Silicon frontiers: Why semiconductors remain the spine of AI

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Key Takeaways

- Leading chip makers have reported resilient, AI-driven revenue growth across graphics processing units (GPUs), custom silicon and memory.
- Cloud giants are maintaining record-high AI-focused capital expenditure, underpinning long-term chip demand.
- Semiconductor valuations are set to compress as earnings grow, reflecting significant profit momentum than the wider market.
- Diversified exposure across GPU, memory, interconnect and design-tool segments smooths volatility and captures all AI hardware tailwinds.

In January 2025, DeepSeek's R1 model startled investors. By open-sourcing its weights and training the network at a fraction of earlier costs, it appeared to prove that AI horsepower was becoming both cheap and ubiquitous. Equity markets duly cheered application builders and, almost reflexively, marked down the companies that fabricate the chips on which those models run.

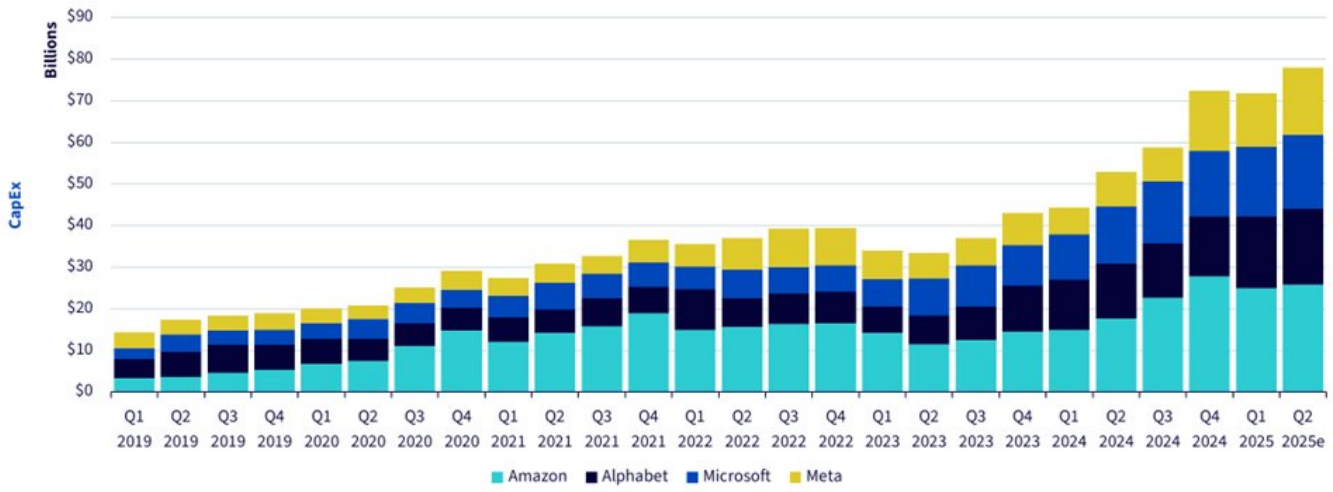
A few months on, and the verdict is clearer. Far from signalling a structural glut, the latest results from leading chip makers – and their biggest customers – show that semiconductor demand is resilient, new catalysts are emerging, and valuations have quietly reset. In such a dynamic landscape, a diversified semiconductor portfolio is not a liability but an essential, versatile foundation for long-term participation in the AI megatrend.

Earnings momentum and demand signals

In the most recent earnings, chip-maker results are outpacing the sceptics. Nvidia's latest quarter produced US$44 billion of revenue, with its data-centre franchise surging 73% year-on-year to US$39 billion. AMD reported data-centre sales of US$3.7 billion, up 57%, thanks to demand for EPYC central processing unit (CPUs) and MI-series graphics processing units (GPUs). The momentum is not confined to the GPU leaders. Connectivity and custom-silicon leader Broadcom recorded US$4.4 billion of AI-chip revenue, up 46 %, while memory specialist SK Hynix grew revenue 42% y/o/y, driven by high-bandwidth memory (HBM)[1].

The buyers are just as emphatic. Amazon spent around US$24 billion on capital expenditure in Q1 2025, three-quarters of it to expand AWS infrastructure. Microsoft is running at a US$80 billion annual capex pace; Satya Nadella told analysts that “as AI becomes more efficient and accessible, we will see exponentially more demand”. The total capex of the hyperscalers like Meta, Amazon, Microsoft and Alphabet remained high at around $720 billion and is expected to grow 8.6% in the next quarter.[2]

