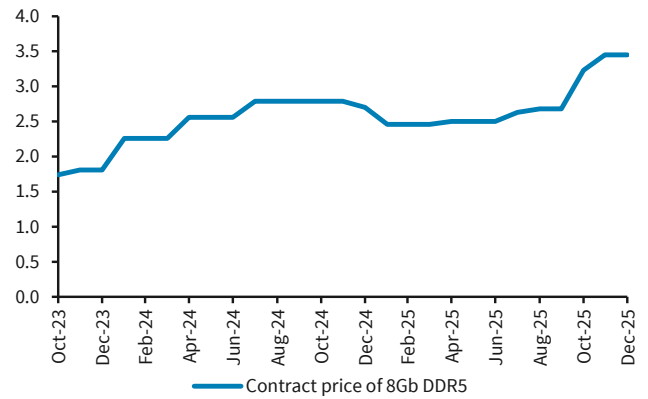
Source: Bloomberg, Barclays Research

FIGURE 20. DDR4 contract pricing (\$)



Source: Bloomberg, Barclays Research

FIGURE 21. DDR5 contract pricing (\$)



Source: Bloomberg, Barclays Research

We estimate global server units will grow low-teens% in '25 and '26, while we estimate global PC and smartphone units will grow LSD% in '25 and '26, respectively, which may have downside risk given the increasing memory prices. Whilst in the past 2-3 years, demand from these end markets has correlated with memory demand/pricing, we note that many companies are saying that increased memory prices shouldn't impact smartphone/PC demand; however, we are sceptical just given how relentless the price increases so far this cycle have been. This could help alleviate the supply/demand tightness being seen but it is unlikely to narrow the gap sufficiently.

China - where are they now?

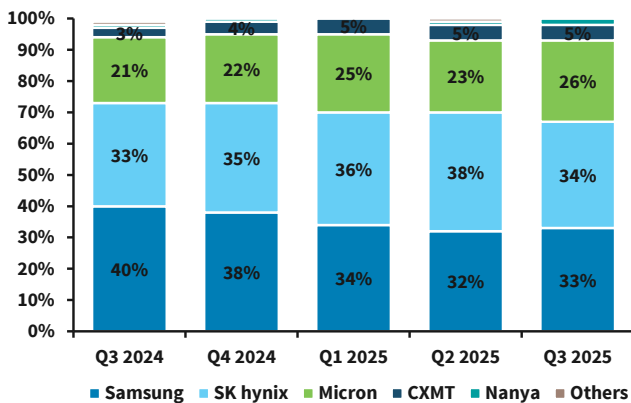
China has a well-known aim to become fully self-sufficient across the whole semiconductor supply chain. Big players such as CXMT (private, not covered) in DRAM and YMTC (private, not covered) in NAND have been spending billions over the past few years to develop competitive technology, expand capacity and take market share. So far CXMT sits at c10% of global DRAM market share whilst YMTC has reached c15% in the global NAND market per Counterpoint. We assume that China memory won't be bought for products outside China, but the tightness of the current global memory market could see ODMs forced to use Chinese supply at least for Chinese sold products, which would further help their progress. For now, though, we do not see supply activity from China materially altering the tight global supply/demand dynamic.

China Memory - making progress

CXMT's global DRAM market share (by revenue) expanded from 3% in 3Q24 to 5% in 3Q25 per Figure 23, with DDR5 and LPDDR5 product launches the main drivers. According to Counterpoint, CXMT's global DRAM market share by shipment was already ~8% in 3Q25.

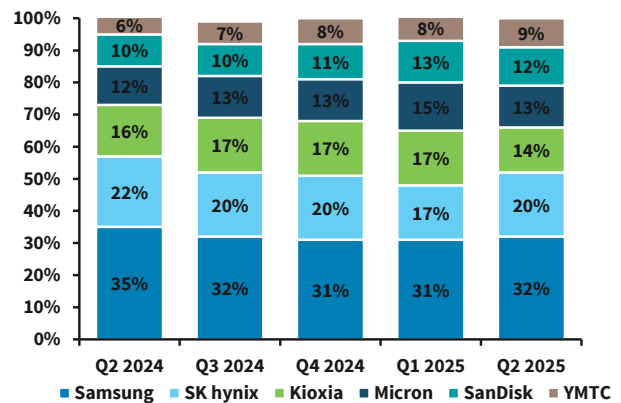
YMTC has made relatively faster progress during the past few quarters per Figure 24, with market share (by revenue) reaching 9% in 2Q25, compared to 6% in 2Q24. Per Counterpoint, YMTC has entered the eSSD market from 3Q25 and its global NAND market share by shipment reached ~13% in 3Q25.

FIGURE 22. Global DRAM Market Share by Revenue



Source: Counterpoint

FIGURE 23. Global NAND Market Share by Revenue



Source: Counterpoint

DRAM - work needed to catch up on the Technology

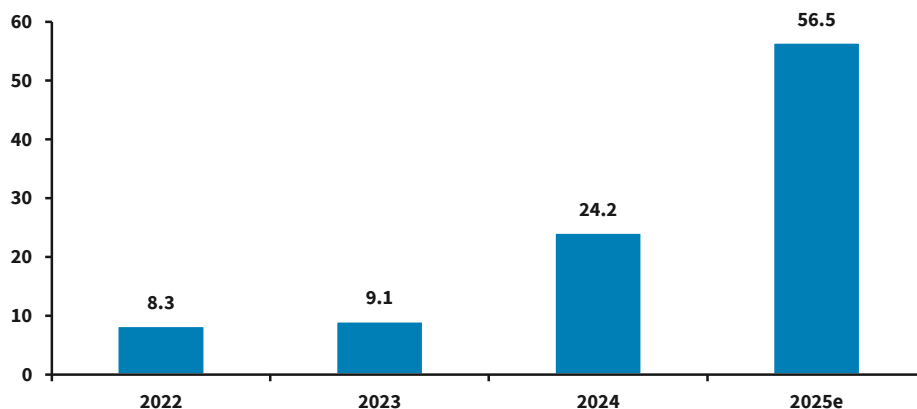
ChangXin Memory Technologies (normally known as CXMT) is the leading DRAM maker in China. CXMT introduced its first-generation DRAM (27nm equivalent) for DDR4 and LPDDR4 in 2019. After skipping second-gen (G2) technology, CXMT ramped up production of G3 (18.5nm equivalent) and significantly increased its DDR4 shipments in 2024. The G4 process (16nm equivalent) technology is CXMT's most advanced DRAM process node. Since late 2023, CXMT has been shipping LPDDR5 products, including 12Gb LPDDR5 dies, 6GB LPDDR5 mobile DRAM, and 12GB LPDDR5 mobile DRAM. In Dec'24, Chinese memory manufacturers KingBank (private, not covered) and Gloway (private, not covered) unveiled the first domestic DDR5 memory modules (with 32GB capacities) using CXMT's DDR5 chips (16nm equivalent), despite the US restrictions on equipment that can be shipped for DRAM makers.

