Confluence INVESTMENT MANAGEMENT

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Taiwan and the Risk of Deglobalizing the World's Semiconductor Industry: Part II

This series is written as a corollary to our recent multi-part *WGR* series titled "The Geopolitics of Taiwan," published last month.[1] In Part I of this report, we showed how Taiwan and the Taiwan Semiconductor Manufacturing Company (TSM, $111.85) represent a key vulnerability in the global computer chip industry. In short, the U.S.-China geopolitical rivalry threatens to cut off Taiwan and its most advanced chip manufacturer, Taiwan Semiconductor Manufacturing Company (also known as TSMC), from some of their key markets, suppliers, and capital sources. In this second and final part of the series, we will discuss the economic and financial implications if Taiwan and the company are indeed forced to deglobalize and join either a U.S. or Chinese economic bloc.

The Threat of Deglobalization

As we discussed in Part I, Taiwan and TSMC are shining examples of the globalization of supply chains in recent decades. Both the country and the company have thrived because of their ability to export to markets around the world, import foreign supplies and expertise, and rely on international capital flows. By the same token, the world has benefited from the development of Taiwan's chipmaking expertise and TSMC's ever-growing operational prowess as advanced chip production consolidated there. The world has benefited from the efficiencies and cost reductions garnered as chip design firms around the world were able to share TSMC's advanced fabs and the large network of Taiwanese suppliers who support the company.

Unfortunately, Taiwan and TSMC also illustrate how geopolitical tensions pose a threat to globalization, over and above the threat from domestic politics as workers in the developed countries get angrier and angrier over lost jobs. In the context of the growing U.S.-China geopolitical rivalry and Beijing's intent to regain sovereignty over Taiwan, TSMC exemplifies the kinds of productive facilities, networks, and supply chains that some countries now want to ringfence for their own purposes and cut off from their rivals. If we consider the issues from the viewpoints of China and the U.S., it's easy to see why Taiwan, TSMC, and many other countries feel like they're being asked to choose sides.

China and TSMC

It's important to remember that President Xi ultimately wants China to develop its own leading-edge chipmaking capability on the mainland. Indeed, the ability to produce world-leading chips is a key goal of his "Made in China 2025" program. However, China has been unsuccessful in that effort so far. Its designated chip foundry champion, Semiconductor Manufacturing International Corp., or SMIC (0981.HK, 22.40), lags several years behind TSMC's capabilities. Therefore, China must preserve access to

[1] See *WGR*, "The Geopolitics of Taiwan: Parts I (5/3/21), II (5/10/21), and III (5/17/21)."

chips from Taiwan and TSMC in at least the short-to-medium term.

Chinese Priority #1: Preserve Taiwan's Chip Industry as a Functioning Entity. China's near-term reliance on advanced chips from Taiwan explains why Xi might be reluctant to launch a military quest to take control of the island. Unifying Taiwan with the mainland by force might allow Xi to achieve his most important political goal, but it would run the risk of damaging TSMC's unique fabs. Even if the Chinese military were able to seize Taiwan with those fabs intact, the U.S. and its allies would probably launch a retaliatory embargo on the foreign supplies and inputs needed by TSMC to produce its chips. It would be especially likely to cut off TSMC from U.S. or allied chipmaking equipment or intellectual property. Beijing would also probably struggle to keep in place TSMC's engineering talent, with its precious technological and production knowledge. The need for China to get control of Taiwan's chipmaking industry as a functioning entity is an important reason why we believe Xi would prefer to not seize the island militarily, but rather to gradually gain political and economic control through a quarantine or other nonviolent method. Therefore, China's current aggressive military maneuvers in the Taiwan Strait may not portend an imminent military seizure of the island. Rather, sending warplanes into Taiwan's air defense identification zone and other similar actions could merely be aimed at wearing down Taiwan's defenders so that they acquiesce to China having a military toehold in the area.

Chinese Priority #2: Control Taiwanese Chip Supply to Benefit China and Hurt the U.S. Assuming it can get control of TSMC as a functioning entity, China would want to maintain much of the company's foreign markets. President Xi would probably want mainland customers to have first call on TSMC's productive capacity, but we believe he would also want to maintain enough foreign sales to keep TSMC's fab utilization high and its average production costs as low as possible.

Figure 1

A Taiwanese fighter jet shadows a Chinese bomber over the Taiwan Strait last year. (Source: *South China Morning Post*)

- Preserving TSMC's foreign sales would be consistent with China's neo-imperialist trade policy, under which it manages excess capacity at home by pushing sales abroad. One example of this policy is China's infamous "Belt and Road" program, which has loaned billions of dollars to less developed countries around the world so that they can build trade infrastructure like ports, roads, railways, and telecom networks. The projects are mostly financed by Chinese banks and built by Chinese firms. By facilitating more trade with China, the ultimate purpose is to enrich China and its companies.

