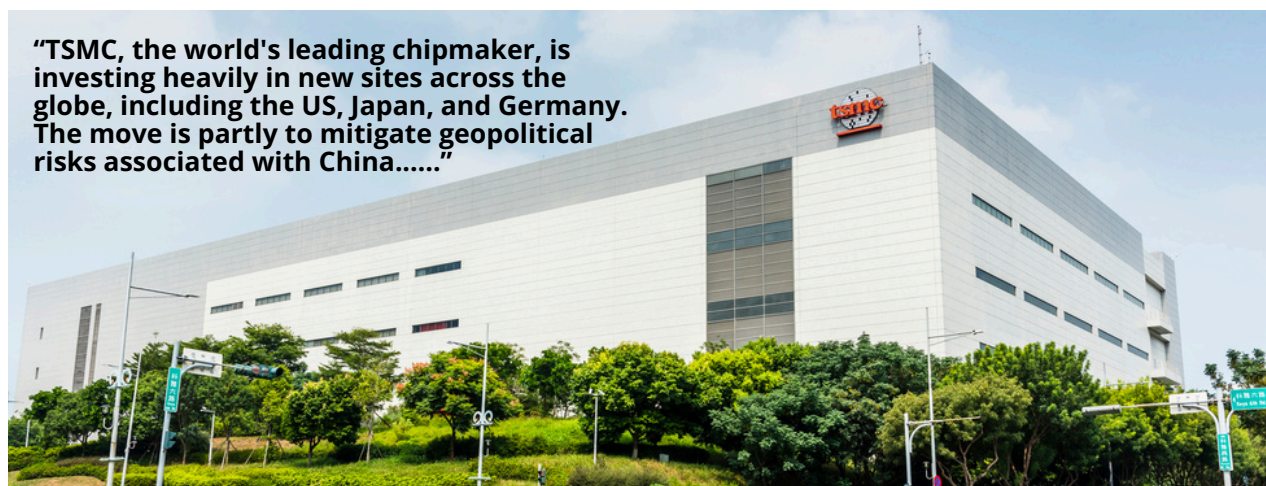


*The excerpts below are taken from two online articles that cover key global news events in the semiconductor industry, focusing on the major players and recent market developments. Detailed references for all content can be found below.*

**In this week's news feature, Yahoo Finance (2024) reports on Taiwan Semiconductor Manufacturing Company's (TSMC) plans for expansion in a booming AI market, with new plants in the pipeline across Europe and potential collaboration with other leading AI chip manufacturers. In related news, CNBC.com announced the launch of a new AI chip from AMD, tipped to rival Nvidia's Blackwell, the current market leader for data centre graphics processors (GPU's).**



**"TSMC, the world's leading chipmaker, is investing heavily in new sites across the globe, including the US, Japan, and Germany. The move is partly to mitigate geopolitical risks associated with China....."**

## **TSMC planning additional plants in Europe**

**Yahoo Finance (2024) emphasises the importance of the AI market for TSMC's expansion plans in Europe and across the globe, stating clearly that the move is partly to mitigate against geo-political risk from China and also to be best placed geographically to exploit the growing European market for next-generation AI chips: :**

TSMC, the world's leading chipmaker, is investing heavily in new sites across the globe, including the US, Japan, and Germany. The move is partly to mitigate geopolitical risks associated with China.

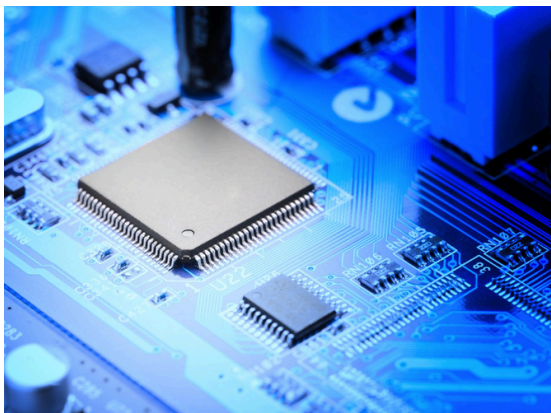
The company's €10bn (\$10.9bn) Dresden plant in Germany, its inaugural EU factory, is expected to commence production by the end of 2027, with state subsidies covering around half of the project's costs. Minister Wu highlighted the significance of the AI market, mentioning that it will be a crucial segment for TSMC.

He cited potential collaborations with companies such as Nvidia and Advanced Micro Devices, suggesting that TSMC may also explore opportunities with other semiconductor firms offering alternative designs. Wu mentioned the possibility of expanding in Dresden or other EU locations for TSMC's upcoming fabs. Europe's established chipmakers, such as NXP Semiconductors and Infineon Technologies, traditionally concentrate on mature technologies for industrial and automotive applications.