In 2025, CXMT continued to make progress in DDR5 products in 2025. After releasing 10667Mbps LPDDR5x product in Oct'25, it has now unveiled 8000 Mbps DDR5 for server in Nov'25. Single die comes in 16 and 24 GB and is 25% faster than the 6400Mbps DDR5, which was released in 2024. CXMT also displayed 7 modules from cloud to edge (see [its website](#)): RDIMM, MRDIMM, TFF MRDIMM for DCs and enterprise; UDIMM for desktop and PCs; SODIMM for laptops and compact; and CUDIMM and CSODIMM for high-end overclocking and work stations. [According to its website](#), CXMT has a line-up of consumer and server products despite not having access to the latest lithography or other overseas SMEs.

In Jan'25, the US Department of Commerce tightened export restrictions on memory manufacturing equipment to China (made technical corrections to the December 2 export controls), subjecting purchases of equipment for processes sub-28nm to additional controls. Although CXMT is not on the US entity list, these broad restrictions have slowed down CXMT's G3 and G4 progress and G5 R&D. CXMT aimed to introduce an updated HKMG G4 technology in 2H25, and the company has not announced notable progress yet. CXMT is likely to face challenges with the High-k Metal Gate (HKMG) process because of export restrictions, which is essential for achieving both power efficiency and performance in the latest DRAM. The company indicated in its prospectus it would be developing G5 DRAM technology in 2025 (15nm equivalent), with commercialisation targeted for 2H26.

Per CXMT's prospectus, its '25 revenue is estimated to be RMB55-58bn, growing 134% YoY (based on mid-point guidance) vs 166% YoY in '24 and 10% YoY in '23. Its 4Q25 revenue is estimated to grow 206% YoY, accelerating from 149% in 3Q25.

FIGURE 24. CXMT's Revenue from 2022 to 2025 (in Bn RMB)



2025e data refers to the mid point of company's 2025 revenue guidance
Source: CXMT

CXMT was the largest DRAM capex spender in 2025, given relatively small contributions from Swaysure (state owned, not covered) and JHICC (state owned, not covered). CXMT also plays a significant role in the China WFE spending, with its '23 and '24 capex accounting for ~20% and ~24% of the total China WFE, respectively. Per CXMT's prospectus, its capex was ~\$5.26b, ~\$6.16b, ~\$9.89b and ~\$3.33b in 2022, 2023, 2024 and 1H25, respectively. Per our channel checks with local equipment vendors, 2026 memory capex could grow ~25% YoY compared to flat or slight growth in 2025.

CXMT has indicated it is constructing a new production line in Shanghai, with a total investment of RMB 13.78bn. The facility covers 280K m², with ~180K m² allocated for Phase I. Published timelines suggest this Shanghai fab is estimated to place significant orders to local vendors and have equipment move in in 2026. This fab will also focus on advanced packaging technologies,

such as through-silicon VIAs (TSVs), to support HBM manufacturing. Per industry sources, CXMT has shipped HBM2 (3rd-generation HBM) in 2025 but with small volumes. These sources also estimate CXMT's HBM2e and HBM3 are likely to be its main supplied products in 2026 and 2027, respectively.

16Gb DDR5 is the mainstream and highest volume DRAM. According to Techinsights, CXMT's 16Gb DDR5 chip size measures 66.99 mm² with a 0.239 Gb/mm² bit density. CXMT reduced DRAM cell size by 20% from the previous G3 DRAM node. Cell pitches measure 29.8 nm, 41.7 nm, and 47.9 nm for active, wordline, and bitline for each, which we believe corresponds to 1Z generations from Samsung, SK hynix, and Micron.

FIGURE 25. Comparison of CXMT's DRAM generations

Generation	CXMT G1	CXMT G3	CXMT G4
Die Size/Ex. Device	79.20 mm ² (7.12 mm × 10.99 mm) CXMT CXDQ4A6AM-CG1 Gb DDR4 Device (8 Gb Die)	44.66 mm ² (4.87 mm × 9.17 mm) CXMT CXD8GCCDM-NA8 Gb LPDDR4X Device (8 Gb Die)	66.99 mm ² (8.19 mm × 8.18 mm) Gloway 16GBx2 (32GB) DDR5-60002 Gb DDR5 Device (16 Gb Die)
Bit Density	0.101 Gb/mm ²	0.179 Gb/mm ²	0.239 Gb/mm ²
Cell Size	0.0044 μm ²	0.0025 μm ²	0.0020 μm ²
Feature Size	23.8 nm	18.0 nm	16.0 nm
Pitch (Act/WL/BL) Measured	45.0 nm / 61.0 nm / 72.0 nm	34.0 nm / 46.6 nm / 54.2 nm	29.8 nm / 41.7 nm / 47.9 nm
Relative Generation	D2y	D1x	D1z

Source: Techinsights, Barclays Research

The top three DRAM players started 16Gb DDR5 high volume manufacturing in 2021, which is three years ahead of CXMT. The top three players now produce DDR5 devices with more advanced technology nodes such as D1a/D1α and D1b/D1β, featuring 12nm to 14nm.