- Controlling TSMC's foreign sales would also give China more geopolitical leverage. For example, it could reward friendly countries by making more TSMC chips available to them. It could also cut off the U.S. and its allies from TSMC's most advanced chips. Given that over two-thirds of TSMC's output currently goes to firms headquartered in the U.S. and its key allies, the company would be at risk of suffering a dramatic decline in sales in such a scenario. It could also find itself constrained in other operational aspects. For example, Beijing might require it to rely more on mainland suppliers, and it may be forced to share its operational knowledge and expertise with SMIC or other mainland rivals.

The U.S. and TSMC

As the U.S.-China rivalry grows, leaders in Washington will also be tempted to "capture" Taiwan and TSMC. Indeed, U.S. leaders have already taken steps in that direction.

U.S. Priority #1: Control the Supply of Advanced Taiwanese Chips to Chinese Firms. In 2019, the Trump administration effectively imposed a ban on providing U.S.-origin technology to Chinese telecom equipment giant Huawei (002502.SZ, 3.58), based on national security concerns. That rule ended Huawei's access to chips made in the U.S., designed in the U.S., or produced with U.S. tools, including TSMC's chips. While TSMC was able to quickly make up for the lost business with sales to other customers, Washington could theoretically cut off TSMC from other Chinese customers as well. Early this year, for example, the Biden administration cited national security concerns in banning the sale of U.S.-made chips to three companies and four branches of China's National Supercomputing Center. That ban could also be expanded to cover chips made in Taiwan by TSMC with U.S. technology.

U.S. Priority #2: Shift More of TSMC's Advanced Chip Production to the U.S. At the same time, the U.S. has pressured TSMC to produce more chips in the U.S. itself. In 2020, the company announced it would invest at least $10 billion in a new fab for 5-nm (nanometer) chips in Phoenix, Arizona. By the time that fab becomes operational in a couple of years, 5-nm chips will no longer be the most advanced, but reports in early 2021 indicated that TSMC is considering the construction of up to five additional fabs at the Arizona site, including next-generation chips using 3-nm and 2-nm technology. Coupled with a TSMC fab already operating in Washington State, the full construction program in Arizona would leave TSMC with almost as many fabs in the U.S. as it has in Taiwan itself.

Figure 2

TSMC fab in Taiwan. (Source: *Wccftech*)

U.S. Priority #3: Leverage the U.S. Defense Umbrella Over Taiwan to Influence Taipei and TSMC. More broadly, the U.S. has long sought to leverage its military protection of Taiwan to influence Taiwanese behavior. For example, its longstanding policy of "strategic ambiguity," in which it doesn't explicitly commit to Taiwan's defense, is meant to discourage Taiwanese leaders from formally declaring independence. Given that Taiwan relies so heavily on U.S. military protection to maintain its independence from China, we believe that Taiwanese leaders would also likely put pressure on TSMC to ensure it respects U.S. export and investment pressures, such as the ban on chips going to

Huawei, despite the economic costs to the company.

Ramifications

Taiwan as a society, TSMC as a company, and scores of other countries and companies around the world are coming under mounting pressure to take sides in the evolving U.S.-China rivalry. For now, they're being pressured to pick a side voluntarily, but as the U.S.-China rivalry intensifies, there will be an increasing risk that they will be forced to choose. Either way, the implication is that their foreign markets could be restricted to one bloc or the other. Their supply sources could be limited to one bloc as well, and their capital sources could also be constrained. The example of TSMC helps illustrate the likely economic consequences. Faced with fewer export opportunities and more limited sources of supply, labor, and capital, TSMC and other firms in the same situation would likely encounter higher average production costs and lower margins. TSMC and similar firms would likely hire fewer employees and invest less, and new innovations would likely be harder to come by.

Obviously, firms forced to deglobalize and join a Chinese- or U.S.-led economic bloc would likely face lower stock prices, since constricted markets could mean reduced profit opportunities. It's probably too early to see such a negative impact right now, but it is clearly a risk in the future. More broadly, since constricted markets and shortened supply chains will tend to drive up unit costs, any deglobalization as described here could help push inflation higher than it otherwise would be, while productivity and economic growth would likely suffer. Those circumstances would tend to undermine both bond and equity prices broadly, although, to reiterate, the main risk may still be off in the future.

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