However, Europe has seen the rise of next-generation chip designers, including Germany's Black Semiconductor and Axelera AI in the Netherlands, potentially opening new avenues for TSMC.

Yahoo Finance (2024)

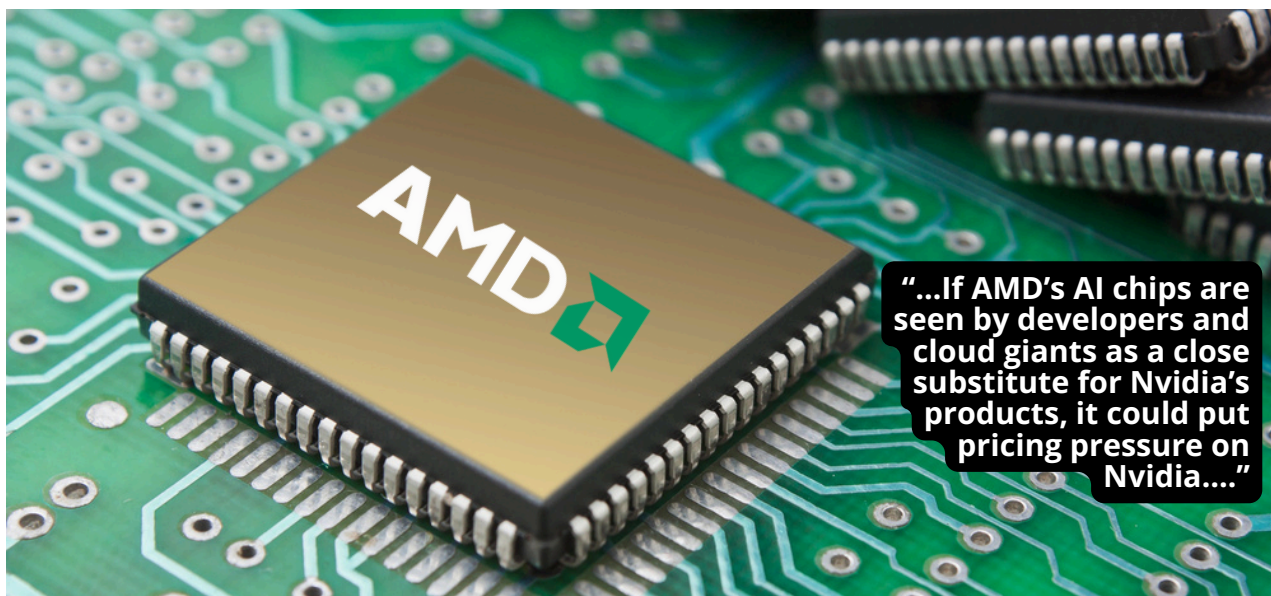
**There are undoubted challenges for TSMC's expansion into other markets around the globe, not least of all in the United States as outlined by Yahoo Finance (2024). However, the advances into European markets, such as the Czech Republic, may result in other investment opportunities for the Taiwanese government in ancillary businesses to the semiconductor industry, and beyond:**



TSMC's international factories are not only expanding the company's reach but also fostering investment opportunities for nearby regions. The Czech Republic, in particular, is set to benefit from TSMC's Dresden site, as Prague and Taipei have strengthened their ties. Minister Wu disclosed that Taiwan's government is contemplating supporting TSMC suppliers to invest in a Czech location near Dresden and is seeking to facilitate joint R&D programmes between Taiwan and the Czech Republic.

In a separate statement, Minister Wu expressed his expectation that Taiwanese chip firms will continue to face pressure to expand in the US, regardless of the upcoming presidential election results. TSMC has committed over \$65bn for three plants in Arizona, a strategic move that Wu believes will ultimately benefit Taiwanese companies by driving self-improvement, despite short-term challenges.

Yahoo Finance (2024)



**"...If AMD's AI chips are seen by developers and cloud giants as a close substitute for Nvidia's products, it could put pricing pressure on Nvidia..."**

## **AMD launches AI chip to rival Nvidia's Blackwell**

**Other significant news this week in the semiconductor market is Advanced Micro Devices' (AMD) launch of a rival chip to Nvidia's market-leading 'Blackwell' chip. CNBC.com (2024) is of the opinion that if well-received by developers and cloud giants, the new AMD processor could very well become a substitute for its Nvidia equivalent :**

AMD launched a new artificial intelligence chip on Thursday last, which is taking direct aim at Nvidia's data center graphics processors, known as GPUs. The Instinct MI325X, as the chip is called, will start production before the end of 2024, Advanced Micro Devices said during an event announcing the new product. If AMD's AI chips are seen by developers and cloud giants as a close substitute for Nvidia's products, it could put pricing pressure on Nvidia, which has enjoyed roughly 75% gross margins while its GPUs have been in high demand over the past year.