FIGURE 26. Comparison of 16Gb DDR5 products from top players

Manufacturer	CXMT 16 Gb DDR5	Samsung 16 Gb DDR5	SK Hynix 16 Gb DDR5	Micron 16 Gb DDR5
Year First Revealed (Clock Speed, ex.)	2024 DDR5-6000	2021 DDR5-5600, DDR5-6000	2021 DDR5-4800, DDR5-6000	2021 DDR5-4800
Parent Product Examples	Gloway 16GBx2 (32GB) DDR5-6000 Module(H2G08BC5G2-6AF)	G.SKILL Trident Z5 DDR5F5-5600U3636C16GX2-TZ5K(KARAJ06VB-BCQK)	SK hynix 32 GBHMC88MEBUA1N DDR5 UDIMM PC5-4800B module(H5CG48MEBD-X014)	TeamGroup ELITE DDR516 GB UDIMM(MT60B2G8J4BE-48B-A)
DRAM Generation	G4	D1y	D1y	D1z
Die Size (Sealed)	66.99 mm ² (8.19 mm × 8.18 mm)	73.58 mm ² (8.94 mm × 8.23 mm)	75.21 mm ² (9.24 mm × 8.14 mm)	66.26 mm ² (8.43 mm × 7.86 mm)
Bit Density	0.239 Gb/mm ²	0.217 Gb/mm ²	0.213 Gb/mm ²	0.241 Gb/mm ²
Peripheral Gate Process	Poly/W Gate	HKMG (Gate-first)	Poly/W Gate	Poly/W Gate

Source: Techinsights for CXMT

FIGURE 27. Tech Roadmap for DRAM (Time to Market)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Samsung		1znm	1anm		1bnm		1cnm		1dnm		0anm
SK hynix	-	1znm	1anm		1bnm		1cnm		1dnm		0anm
Micron		1znm	1anm		1bnm		1cnm		1dnm		1enm
CXMT	-	2ynm		1xnm		1znm			1anm		
NANYA		-		1xnm		1ynm			1z/1a nm		
Winbond			-			2znm			1xnm		

Source: Yole, Barclays Research

FIGURE 28. Tech Roadmap for HBM (Time to Market)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Samsung	-		HBM2E		HBM3	HBM3e	HBM4		HBM4E		HBM5
SK hynix	-		HBM2E	HBM3	HBM3E		HBM4		HBM4E		HBM5
Micron	-		HBM2E		HBM3E		HBM4		HBM4E		HBM5
CXMT			-			HBM2	HBM2E	HBM3	HBM3E		TBD

Source: Yole, Barclays Research

There are also other DRAM players operating in China. Fujian jinhua, commonly known as JHICC (private, not covered), is a state-owned enterprise founded in 2016, specialising in DRAM. JHICC started small-scale trial production of DDR4 8GB memory chips in 2021 and planned a total capacity of 240KWPM for four phases with an overall investment exceeding \$20B. However, due to US sanctions, JHICC had to suspend the capacity expansion projects and has shifted to using mainly domestic equipment, except for photolithography tools. According to Yole, Huawei (not covered) is a key customer, and is in joint development of HBM with JHICC. JHICC's P1 planned capacity is 60kwpm, primarily using the 25nm process, with a small % at 19nm.

According to the [Korea press](#) in Sept'25, YMTC is collaborating with CXMT on DRAM and HBM development and is planning to invest in R&D equipment for DRAM aimed at HBM. The report indicated CXMT is likely to provide the DRAM while YMTC supplies hybrid bonding technology, which may be applied to next-gen HBM.

According to industry sources, Huawei is working on HBM die production with a target capacity of 15kwpm. Swaysure is a state-backed company affiliated with Huawei, which specialises in DRAM for automotive, consumer electronics and wearables. However, we have seen limited capacity expansion during the past years given US restrictions. XMC (private company, not covered, specialising in NOR flash; also a sister company to YMTC with YMTC also holding a majority stake in it) specialises in TSV (Through-Silicon VIA) process technology for HBM integration and packaging.

NAND - Competitive with global players

Yangtze Memory Technologies Corporation, commonly known as YMTC, was founded in 2016 and has emerged as the largest memory maker in China by revenue, which ships 64/128/232-layer NAND products in China. The company has 2 fabs in operation and 1 fab in EPC (engineering, procurement and construction), with a total planned capacity of 300KWPM (all in Wuhan, China).

- In 2018, YMTC introduced the Xtacking 1.0 technology, which employs one CMOS wafer and one NAND cell wafer, bonded face-to-face with wafer-scale bonding through millions of metal VIAs (Vertical Interconnect Accesses).

- In 2020, YMTC launched 128-layer 3D NAND products with its Xtacking 2.0 architecture, which enables a 47% bit-density improvement vs 64L generation.
- In Aug'22, YMTC launched its G4 3D NAND 232L based on Xtacking 3.0, with power performance and IO speed growing 25% and 50% (from 1600MT/s to 2400MT/s), respectively.

FIGURE 29. YMTC's Current NAND Portfolio

Generation	Model	Architecture	Organization	Active Layers	String Stacking
G1	X0-A030	Conventional	MLC	32	1x32L
G2	X1-9050	Xtacking 1.0	TLC	64	1x64L
G3	X2-9060	Xtacking 1.0	TLC	64	1x64L
G3	X2-6070	Xtacking 2.0	QLC	128	2x64L
G4	Test	Xtacking 3.0	N.A.	192/196	N.A.
G4	X3-9060	Xtacking 3.0	TLC	128	2x64L
G4	X3-9070	Xtacking 3.0	TLC	232	2x116L
G4	X3-6070	Xtacking 3.0	QLC	128	2x64L
G5	X4-9060	Xtacking 4.0	TLC	128	2x64L
G5	X4-9070	Xtacking 4.0	TLC	232	2x116L

Source: Yole

Since it was added to the US Entity List in Dec 2022, YMTC has been restricted from importing western semis equipment, and has been struggling for capacity expansion. However, it is collaborating with local equipment vendors to develop advanced etching equipment capable of handling 128 layers and above. The company is also exploring hybrid bonding techniques for stacking multiple NAND wafers based on our channel checks with Chinese semicap equipment companies.

According to our checks, YMTC's second fab in Wuhan has been ramping slowly, given restrictions, and it has been working on a new production line with most local equipment suppliers since 2024. Its third fab is expected to place equipment orders (mostly domestic equipment) in 2026 and move in equipment in 2027. Per feedback from one top local equipment vendor, the localisation rate at YMTC fabs has been more than 40%, compared to an average 20% at most domestic fabs.

According to [industry sources](#) in early Oct' 25, YMTC was developing a 400-layer NAND product as the next step after its current 267-layer (with 232 active layers) mass-production line, which mirrors Samsung's strategy of preparing a 400-layer product after its 286-layer NAND.

