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No. 043/2024 dated 8 April 2024

Taiwan's Reliance on the Semiconductor Industry: A Geopolitical Achilles' Heel?

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SYNOPSIS

Taiwan houses one of the world's largest chipmakers that specialises in producing cutting-edge semiconductors. Although integrated chips do generate wealth and facilitate development, the island has relied too much on its "silicon shield" and devoted substantial resources to boost the industry as its main source of economic growth. This dependence could be Taiwan's Achilles' heel, making it more politically vulnerable, especially since China remains the largest buyer of its semiconductors.

COMMENTARY

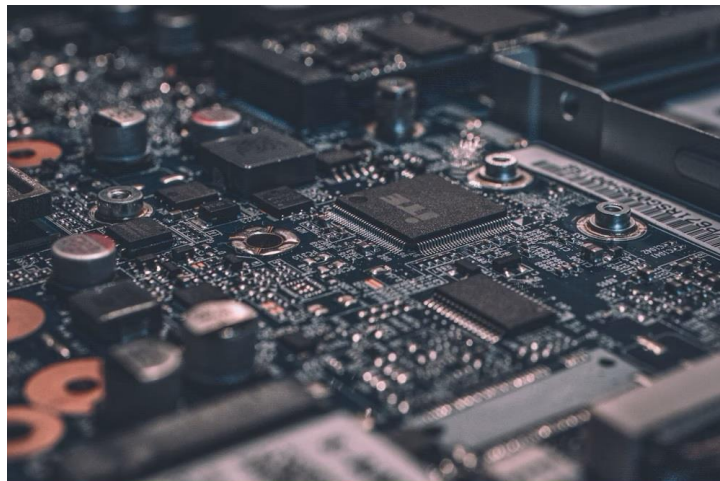
The [semiconductor industry](#) was one of the most highly contested topics during the 2024 Taiwanese presidential election. Particularly, vice-presidential nominees like Jaw Shaw-kong and Hsiao Bi-khim [debated](#) the issue of chipmaker Taiwan Semiconductor Manufacturing Company Limited (TSMC)'s investments abroad and questioned whether escalating tensions with China rendered Taiwan an overly risky destination for foreign investments.

Following his victory in the presidential race, the Democratic Progressive Party (DPP)'s Lai Ching-te [pledged](#) to advance Taiwan's crucial chips sector. As an export-oriented island, Taiwan's trading activities contribute to a huge portion of its economy, with the [total amounting to 114% of its Gross Domestic Product \(GDP\)](#). Notably, [40% of its exports are semiconductors](#). Yet, this over-reliance on the chip industry could heighten Taiwan's political vulnerability as the island is already prone to external shocks and disruptions.

The rise of artificial intelligence (AI) chips poses significant risks to the semiconductor industry. While demand for more sophisticated semiconductors driven by AI chips grows, it may disrupt markets for companies focusing on traditional chips. The evolving AI technology requires quick adaptation by semiconductor firms, posing challenges to development timelines and resource allocation. Smaller (domestic) chip companies may be at a greater disadvantage compared to larger corporations due to limited capacities, making it challenging to adapt.

Another risk that the semiconductor industry faces is that of cyber threats. Being increasingly important for multiple devices and industries, semiconductors constitute [unique assets that make them valuable targets for cyberattacks](#). In January, Foxsemicon, a major manufacturer in Taiwan, was [targeted by the Russia-based LockBit ransomware group](#). Although the ransom details were not disclosed and minimal operational disruptions were reported, the incident underscored the sector's vulnerabilities and the risk of compromised security.

While the semiconductor industry may well be Taiwan's selling point, over-emphasis on a single sector could jeopardise its economy in situations of huge supply chain disruptions. Examining the implications of narrowly focusing on the chip sector could provide an understanding of why Taiwan must further diversify its economy while managing external relations to maintain its relevance in global supply chains.



While the semiconductor industry continues to be one of Taiwan's strongest selling points, the over-reliance on the chip sector amid strained cross-strait relations could jeopardise the island's economy in situations of huge supply chain disruptions. *Image from Unsplash.*

Fierce Competition amid Strained Cross-Strait Relations

In 2022, China was ranked among the [five leading destinations](#) for Taiwan's integrated circuit exports. With the island's economy being tied closely to Beijing, it is difficult to separate the political challenges (due to strained cross-strait relations) from Taiwan's economic health. This is notwithstanding the fact that trade with Beijing is already at a [historically low level](#), with exports making up [35.25% of the overall total in 2023](#), compared with [42% back in 2010](#).

In 2023, Taiwan accounted for [around 46% of the world's semiconductor foundry capacity](#), with Beijing following at 26%. Earlier, in 2015, Chinese President Xi Jinping introduced a ["Made in China 2025"](#) plan targeting Chinese supremacy in 20 key

sectors while pushing for [self-sufficiency in semiconductor manufacturing](#) to achieve technological independence. Although there was a decline in Taiwan's chip exports to China, China has remained Taiwan's largest buyer, accounting for [nearly 54% of Taiwan's exports in May 2023](#).