Advanced generative AI such as OpenAI's ChatGPT requires massive data centers full of GPUs in order to do the necessary processing, which has created demand for more companies to provide AI chips. In the past few years, Nvidia has dominated the majority of the data center GPU market, but AMD is historically in second place. Now, AMD is aiming to take share from its Silicon Valley rival or at least to capture a big chunk of the market, which it says will be worth \$500 billion by 2028.

"AI demand has actually continued to take off and actually exceed expectations. It's clear that the rate of investment is continuing to grow everywhere," AMD CEO Lisa Su said at the event. AMD didn't reveal new major cloud or internet customers for its Instinct GPUs at the event, but the company has previously disclosed that both Meta and Microsoft buy its AI GPUs and that OpenAI uses them for some applications. The company also did not disclose pricing for the Instinct MI325X, which is typically sold as part of a complete server. With the launch of the MI325X, AMD is accelerating its product schedule to release new chips on an annual schedule to better compete with Nvidia and take advantage of the boom in AI chips. The new AI chip is the successor to the MI300X, which started shipping late last year. AMD's 2025 chip will be called MI350, and its 2026 chip will be called MI400, the company said. The MI325X's rollout will pit it against Nvidia's upcoming Blackwell chips, which Nvidia has said will start shipping in significant quantities early next year.

CNBC.com (2024)

**CNBC.com (2024) believes that a successful AMD launch of this new chip could attract investors looking at the AI boom, but there are some obstacles to be overcome, particularly around competing programme languages. However, AMD's ambitious plans extend further, targeting Intel's dominant market position for data centre processors :**

A successful launch for AMD's newest data center GPU could draw interest from investors that are looking for additional companies that are in line to benefit from the AI boom. AMD is only up 20% so far in 2024 while Nvidia's stock has risen over 175%. Most industry estimates say Nvidia has more than 90% of the market for data center AI chips. AMD's biggest obstacle in taking market share is that its rival's chips use their own programming language, CUDA, which has become standard among AI developers. That essentially locks developers into Nvidia's ecosystem.

In response, AMD this week said that it has been improving its competing software, called ROCm, so that AI developers can easily switch more of their AI models over to AMD's chips, which it calls accelerators. AMD has framed its AI accelerators as more competitive for use cases where AI models are creating content or making predictions rather than when an AI model is processing terabytes of data to improve.



That's partially due to the advanced memory AMD is using on its chip, it said, which allows it to serve Meta's Llama AI model faster than some Nvidia chips." What you see is that MI325 platform delivers up to 40% more inference performance than the H200 on Llama 3.1," said Su, referring to Meta's large language AI model. While AI accelerators and GPUs have become the most intensely watched part of the semiconductor industry, AMD's core business has been central processors, or CPUs, that lay at the heart of nearly every server in the world.

CNBC.com (2024)



AMD's data center sales during the June quarter more than doubled in the past year to \$2.8 billion, with AI chips accounting for only about \$1 billion, the company said in July. AMD takes about 34% of total dollars spent on data center CPUs, the company said. That's still less than Intel, which remains the boss of the market with its Xeon line of chips. AMD is aiming to change that with a new line of CPUs, called EPYC 5th Gen, that it also announced last Thursday. Those chips come in a number of different configurations ranging from a

low-cost and low-power 8-core chip that costs \$527 to 192-core, 500-watt processors intended for supercomputers that cost \$14,813 per chip. The new CPUs are particularly good for feeding data into AI workloads, AMD said. Nearly all GPUs require a CPU on the same system in order to boot up the computer."Today's AI is really about CPU capability, and you see that in data analytics and a lot of those types of applications," Su said.

CNBC.com (2024)

## References:

Yahoo Finance (2024). 'TSMC planning additional plants in Europe'. Yahoo Finance, October 14th. Available at: <https://finance.yahoo.com/news/tsmc-planning-additional-plants-europe-110106838.html>. (Accessed 14 October 2024).

CNBC.com (2024). 'AMD launches AI chip to rival Nvidia's Blackwell'. CNBC.com (2024) October 10th. Available at: <https://www.cnbc.com/2024/10/10/amd-launches-mi325x-ai-chip-to-rival-nvidias-blackwell.html>. (Accessed 14 October 2024).

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