FIGURE 30. NAND Technology Roadmaps (Time to Market)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Samsung	-	128L		176L	236L		286L	400L				>600L
Kioxia & WD	-	112L		162L			218L					>300L
Micron	-		176L		232L		276L					>276L
SK hynix	-	128L		176L		238L		321L				>321L
Solidigm	-		144L					192L				
YMTC	-		128L			232L		294L but 232 active				TBD

Source: Yole, Barclays Research

YMTC and Kioxia are pioneering the use of wafer bonding technologies, which enables increases in density, speed and power performances. YMTC's Xtacking solution is a CBA architecture that bonds two wafers, one with the NAND cell arrays and one with the CMOS logic. The permanent bond forms interconnections with pitches of 10µm and below, with no compromise regarding I/O performance while offering the capability to increase the density per mm². Per Figure 32 below, YMTC's NAND products are comparable to the ones from overseas players despite its operating constraints.

FIGURE 31. Comparison of 1TB TLC products from top players

1 TB TLC	YMTC	Samsung	SK Hynix	Micron	Kioxia
Number of Layers	232	236	238	232	218
Architecture	CBA	CUA	CUA	CUA	CBA
I/F Speed	2.4Gbps	2.4Gbps	2.4Gbps	2.4Gbps	3.6Gbps
Chip Size	69.5mm ²	66.6mm ²	N/A	68.9mm ²	55.9mm ²
Chip GB Density	184GB/cm ²	192GB/cm ²	185GB/cm ²	186GB/cm ²	229GB/cm ²

Source: Techinsights, Barclays Research

Upside and downside risks to rating and price target

SK hynix has delivered impressive performance, with a total return of >270% on a 1 year basis compared to c90% in the KOSPI index. There are therefore a number of upside and downside risks to our investment thesis. We detail and discuss the main ones below.

Potential upside

- **Pricing strength continues.** Micron has guided for revenues to grow 32% qoq next quarter. We expect this dynamic to help SK hynix as well, given the supply/demand tightness in the industry. We model further pricing improvement in 1Q26 and 2Q26 before stabilisation. Given tightness of supply if pricing continues to improve, then our estimates could be conservative.
- **AI strength continues.** If AI strength continues and leads to a further step-up in server demand then this could pressure what is already tight supply across the industry. This would support further pricing improvement as supply increases are limited.
- **AI models increase further in size.** Currently scaling laws are holding true. If models continue to increase in size, this would likely increase memory requirements even further, resulting in increasing memory demand from AI to even higher levels. This would cause supply tightness to continue for even longer and push pricing ever upward as we believe AI customers are more inelastic to pricing than other consumer end markets.
- **Peers struggle on HBM4.** Currently all players are striving to supply HBM4 in 2026. According to [the press](#), delays/accelerations/specification changes are possible. We believe Hynix is still well placed to keep a dominant position in HBM4. If its competitors face any issues, then we think Hynix could supply even more share than we model, which would imply upside potential to our estimates.
- **New shareholding rules.** A [potential deregulation](#) that would ease shareholding rules could allow SK hynix easier access to capital and lower its shareholding requirement on subsidiaries from 100% to 50%. This could either free up capital or allow SK hynix to involve partners to finance significant projects, which in turn could lower its cost of capital. If enacted, this would be beneficial and is not included in our valuation.
- **HBF could be another HBM.** As discussed earlier in the report, NAND is seeing increasing demand from AI servers. One proposal has been high bandwidth flash or HBF for short. It is early days, but if this product was to see widespread adoption and if SK hynix can take a leading position, then this could lead to material upside to our estimates. We do not explicitly include any HBF revenues in our forecasts.

Downside risks

- **Samsung catches up.** Samsung has been lagging on the technology front after facing a number of issues in recent years, including competitiveness on HBM. We believe its issues are behind it now, and Samsung will now strive to return to its prior leadership position. This would likely be at SK hynix's expense. For now we assume that SK hynix can retain a competitive position; however, if Samsung is more aggressive and leverages its scale then there could be risk ahead.
- **HBM4 share is lower than expected.** Conversely, if competitors are able to ramp their HBM4 products on time and be competitive to SK hynix then the company could cede more HBM share than we currently expect.
- **Hyperscalers are double ordering or more.** Given the seemingly insatiable demand for AI servers the hyperscalers are seeing and considering their plans to bring as much AI capacity

online as possible, it is possible hyperscalers are over-ordering and inflating true demand. We consider this a risk partly because we can also envision a scenario in which power and other constraints become bottlenecks to rolling out new DC capacity, and thus sitting on memory inventory that can be deployed as soon as a datacentre is ready makes sense. However, if rollouts reach a steadier state and future true demand is materially lower than hyperscalers are currently ordering, then supply/demand tightness could evaporate and pricing would be impacted negatively. This would be a material downside risk to our expectations.

- **Risks to the AI trade.** Somewhat linked to the above point, but if the AI trade loses momentum due to either AI winners missing expectations or a slowdown in investment, then we could see AI related stocks derate, which would include SK hynix.
- **Capacity doesn't come online as expected.** SK hynix and peers plan to expand capacity at a record pace in 2026 and 2027. If there are any issues or hurdles that delay capacity expansion, then our bit growth assumptions could be too optimistic and SK hynix may not be able to capture all of the opportunity ahead, which would be downside risk to our expectations.
- **SK hynix has exclusive material supply agreement for HBM.** SK hynix has an exclusive supply agreement with NAMICs for the supply of a chemical used in its HBM manufacturing process. Based on our channel checks, this arrangement has helped SK secure the lead in HBM, ensuring its product has better heat dissipation properties than competitor products that use a different process. This exclusive agreement seems to be [coming to an end](#), so one could assume this would allow competitors to apply the same process. We think there are a number of other factors for competitors to consider before doing this and we also see SK being able to just extend the agreement further, but if competitors were able to replicate then that could accelerate their HBM progress.
- **China catches up.** China today has made progress in memory but so far taken limited market share. If China is able to catch up on technology and take significant market share then this could be a material headwind for the industry including SK hynix. We don't see it as a near-term risk but it is a realistic longer-term risk.

