Silicon frontiers: Why semiconductors remain the spine of AI

Published 26 June 2025

Baoqi Zhu
Associate Director, Quantitative Research & Multi Asset Solutions

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.

Important Risks Related to this Article

IMPORTANT INFORMATION

Marketing communications issued in the European Economic Area ("EEA"): This document has been issued and approved by WisdomTree Ireland Limited, which is authorised and regulated by the Central Bank of Ireland. **Marketing communications issued in jurisdictions outside of the EEA:** This document has been issued and approved by WisdomTree UK Limited, which is authorised and regulated by the United Kingdom Financial Conduct Authority. WisdomTree Ireland Limited and WisdomTree UK Limited are each referred to as "WisdomTree" (as applicable). Our Conflicts of Interest Policy and Inventory are available on request. This marketing communication has been prepared for professional investors, but the WisdomTree products set out in this document may be available in some jurisdictions to any investors, subject to applicable laws and regulations. As the product may not be authorised or its offering may be restricted in your jurisdiction, it is the responsibility of every person or entity to satisfy themselves as to the full observance of the laws and regulations of the relevant jurisdiction. Prior to any application investors are advised to take all necessary legal, regulatory, tax and investment advice on the suitability and consequences of an investment in the products. Past performance is not a reliable indicator of future performance. Any historical performance included in this document may be based on back testing. Back testing is the process of evaluating an investment strategy by applying it to historical data to simulate what the performance of such strategy would have been. Back tested performance is purely hypothetical and is provided in this document solely for informational purposes. Back tested data does not represent actual performance and should not be interpreted as an indication of actual or future performance. The value of any investment may be affected by exchange rate movements. Any decision to invest should be based on the information contained in the appropriate prospectus and affer seeking independent investment, tax and legal advice. These products may not be available in your market or suitable for you. The content of this document does not constitute investment advice nor an offer for sale nor a solicitation of an offer to buy any product or make any investment. An investment in exchange-traded products ("ETPs") is dependent on the performance of the underlying index, less costs, but it is not expected to match that performance precisely. ETPs involve numerous risks including among others, general market risks relating to the relevant underlying index, credit risks on the provider of index swaps utilised in the ETP, exchange rate risks, interest rate risks, inflationary risks, liquidity risks and legal and regulatory risks. The information contained in this document is not, and under no circumstances is to be construed as, an advertisement or any other step in furtherance of a public offering of shares in the United States or any province or territory thereof, where none of the issuers or their products are authorised or registered for distribution and where no prospectus of any of the issuers has been filed with any securities commission or regulatory authority. No document or information in this document should be taken, transmitted or distributed (directly or indirectly) into the United States. None of the issuers, nor any securities issued by them, have been or will be registered under the United States Securities Act of 1933 or the Investment Company Act of 1940 or qualified under any applicable state securities statutes. This document may contain independent market commentary prepared by WisdomTree based on publicly available information. Although WisdomTree endeavours to ensure the accuracy of the content in this document, WisdomTree does not warrant or

guarantee its accuracy or correctness. Any third party data providers used to source the information in this document make no warranties or representation of any kind relating to such data. Where WisdomTree has expressed its own opinions related to product or market activity, these views may change. Neither WisdomTree, nor any affiliate, nor any of their respective officers, directors, partners, or employees accepts any liability whatsoever for any direct or consequential loss arising from any use of this document or its contents. This document may contain forward looking statements including statements regarding our belief or current expectations with regards to the performance of certain assets classes and/or sectors. Forward looking statements are subject to certain risks, uncertainties and assumptions. There can be no assurance that such statements will be accurate and actual results could differ materially from those anticipated in such statements. WisdomTree strongly recommends that you do not place undue reliance on these forward-looking statements. WisdomTree Issuer ICAV The products discussed in this document are issued by WisdomTree Issuer ICAV (“WT Issuer”). WT Issuer is an umbrella investment company with variable capital having segregated liability between its funds organised under the laws of Ireland as an Irish Collective Asset-management Vehicle and authorised by the Central Bank of Ireland (“CBI”). WT Issuer is organised as an Undertaking for Collective Investment in Transferable Securities (“UCITS”) under the laws of Ireland and shall issue a separate class of shares ("Shares”) representing each fund.

