

## Singapore and China-US Chip Rivalry: Steady in Choppy Waters for Now

By Manoj Harjani

*Singapore is advancing its chip industry with a clear-eyed approach and sensible goals but will still face challenges from geopolitical tensions to stay competitive.*

Ongoing debates about how Southeast Asia will navigate the rivalry between China and the United States (US) over semiconductor chips are mainly focused on Singapore and Malaysia—for now. Vietnam is a **rising player**, but chip industry supply and value chains change slowly due to brutal competitive dynamics that create significant barriers to entry, even for countries with all the essential ingredients for a successful ecosystem.

For Singapore, securing the future of its chip industry is less about out-competing regional players than it is about managing various geopolitical currents. After all, Singapore and other Southeast Asian countries are focused on different segments of the value chain. The city-state cannot count on the recent influx of investments into Southeast Asia being sustained in the long term.

What is at stake? Singapore's traditional strengths in attracting investments remain an important foundation, supplemented by



recent efforts to break into new segments that should continue to be supported. The challenge lies in managing the fallout from future export controls implemented by the US as well as the reputational risk from “Singapore-washing.”

### Situating Singapore in the Global Chip Industry

The semiconductor chip industry **dominates** manufacturing in Singapore. In 2023, it contributed approximately 40 percent of the country's total manufacturing value added. Singapore also **accounts** for 5 percent of global wafer fabrication and 20 percent of chip equipment output. It is therefore not an insignificant player overall, but is also not among the largest.

Other than Singapore, the other major player in Southeast Asia is Malaysia, which has significant advantages over Singapore in land and labour costs, but cannot yet match the

city-state's ability to attract talent and anchor higher value functions which rests on a conducive business environment and R&D ecosystem.

However, the two countries actually play in different segments of the supply and value chain. Malaysia's chip industry is currently more focused on downstream activities such as assembly, testing, and packaging (ATP) whereas Singapore focuses more on wafer fabrication and R&D.

Both countries have attracted a **slew of investments** in recent years as key global chip players look to manage the fallout of American pressure on China's chip industry. But many of these investments are expansions of existing facilities, which might suggest that the emphasis is on supply chain resilience rather than reconfiguration per se.

### Singapore's Competitive Strategy for Chips

Nevertheless, Singapore's ability to expand into new segments demonstrates its keenness to maintain defensible niches in global value chains. For example, a chip packaging materials plant by Japan's Toppan Holdings **broke ground** in March 2024, the first such facility in the country.

Singapore will also benefit from the growing adoption of AI, as this is expected to drive up demand for NAND memory chips. The American chipmaker Micron relies on its Singapore plant to produce most of its cutting-edge NAND chips, which represent **30 percent** of its revenue and gives Singapore a

**10 percent** share of the global market.

Guided by a **vision** to grow manufacturing value-add by 50 percent by 2030 and an ongoing transformation **plan** focusing on industry ecosystem and talent pool development, the general outlook in terms of competitive strategy is positive. However, ensuring that expected outcomes materialise will be an ongoing challenge given Singapore's longstanding constraints as a small, open economy with an ageing workforce and limited water and energy resources.

### Managing Geopolitical Currents

While Singapore's traditional strengths and constraints in attracting advanced manufacturing investments remain important, much will also depend on the geopolitics surrounding the chip industry. The Biden administration's **planned expansion** of export controls on chip manufacturing equipment will likely affect Singapore, which highlights the vulnerability of its chip industry to external factors that it has little or no control over.

There is also a reputational risk from "**Singapore-washing**," which refers to the practice of Chinese companies moving to Singapore to avoid American scrutiny and gain access to talent and technology that might not otherwise be available to them. Several Singapore-based entities with links to China's chip industry have been included in the US Department of Commerce's **Entity List** to date, suggesting that this is not an

isolated phenomenon.

An example is the Singapore affiliate of Corad Technology, which was added to the Entity List in 2021 for supplying China's government and defence industry. Corad designs and manufactures different types of printed circuit boards.

How Singapore manages these challenges will determine the ability of its chip industry to remain globally relevant. Thus far, the country has been clear-eyed in setting out sensible goals—for example, instead of diving head-first into manufacturing cutting-edge chips that are the preserve of a handful of unique companies such as Taiwan's TSMC, Singapore is **doubling down** on its advantages in the much larger market for legacy chips.

The question is whether sensible can be sustained when the competitive landscape will undoubtedly change in the coming decade. Singapore will have the unenviable task of having to account not only for rising regional competitors, but also for ongoing transformations among existing key players beyond China and the US such as Japan, South Korea, and Taiwan.

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