Forecasts

FIGURE 32. DRAM Forecasts

Dec FY, USDm	2021	2022	2023	2024	2025E	2026E	2027E	2028E	2029E	2030E
DRAM sales (USDm)	26,968	22,871	16,106	33,286	52,915	113,791	142,239	155,396	153,842	152,304
% change Y/Y	41%	-15%	-30%	107%	59%	115%	25%	9%	-1%	-1%
Shipments -- 1Gb eq(mn)	55,333	57,710	65,617	77,311	92,148	110,390	137,988	158,686	174,554	192,010
% change Y/Y	23%	4%	14%	18%	19%	20%	25%	15%	10%	10%
ASP - Gb (USD)	0.49	0.40	0.25	0.43	0.57	1.03	1.03	0.98	0.88	0.79
% change Y/Y	15%	-19%	-38%	75%	33%	80%	0%	-5%	-10%	-10%
By Product										
PC		5,547	3,945	5,444	5,763	3,080	3,191	3,370	3,733	4,045
% change Y/Y		-4%	-29%	38%	6%	-47%	4%	6%	11%	8%
% of DRAM		24%	24%	16%	11%	3%	2%	2%	2%	3%
Server		12,781	7,770	16,828	22,582	38,533	46,240	46,240	46,240	44,390
% change Y/Y		2%	-39%	117%	34%	71%	20%	0%	0%	-4%
% of DRAM		56%	48%	51%	43%	34%	33%	30%	30%	29%
Graphics (incl. HBM)		2,353	3,618	13,940	30,515	64,638	83,383	95,890	93,973	93,973
% change Y/Y		5%	54%	285%	119%	112%	29%	15%	-2%	0%
% of DRAM		10%	22%	42%	58%	57%	59%	62%	61%	62%
Mobile		5,715	4,538	7,418	8,176	7,540	9,425	9,897	9,897	9,897
% change Y/Y		-32%	-21%	63%	10%	-8%	25%	5%	0%	0%
% of DRAM		25%	28%	22%	15%	7%	7%	6%	6%	6%

Source: Barclays Research Estimates

FIGURE 33. NAND Forecasts

Dec FY, USDm	2021	2022	2023	2024	2025E	2026E	2027E	2028E	2029E	2030E
NAND sales (USDm)	9,036	11,210	7,395	14,078	13,505	30,831	31,077	33,502	33,167	32,835
% change Y/Y	47%	24%	-34%	90%	-4%	128%	1%	8%	-1%	-1%
Shipments - 8GB eq (mn)	90,896	138,146	162,200	162,997	168,562	198,646	222,484	244,732	269,206	296,126
% change Y/Y	61%	52%	17%	0%	3%	18%	12%	10%	10%	10%
ASP - 8Gb (USD)	0.10	0.08	0.05	0.09	0.08	0.16	0.14	0.14	0.12	0.11
% change Y/Y	-9%	-18%	-44%	89%	-7%	94%	-10%	-2%	-10%	-10%
By Product										
USB, Card & Others		943	2,216	1,853	3,075	5,666	349	429	440	496
% change Y/Y		6%	135%	-16%	66%	84%	-94%	23%	3%	13%
% of NAND		8%	30%	13%	23%	18%	1%	1%	1%	2%
Mobile		6,572	4,329	4,489	3,444	3,637	3,819	4,009	3,809	3,999
% change Y/Y		16%	-34%	4%	-23%	6%	5%	5%	-5%	5%
% of NAND		59%	59%	32%	26%	12%	12%	12%	11%	12%
SSD (incl. discrete NAND for SSDs)		6,391	3,052	12,764	10,803	21,528	26,910	29,063	28,918	28,339
% change Y/Y		68%	-52%	318%	-15%	99%	25%	8%	-1%	-2%
% of NAND		57%	41%	91%	80%	70%	87%	87%	87%	86%

Source: Barclays Research Estimates

FIGURE 34. P&L Forecast

Dec FY, USDm	2021	2022	2023	2024	2025E	2026E	2027E	2028E	2029E	2030E
Total revenue	42,998	44,622	32,766	66,193	96,677	209,247	250,763	273,307	270,574	267,868
Adjusted Gross Profit	18,953	15,628	-533	31,828	57,469	144,745	170,519	180,383	162,344	147,328
Adjusted Operating Income	12,411	6,810	-7,730	23,467	46,351	125,696	147,950	155,785	135,287	116,523
Adjusted Pretax Income	13,417	4,003	-11,658	23,885	51,026	125,296	148,876	157,710	138,279	120,465
Adjusted Net Income	9,617	2,242	-9,138	19,796	43,184	106,502	126,544	134,053	117,537	102,395
Profit attributable to NCI	14	12	-25	8	9	9	9	10	10	11
Adjusted Net Income Available to Common Stock	9,602	2,230	-9,112	19,789	43,176	106,493	126,535	134,044	117,527	102,385
Diluted EPS (KRW)	13,984	3,242	-13,244	28,419	60,693	149,581	177,731	188,277	165,080	143,814
DPS (P&L)	586	1,222	600	600	1,589	4,000	4,000	4,000	4,000	4,000
Margins										
Adjusted Gross Margin	44%	35%	-2%	48%	59%	69%	68%	66%	60%	55%
Adjusted Operating Margin	29%	15%	-24%	35%	48%	60%	59%	57%	50%	44%
% adjusted pretax margin	31%	9%	-36%	36%	53%	60%	59%	58%	51%	45%
% adjusted net margin	22%	5%	-28%	30%	45%	51%	50%	49%	43%	38%

Source: Barclays Research Estimates

FIGURE 35. Cash Flow Forecast

Dec FY, USDm	2021	2022	2023	2024	2025E	2026E	2027E	2028E	2029E	2030E
Net Income	9,617	2,243	-9,138	19,797	43,184	106,502	126,544	134,053	117,537	102,395
Depreciation and Amortization	10,659	14,169	13,674	12,581	14,067	19,390	22,185	26,473	30,285	33,145
Other Adjustments	676	2,672	2,152	-1,127	1,565	17,866	16,667	14,131	10,824	12,700
Total Adjustments	11,335	16,841	15,826	11,454	15,632	37,256	38,852	40,603	41,109	45,845
Interest received	17	77	199	323	346	800	2,125	3,125	4,192	5,143
Interest paid	-241	-495	-1,262	-1,277	-1,109	-1,200	-1,200	-1,200	-1,200	-1,200
Income tax paid	-1,015	-3,979	-1,384	-552	-7,299	-18,794	-22,331	-23,656	-20,742	-18,070
Net cash generated from operating activities	19,798	14,781	4,278	29,796	50,785	124,613	144,040	152,975	140,946	134,163
Acquisition of property, plant and equipment	-12,487	-19,010	-8,325	-15,946	-26,002	-36,171	-39,065	-40,996	-40,586	-40,180
Acquisition of intangible assets	-974	-739	-455	-717	-969	-1,046	-1,254	-1,367	-1,353	-1,339
Net cash generated from investing activities	-22,392	-17,884	-7,335	-18,005	-43,434	-37,095	-40,401	-42,475	-41,925	-41,506
Net repayments from borrowings	5,613	4,793	6,969	-7,376	1,918	-4,000	0	0	0	0
Payment of dividends	-805	-1,681	-826	-826	-1,677	-2,762	-2,760	-2,760	-2,760	-2,760
Net cash generated from financing activities	-805	-1,681	-826	-826	-1,677	-2,762	-2,760	-2,760	-2,760	-2,760
Effect of exchange rate changes on cash and cash equivalents	184	200	-30	530	-91	0	0	0	0	0
Net Change in Cash	2,082	-81	2,610	3,618	6,611	79,933	99,966	106,690	95,084	88,650
Cash - Beginning	2,976	5,058	4,977	7,587	11,205	17,816	97,749	197,715	304,405	399,490
Cash - End	5,058	4,977	7,587	11,205	17,816	97,749	197,715	304,405	399,490	488,140