Figure 1: Hyperscalers’ capex since 2019

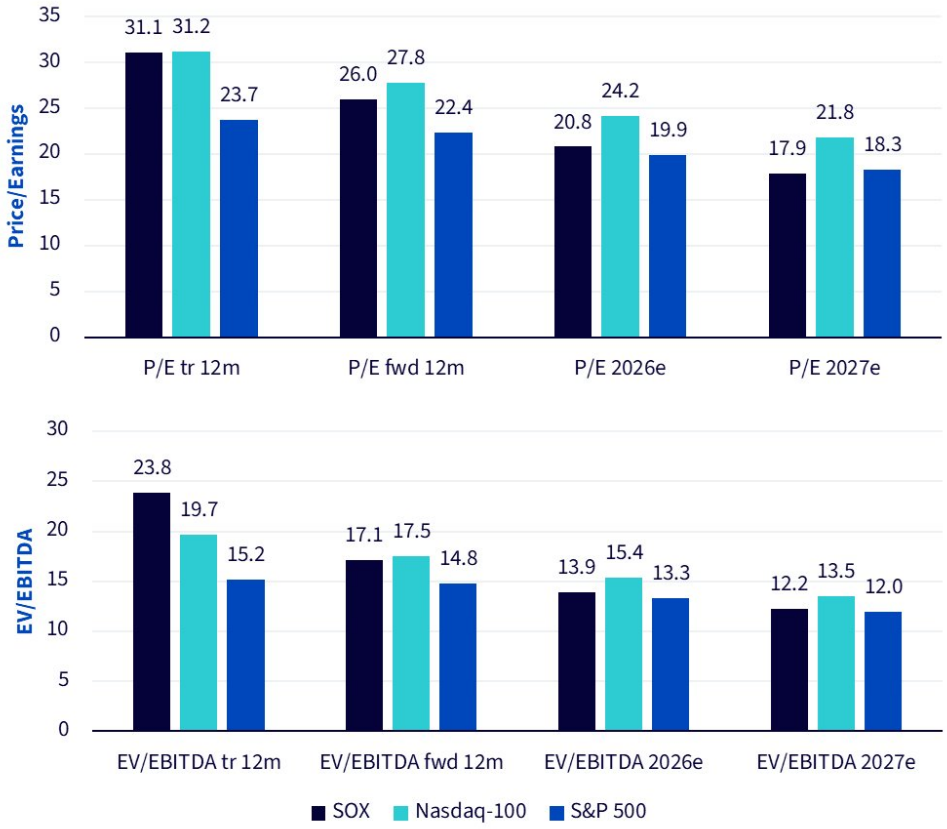


Source: WisdomTree, Bloomberg. As of 10 June 2025. Figures for Q2 2025 are averages of analysts’ estimates available on Bloomberg. Historical performance is not an indication of future performance and any investments may go down in value.

Valuation: growing into the multiple

Because earnings are accelerating, semiconductor valuations are compressing faster than the broader market. Here we take the Philadelphia Stock Exchange Semiconductor Index (SOX) as an example. In Figure 2, on consensus numbers, the SOX’s aggregate long-term earnings-growth forecast is about 17.9%, comfortably above the 11.7% for the S&P 500 and 12.0% for the Nasdaq-100. Analysts also expect the SOX’s forward P/E to fall from roughly 31 × today to below 18 × by 2027 as profits catch up. Looking through a capital-structure-neutral lens yields a similar picture: the index’s forward EV/EBITDA[3] is projected to ease to around 12–13 ×, lower than the Nasdaq-100’s mid-teens handle. Chips are growing into their valuations faster than the rest of the market. So, evaluating the share price of semiconductors on traditional metrics alone, without factoring in their faster growth, paints an incomplete picture.

