



## Why semiconductors are driving future innovation

Semiconductors are the essential components powering a vast array of electronic devices we use daily. Investment Analyst Adrian Lu explains how the semiconductor industry has experienced rapid growth and is set to continue expanding. Adrian highlights the industry's robust outlook and discusses DeepSeek's innovative entrance into the sector, which has made AI models cheaper and more efficient to build and run. He also provides insights on TSMC, a high-quality company that stands out as a key player in the sector due to its unique role in the semiconductor value chain.

**Semiconductors are essential components in all electronic devices, from kitchen appliances to car electronics and smartphone software. It's no surprise that the semiconductor industry has grown rapidly in recent years and now makes up around 9 % of the market. What's your view on the industry for the future?**

The future for semiconductors looks promising, with strong growth expected in the coming years. This growth will be driven by the rapid increase in technology adoption across various sectors, including artificial intelligence, robotics, autonomous vehicles, cloud computing, and edge computing. All these technologies require semiconductors, ensuring a sustained demand for chips. For example, the semiconductor content in electric vehicles is already twice that of modern combustion engine vehicles, doubling the market opportunity for semiconductors even if the car industry doesn't grow.

Additionally, the reliance on semiconductors will continue to rise as technology advances. The industry predicts global spending on semiconductors will reach a trillion dollars by 2030 and this number could be surpassed given current trends. Despite potential cyclicality and challenges, the semiconductor market offers significant investment opportunities.

**The demand for semiconductors is tied closely to advancements in the artificial intelligence (AI) industry. Given the strong link between semiconductor demand and AI developments, can you discuss the recent news about DeepSeek and the compute power needed for their technology? How might this affect the industry's outlook?**

DeepSeek made significant waves with their latest AI models released in January, not because they surpassed the state of the art, but because they achieved near state-of-the-art performance at a much lower cost. This raised market concerns about the need for high GPU spending. While there is debate about the actual cost savings, DeepSeek's innovative techniques undeniably made building, refining, and running these models cheaper. However, this development is part of an ongoing trend towards more efficient, lightweight, and cost-effective AI models rather than a sudden pivotal moment.

The market's delayed reaction to DeepSeek's advancements was notable, as their initial paper was published in December, followed by a subsequent paper in January, a week before the market responded. This trend of greater efficiency in AI models has made us more cautious about the high levels of GPU spending observed in the market.

**TSMC is one of our highest conviction picks within the sector. It's a stock we've owned in our High Conviction and Global Opportunities strategies for around two years and more recently within our Global Equities Strategy. Can you tell us about TSMC and why it is an attractive opportunity?**

The semiconductor sector is vast, covering everything from intellectual property to design software and manufacturing equipment. TSMC holds a unique position as a contract manufacturer for chip designs, a role few companies can fulfil due to the enormous capital costs required to build semiconductor manufacturing facilities. These costs are in the double-digit billions of US dollars and continue to rise with increasing chip

sophistication. For companies seeking advanced manufacturing, partnering with TSMC is more efficient and cost-effective than building their own facilities.

TSMC has virtually no competition in advanced manufacturing processes, making it the go-to partner for every design company in the value chain. This dominance, combined with strong growth prospects, attractive valuation and favourable growth dynamics, makes TSMC a top pick in the semiconductor industry. Most future innovations will likely rely on TSMC's fabs, reinforcing its critical role in the sector.

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