Source: Barclays Research Estimates

Valuation

In an upcycle we use a P/E valuation approach. Although volatile, SK hynix has traded at c12x P/E over the past 10 years but has been as low as 3x (excluding when earnings were negative). Its average on 2 year forward earnings has been c7x. We value SK hynix on a 1 year forward P/E multiple or simply 2026 P/E given the volatility of the memory industry. Whilst we are bullish on the outlook for the next 12 months, we think prudence on the multiple is sensible given the uncertainties. We also note that our US colleagues use an 8x to value Micron - a key peer. Therefore, we use a 7x 2026E P/E multiple to reach our price target of €615 per share, which gives c40% upside. This is equivalent to 3.4x 2026E P/Book.

Consensus and historical valuation

Consensus

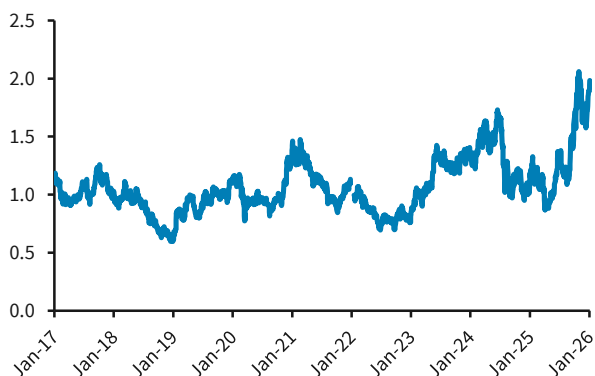
FIGURE 36. Barclays Estimates vs Bloomberg Consensus

Won Bn, Dec FY	Barclays Estimates			Bloomberg Consensus			Delta		
	2026	2027	2028	2026	2027	2028	2026	2027	2028
Revenue	209,247	250,763	273,307	156,877	189,799	208,087	33%	32%	31%
Gross margin	69%	68%	66%	67%	65%	67%	2.1pp	3.4pp	-0.7pp
EBIT	125,696	147,950	155,785	93,626	103,323	18,378	34%	43%	748%
Net income	106,502	126,544	155,785	77,502	82,021	65,496	37%	54%	138%
Capex	36,171	39,065	40,996	24511	32310	34836	48%	21%	18%

Source: Bloomberg, Barclays Research Estimates

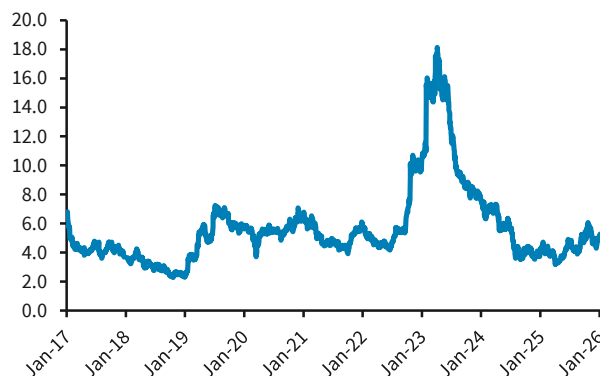
Valuation

FIGURE 37. SK hynix historical P/B



N.B. 2 year forward
Source: Bloomberg, Barclays Research

FIGURE 38. SK hynix historical EV/EBIT



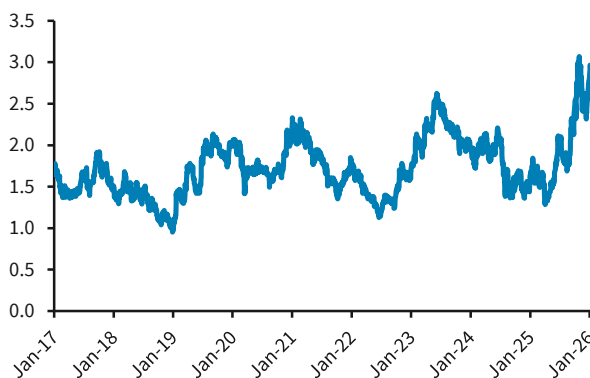
N.B. 2 year forward
Source: Bloomberg, Barclays Research

FIGURE 39. SK hynix historical P/E



N.B. 2 year forward
Source: Bloomberg, Barclays Research

FIGURE 40. SK hynix historical EV/Sales



N.B. 2 year forward
Source: Bloomberg, Barclays Research

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Primary Stocks (Ticker, Date, Price)

SK hynix Inc. (HY9Hy.F, 12-Jan-2026, EUR 443.00), Overweight/Neutral, CD/J

Materially Mentioned Stocks (Ticker, Date, Price)

Micron Technology, Inc. (MU, 12-Jan-2026, USD 345.87), Overweight/Neutral, CD/CE/D/J/K/L/M/N

NVIDIA Corp. (NVDA, 12-Jan-2026, USD 184.94), Overweight/Neutral, CD/CE/J/K/M

Samsung Electronics Co Ltd (0593xq.L, 13-Jan-2026, USD 2314.00), Overweight/Neutral, CD/J/K/M/N

Sandisk Corporation (SNDK, 12-Jan-2026, USD 389.27), Equal Weight/Neutral, A/D/J/L

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Negative - industry coverage universe fundamentals/valuations are deteriorating.