The Fund is described in a Key Information Document (KID) or Key Investor Information Document (KIID) for UK investors, and the prospectus of WT Issuer (“WT Prospectus”). A copy of the WT Prospectus and the KID / KIID is available, for EEA/UK only, in English at www.wisdomtree.eu. Where required under national rules, the KID will also be available in the local language of the relevant EEA Member State. Investors should read the WT Prospectus before investing and should refer to the section of the WT Prospectus entitled 'Risk Factors' for further details of risks associated with an investment in the Shares. The summary of investor rights associated with an investment in the fund is available in English on WisdomTree Europe's website. WisdomTree Management Limited may decide to terminate the arrangements made for the marketing of its collective investment undertakings. In such circumstances, shareholders in the affected EEA Member State will be notified of this decision and will be provided with the opportunity to redeem their shareholding in the fund free of any charges or deductions for at least 30 working days from the date of such notification. WisdomTree Artificial Intelligence UCITS ETF Nasdaq® and the Nasdaq CTA Artificial intelligence Index are registered trademarks of Nasdaq, Inc. (which with its affiliates is referred to as the “Corporations”) and are licensed for use by WisdomTree Management Limited. The WisdomTree Artificial Intelligence UCITS ETF (the “Fund”) has not been passed on by the Corporations as to its legality or suitability. Shares in the Fund are not issued, endorsed, sold, or promoted by the Corporations. THE CORPORATIONS MAKE NO WARRANTIES AND BEAR NO LIABILITY WITH RESPECT TO THE FUND.

Notice to Investors in Switzerland – Qualified Investors This document constitutes an advertisement of the financial product(s) mentioned herein.

The prospectus and the key investor information documents (KIID) are available from WisdomTree's web-site: https://www.wisdomtree.eu/en-ch/resource-library/prospectus-and-regulatory-reports Some of the sub-funds referred to in this document may not have been registered with the Swiss Financial Market Supervisory Authority (“FINMA”). In Switzerland, such sub-funds that have not been registered with

FINMA shall be distributed exclusively to qualified investors, as defined in the Swiss Federal Act on Collective Investment Schemes or its implementing ordinance (each, as amended from time to time). The representative and paying agent of the sub-funds in Switzerland is Société Générale Paris, Zurich Branch, Talacker 50, PO Box 5070, 8021 Zurich, Switzerland. The prospectus, the key investor information documents (KIID), the articles of association and the annual and semi-annual reports of the sub-funds are available free of charge from the representative and paying agent. As regards distribution in Switzerland, the place of jurisdiction and performance is at the registered seat of the representative and paying agent. For Investors in France: The information in this document is intended exclusively for professional investors (as defined under the MiFID) investing for their own account and this material may not in any way be distributed to the public. The distribution of the Prospectus and the offering, sale and delivery of Shares in other jurisdictions may be restricted by law. WT Issuer is a UCITS governed by Irish legislation, and approved by the Financial Regulatory as UCITS compliant with European regulations although may not have to comply with the same rules as those applicable to a similar product approved in France. The Fund has been registered for marketing in France by the Financial Markets Authority (Autorité des Marchés Financiers) and may be distributed to investors in France. Copies of all documents (i.e. the Prospectus, the Key Investor Information Document, any supplements or addenda thereto, the latest annual reports and the memorandum of incorporation and articles of association) are available in France, free of charge at the French centralizing agent, Societe Generale at 29, Boulevard Haussmann, 75009, Paris, France. Any subscription for Shares of the Fund will be made on the basis of the terms of the prospectus and any supplements or addenda thereto. **For Investors in Malta:** This document does not constitute or form part of any offer or invitation to the public to subscribe for or purchase shares in the Fund and shall not be construed as such and no person other than the person to whom this document has been addressed or delivered shall be eligible to subscribe for or purchase shares in the Fund. Shares in the Fund will not in any event be marketed to the public in Malta without the prior authorisation of the Maltese Financial Services Authority. **For Investors in Monaco:** This communication is only intended for duly registered banks and/or licensed portfolio management companies in Monaco. This communication must not be sent to the public in Monaco.