While Beijing still needs Taiwanese technology and is unlikely to boycott Taiwan's advanced chips in the near term, the mainland seems determined to focus on domestic production to gradually move towards self-reliance amid the ongoing trade war with the United States. As such, competition in the chip industry is significant as key players attempt to up their game to have a larger share of the pie.

Scholarly discussions have highlighted how Taiwan's chip sector was referred to as [huquo shenshan](#) (guardian mountain of the nation) and a critical strategic asset. Leveraging semiconductors for economic reliance has potentially enhanced Taiwan's influence in [a form of asymmetrical warfare](#) between itself and Beijing. Nevertheless, Taiwan aims for inclusivity in global supply chains even as it enjoys a critical role in the development of advanced information-processing technologies like AI-specific chips.

Yet, cross-strait tensions may prompt other countries to [explore alternative import routes for semiconductor chips](#) to avert possible supply disruptions. This year, European CEOs are increasingly [shifting their focus to other \(new\) markets such as Southeast Asia](#) to strengthen supply chain resilience. Such measures could be intentional to avoid appearing aligned with Taiwan's assertions of independence. The over-reliance on the semiconductor sector thus magnifies Taiwan's political vulnerability as the island's alliances drive the chip industry's prosperity.

Depending on the Chinese market as its main buyer for semiconductors poses risks for Taiwan. This is especially so considering that China may be losing its appeal to foreign investors, given the primacy that Beijing has begun to [accord to national security](#) over economic growth and development, manifested through its crackdowns on alleged foreign espionage activities and its data localisation laws. During the first quarter of 2023, China's balance of payments showed a [decline in direct investment liabilities](#) for the first time. Such a trend could further weaken the Chinese economy, which could in turn affect China's demand for semiconductors.

Potential Sacrificial Lamb in US-China Tech War?

As Washington and Beijing jostle for power in a tech war, there is a high risk of Taiwan becoming the proverbial sacrificial lamb. When the United States adopted the [CHIPS and Science Act of 2022](#) to promote domestic semiconductor production, companies that received subsidies such as TSMC were [restricted from producing chips](#) more advanced than 28 nanometres in [China and "other countries of concern"](#) for the next decade. It must be noted that Beijing managed to manufacture the Huawei Mate 60 in 2023 using a [7-nanometre process through Semiconductor Manufacturing International Corporation \(SMIC\)](#), a Chinese company [blacklisted by the United States in 2020](#).

The US CHIPS Act is a strategic retaliation by proxy to contain Beijing. Washington has offered Taiwan a carrot by including it in the "Chip 4 Alliance" to promote

interconnectivity in the semiconductor supply chain network even as it implements the CHIPS Act, which could further alienate Taiwanese chipmakers from the mainland. The United States' actions may exacerbate Taiwan's challenges as they have the potential to affect the profitability of some of Taiwan's semiconductor manufacturers and could also further strain cross-strait relations.

While the semiconductor industry might be called Taiwan's "silicon shield", there is a [shift of production away from the island](#) towards countries like [the United States \(Arizona\)](#) and [Japan \(Kumamoto\)](#). Although TSMC stressed that the company would remain "[rooted in Taiwan](#)", its setting up of new manufacturing plants in other countries suggests it has back-up solutions for replacement and continuity if domestic stability in Taiwan is affected owing to cross-strait tensions.

No Longer Putting Most Eggs in One Basket

As a leading player in semiconductor manufacturing and technological innovation, Taiwan plays a crucial role in the global supply chain, producing important components for many countries worldwide. While investment in the industry is essential for boosting research and development, heavy reliance on the sector can heighten the risk of the island becoming a target for cyberattacks and a pawn in the major powers' battle for their own geopolitical agendas.

Although the Taiwanese government does promote [investment projects in Central and Eastern Europe to diversify risks](#), it should consider redistributing more resources to other sectors that do contribute to its growth such as pharmaceuticals, petrochemicals, and agriculture, rather than allocating most of its capital to the chips industry. [Government sources](#) reported that in January, Taiwanese exports comprised 36.8% electronic components and 25.3% information and communication technology (ICT) and audio-visual products. These items are closely related to the semiconductor industry, underscoring its substantial presence in Taiwan's export profile and emphasise the island's continued reliance on chips.

Diversifying the economy away from dependence on semiconductor production could provide the island with more opportunities for cooperation with other countries. This is particularly critical after the COVID-19 pandemic, which clearly highlighted the importance of timely deliveries of medicine and food. While diversification may seem ambitious in the short run, the redistribution of resources to other crucial industries would encourage Taiwan to prioritise security and economic growth simultaneously in the long term. Rather than putting most eggs in one basket, i.e., the semiconductor sector, practising economic resilience would lower Taiwan's political vulnerability and its susceptibility to external threats.

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