Below is the list of companies that constitute the "industry coverage universe":

European Technology Hardware

Aixtron (AIXGn.DE)	ams OSRAM (AMS.S)	ASM International N.V. (ASMI.AS)
ASML Holding NV (ASML.AS)	BE Semiconductor Industries NV (BESI.AS)	Ericsson (ERICb.ST)
Infineon Technologies AG (IFXGn.DE)	Nokia (NOKIA.HE)	Nordic Semiconductor ASA (NOD.OL)
Samsung Electronics Co Ltd (0593xq.L)	SK hynix Inc. (HY9Hy.F)	Soitec (SOIT.PA)
STMMicroelectronics NV (STM.PA)	Taiwan Semiconductor Manufacturing Company (TSM)	

U.S. Semiconductors & Semiconductor Capital Equipment

Advanced Micro Devices (AMD)	Allegro Microsystems (ALGM)	Analog Devices (ADI)
Applied Materials Inc. (AMAT)	Arm Holdings plc (ARM)	Astera Labs, Inc. (ALAB)
Broadcom Inc. (AVGO)	Camtek (CAMT)	Cirrus Logic Inc. (CRUS)
Coherent Corp. (COHR)	Credo Technology Group (CRDO)	Intel Corp. (INTC)
KLA Corporation (KLAC)	Lam Research Corporation (LRCX)	Lumentum Holdings Inc. (LITE)
MACOM Technology Solutions Holdings, Inc. (MTSI)	Marvell Technology Group, Ltd. (MRVL)	Micron Technology, Inc. (MU)
NVIDIA Corp. (NVDA)	NXP Semiconductors NV (NXPI)	Penguin Solutions (PENG)
Qorvo Inc. (QRVO)	QUALCOMM, Inc. (QCOM)	Sandisk Corporation (SNDK)
Seagate Technology plc (STX)	Silicon Laboratories, Inc. (SLAB)	SiTime Corporation (SITM)
Skyworks Solutions, Inc. (SWKS)	Synaptics Incorporated (SYNA)	Texas Instruments, Inc. (TXN)
Veeco Instruments Inc (VECO)	Western Digital Corporation (WDC)	

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Barclays Equity Research has 1857 companies under coverage.

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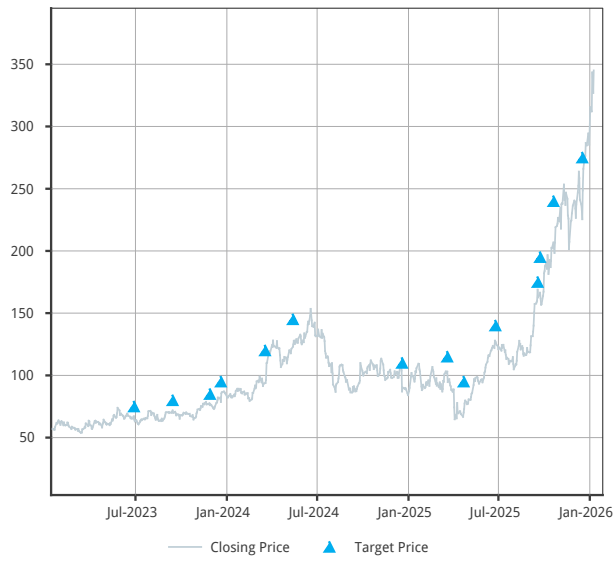
Stock Rating: **OVERWEIGHT**

Industry View: **NEUTRAL**

Closing Price: **USD 345.87** (12-Jan-2026)

Rating and Price Target Chart - USD (as of 12-Jan-2026)

Currency=USD



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
17-Dec-2025	225.52		275.00
20-Oct-2025	202.38		240.00
23-Sep-2025	166.41		195.00
18-Sep-2025	159.99		175.00
25-Jun-2025	127.25		140.00
22-Apr-2025	66.74		95.00
20-Mar-2025	103.00		115.00
19-Dec-2024	103.90		110.00
13-May-2024	121.24		145.00
18-Mar-2024	93.25		120.00
20-Dec-2023	78.69		95.00
28-Nov-2023	77.51		85.00
14-Sep-2023	70.85		80.00
28-Jun-2023	67.07		75.00

On 13-Jan-2023, prior to any intra-day change that may have been published, the rating for this security was Overweight, and the adjusted price target was 70.00.

Source: Bloomberg, Barclays Research

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Valuation Methodology: Our price target of \$275 is based upon 8.1x our CY27 EPS of \$34.04.

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NVIDIA Corp. (NVDA / NVDA)

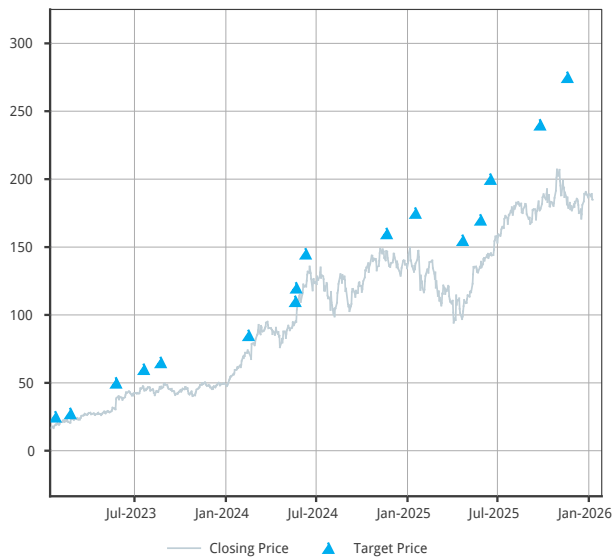
Stock Rating: **OVERWEIGHT**

Industry View: **NEUTRAL**

Closing Price: **USD 184.94** (12-Jan-2026)

Rating and Price Target Chart - USD (as of 12-Jan-2026)

Currency=USD



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
19-Nov-2025	186.52		275.00
25-Sep-2025	176.97		240.00
17-Jun-2025	144.69		200.00
28-May-2025	134.81		170.00
22-Apr-2025	96.91		155.00
17-Jan-2025	133.57		175.00
20-Nov-2024	145.89		160.00
10-Jun-2024	1208.88		145.00
22-May-2024	95.39		120.00
20-May-2024	92.48		110.00
16-Feb-2024	72.61		85.00
23-Aug-2023	47.12		65.00
20-Jul-2023	45.52		60.00
25-May-2023	37.98		50.00
22-Feb-2023	20.75		27.50
23-Jan-2023	19.19		25.00

On 13-Jan-2023, prior to any intra-day change that may have been published, the rating for this security was Overweight, and the adjusted price target was 17.00.