Figure 2: SOX valuations forecast to converge with broader market multiples

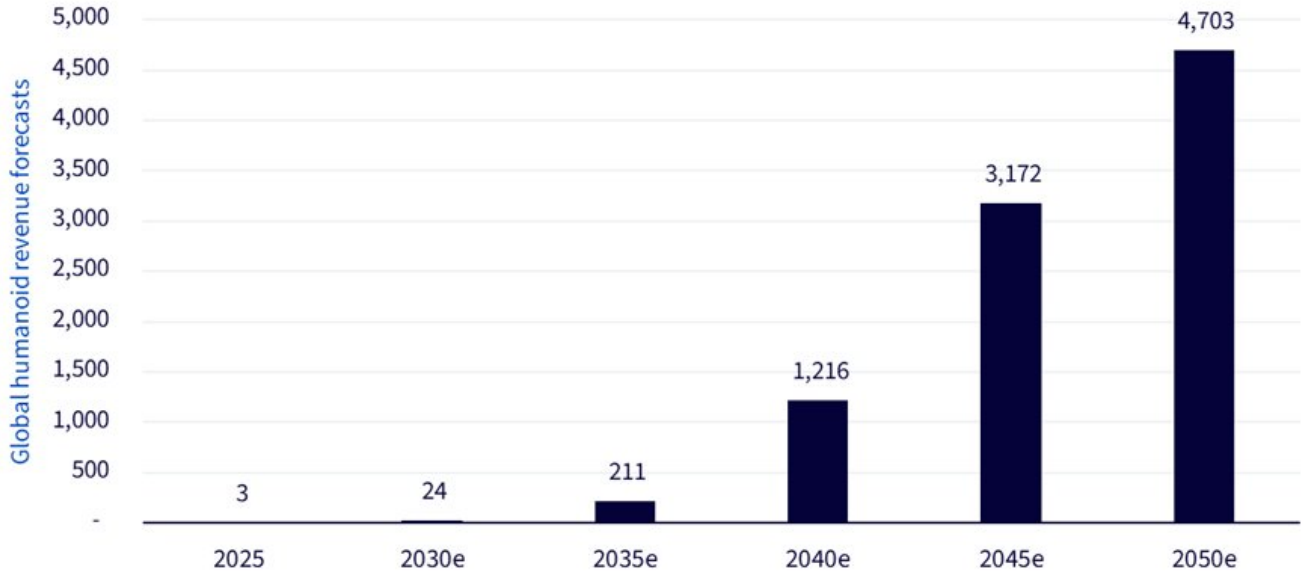


Source: WisdomTree, Bloomberg, as of 10 June 2025. SOX refers Philadelphia Stock Exchange Semiconductor Index. Tr 12m denotes trailing 12 months. Fwd 12m denotes forward 12 months. The estimates are based on the averages of analysts' forecasts available on Bloomberg. Historical performance is not an indication of future performance and any investments may go down in value.

Catalysts beyond the AI model training

AI data centres may dominate the headlines, yet multiple secular forces are broadening semiconductor demand. Automotive and robotics offer a prime example. Chip content per vehicle nearly doubled from US$420 in 2019 to about US$800 in 2023 and is forecast to reach US$1,350 by 2030[4]. That trend is already visible: Nvidia's automotive revenue totalled US$567 million last quarter, up 72 % year-on-year as manufacturers integrate its DRIVE platform. Looking further ahead, Morgan Stanley projects humanoid-robot revenues climbing from roughly US$3 billion in 2025 to US$4.7 trillion by 2050, implying a 54 % compound annual growth rate in the first decade. Robots, like vehicles, demand a range of silicon, from vision processors and real-time controllers to power devices and reliability-critical memory.

Figure 3: Global humanoid-robot market expected to reach $4.7 trillion by 2050



Source: Morgan Stanley. 29 April 2025.

Memory and interconnect form a second tailwind. Sovereign and corporate commitments totalling hundreds of billions, such as Gulf-state AI infrastructure programmes and the US "Stargate" initiative, underpin long-term investments in high-bandwidth memory. Such investment in AI infrastructure will buoy SK Hynix and Micron as AI workloads shift from training to inference at scale. At the same time, deploying ever-larger models requires faster in-rack connectivity: Astera Labs' PCIe and CXL interface chips, together with Broadcom's new 800 Gb Ethernet switches, are becoming as indispensable as GPUs. In every case, lower per-unit cost unlocks new applications rather than suppressing overall silicon demand.

AI infrastructure is not just Nvidia

Semiconductors extend far beyond the headline names. While Nvidia remains synonymous with AI compute, a broader set of companies, from memory specialists and chip manufacturers to interconnect innovators and design-tool providers, stand to benefit as AI proliferates across every industry. By spreading exposure across these different segments, investors capture opportunities in areas such as high-performance dynamic random access memory (DRAM) and NAND[5], advanced logic fabrication, in-server networking silicon, automated test equipment, and electronic design automation software.

Building a coherent AI strategy means recognising that hardware is the foundation on which every model runs. For example, the Nasdaq CTA Artificial Intelligence Index exemplifies this approach: it allocates roughly 40% of its weight to a diversified sleeve of 17 semiconductor names as of 30 May 2025[6] This structure ensures that when one segment faces cyclical headwinds—say, GPU supply tightness—growth in memory, connectivity, or tooling can help sustain the overall portfolio. In an environment defined by rapid technological change and shifting end markets, such diversification is not merely defensive; it is essential to capturing the full potential of the AI megatrend.

Conclusion

Semiconductors, from GPU pioneers to memory and interconnect specialists, continue to outgrow broader market benchmarks, while hyperscale customers keep investing at record levels. Valuations have already begun to normalise as profits catch up, making semiconductors a blend of growth and value. AI's hardware story extends well beyond a single vendor: opportunities span automotive electrification, robotics, memory scaling and high-speed data-centre fabrics. In this environment, a diversified semiconductor portfolio is not merely defensive insurance, it is the most direct way to harness the structural up-swing in chip demand that underpins every facet of the AI revolution.

[1]The financials were sourced from the companies' reports for Q1 2025.
[2]The capex data were sourced from Bloomberg. As of 10 June 2025.
[3]Enterprise Value / Earnings Before Interest, Taxes, Depreciation, and Amortisation)
[4]Source: PwC, State of the semiconductor industry, November 2024.
[5]A type of flash memory chip, optimised for high density storage.
[6]Source: WisdomTree, as of 30 May 2025.

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