Source: Bloomberg, Barclays Research

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Valuation Methodology: Our price target of \$275 is based upon 30x our CY26E non-GAAP EPS of \$9.15.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to the downside include a slower ramp in GPUs for AI in the DC, slower recovery in the gaming market, a slower Auto ramp and slower GM improvement.

Samsung Electronics Co Ltd (SMSN LI / 0593xq.L)

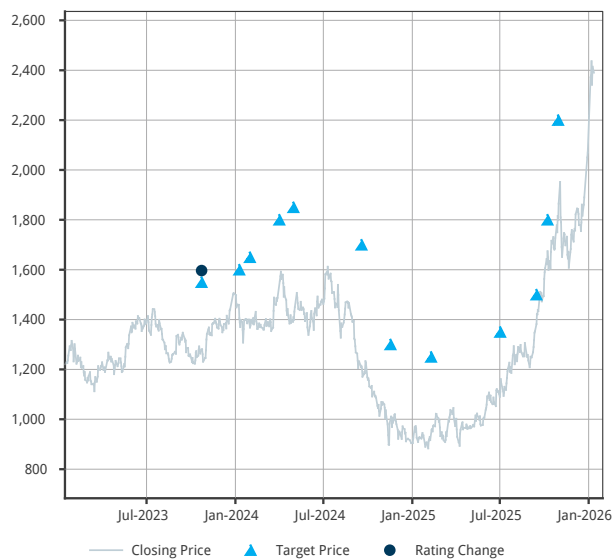
Stock Rating: **OVERWEIGHT**

Industry View: **NEUTRAL**

Closing Price: **USD 2314.00** (13-Jan-2026)

Rating and Price Target Chart - USD (as of 13-Jan-2026)

Currency=USD



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
30-Oct-2025	1815.00		2200.00
08-Oct-2025	1643.00		1800.00
15-Sep-2025	1382.00		1500.00
02-Jul-2025	1110.00		1350.00
09-Feb-2025	916.50		1250.00
17-Nov-2024	983.50		1300.00
18-Sep-2024	1212.00		1700.00
30-Apr-2024	1409.00		1850.00
01-Apr-2024	1487.00		1800.00
31-Jan-2024	1368.00		1650.00
09-Jan-2024	1406.00		1600.00
23-Oct-2023	1264.00	Overweight	1550.00

Source: Bloomberg, Barclays Research

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Valuation Methodology: We value Samsung at 1.8x 2026E P/Book, which is a discount to peers given it is (currently) behind on HBM and the diversified nature of the business.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Key risks to our investment thesis include 1) loss of market share in foundry due to strong competition; 2) prolonged macro weakness limits revenue growth; and 3) China achieving self-sufficiency in advanced semiconductor manufacturing and consumer electronics leading to a loss of revenues from China.

Sandisk Corporation (SNDK / SNDK)

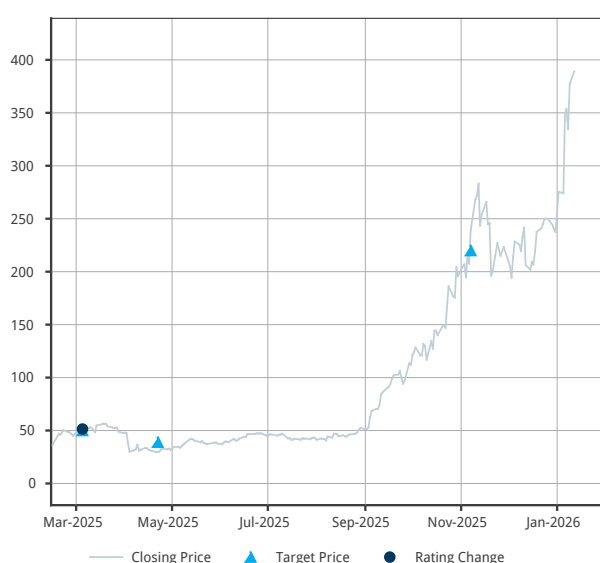
Stock Rating: **EQUAL WEIGHT**

Industry View: **NEUTRAL**

Closing Price: **USD 389.27** (12-Jan-2026)

Rating and Price Target Chart - USD (as of 12-Jan-2026)

Currency=USD



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
07-Nov-2025	207.69		220.00
22-Apr-2025	29.81		39.00
05-Mar-2025	48.69	Equal Weight	50.00

Source: Bloomberg, Barclays Research

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Valuation Methodology: Our price target of \$220 is based upon 11x our CY26E EPS of \$19.95.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Upside risks include better than expected improvement in end market demand and sustainable price increases. Downside risks include industry oversupply, lower ASPs, and weaker end market demand.

SK hynix Inc. (HY9H GR / HY9Hy.F)

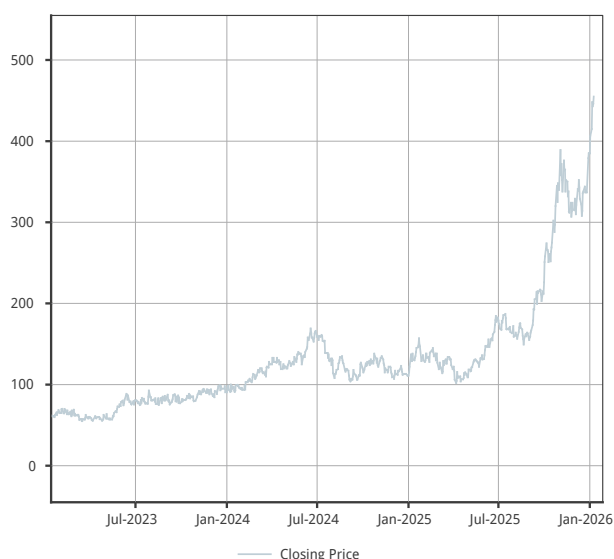
Stock Rating: **OVERWEIGHT**

Industry View: **NEUTRAL**

Closing Price: **EUR 443.00** (12-Jan-2026)

Rating and Price Target Chart - EUR (as of 12-Jan-2026)

Currency=EUR



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
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Valuation Methodology: We use a target multiple of 7x 2026E EPS, in line with peers and a discount to its historical valuation, although history is a difficult guide for memory stocks. The discount reflects uncertainty on the outlook around potential double ordering but also that our estimates are well ahead of consensus.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Key risks to our investment thesis include: 1) loss of market share in HBM due to strong competition; 2) a slowdown in AI-related demand; and 3) slower than expected capacity additions, leading to failure in capturing all of the opportunities ahead.

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