The Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act: What it Means for the United States Economy and its Foreign Relations

still inflated and consumer electronics have yet to return to pre-pandemic stocks or prices.[12] Seeking to secure a steady stream of chips for the American consumer base, the Act also seeks to ensure that the United States need not rely on foreign, chiefly East Asian, nations for a supply of semiconductors.[13]

B. The History and Science of Semiconductors

Semiconductors are the piece of hardware that enables every single electronic to function—at the heart of every smartphone, computer, modern automotive, etc. lies a semiconductor.[14] Also known as an integrated circuit (IC) or "chip," semiconductors are an extremely important part of modern-day life and "are the enabling hardware for all information technology."[15]

roof.[41] Yet as China's industry slowly developed, Mao Zedong's Cultural Revolution (1965-75) hampered further advancement and progress of semiconductor technology, and China lost much

before the CHIPS Act was signed into law, but during which the Endless Frontier Act was marching its way through the House, Intel broke ground on two fabrication plants totaling twenty billion dollars in Chandler, Arizona.[70] Intel, who already had four other previous semiconductor factories at their Chandler campus, stated that the new plants will produce Intel's most advanced, cutting edge chips in an effort to draw market share away from TSMC.[71] Intel's Chief Executive Pat Geisinger cited a need for a more resilient supply chain as a major factor in constructing the new fabrication plants, while the operations will yield a significant economic boost to the area's job market.[72] A few months earlier in July 2021, semiconductor manufacturer GlobalFoundries announced plans to build a new and highly advanced semiconductor manufacturing plant in upstate New York with funding from the federal government.[73] GlobalFoundries—whose investments include a one billion dollar push to produce more wafers (the silicone structure chips are built upon)—worked with politicians including Senator Schumer as well as Department of Defense officials in crafting the bipartisan USICA, the precursor to the CHIPS Act.[74]

While most American and foreign companies receiving funds designated through the CHIPS Act found the trade-off to be worth the cost of limited expansion of China, some aren't so sure about the efficacy of the new law—many of the new factories built as a result of the CHIPS Act will be producing more and more advanced chips.[96] While no doubt important, much of the United States economy relies on older chips for use in products such as cars—the same type of chips that have been high in demand and low in supply over the past few years.[97] As a result, while China's advanced semiconductor industry will probably struggle to gain new footing and progress at a solid rate, China still produces many of these older-style semiconductors that are used in a plethora of everyday electronics and goods.[98] While the United States has targeted China's ability to produce and obtain advanced semiconductors for use in artificial intelligence and defense systems-related super computers, the Biden administration failed to introduce restrictions regarding China's production of older chips used in household and everyday products.[99]

Another issue with the CHIPS Act and additional restrictions imposed by the Biden administration is that it expects China to be unable to obtain any advanced chips as a result of the restrictions. The issue with this thinking is that the main technologies the United States seeks to prevent China from obtaining have alternatives that are already widely available.[100] While the United States already attempted to persuade other chip manufacturing nations—the Netherlands, for example—to comply with its efforts to dismantle China's ability to obtain advanced chips, there has not been international agreement on how to handle the China semiconductor issue.[101] Further, even with such broad restrictions against China, there is no guarantee that Beijing won't start production on advanced semiconductors at home—China, in part thanks to its "Made In China" policy discussed above, has already attracted a large number of foreign engineers (many of whom are ethnically Chinese) as well as taken additional measures to establish domestic production of advanced semiconductors.[102] Subsequently, the United States and current administration may be overestimating their importance in ensuring China doesn't develop such advanced semiconductors all while possibly hurting American semiconductor companies that manufacture large numbers of chips and other products reliant on semiconductors in mainland China.[103]

Yet the issue with these critiques is that the United States government has proactively accounted for many of these issues. When it comes to the CHIPS Act—which has already generated over

---

[96] Don Clark & Ana Swanson, *U.S. Pours Money into Chips, but Even Soaring Spending Has Limits*, N.Y. TIMES (Jan. 1, 2023), https://www.nytimes.com/2023/01/01/technology/us-chip-making-china-invest.html [https://perma.cc/58RF-88YN].
[97] *Id.*
[98] Zeyi Yang, *Chinese Chips Will Keep Powering Your Everyday Life*, MIT TECHNOLOGY REVIEW (Jan. 4, 2023), https://www.technologyreview.com/2023/01/04/1066136/chinese-legacy-chips-advantage/ [https://perma.cc/GKM6-5W3D].
[99] *Id.*
[100] Rakesh Kumar, *Chip Bans on Countries like China Will Hurt the U.S. More Than They'll Help. They Won't Even Work*, FORTUNE (Sept. 28, 2022), https://fortune.com/2022/09/28/chip-export-ban-china-us-asml-nvidia-rakesh-kumar/ [https://perma.cc/Q6ZE-RB97].
[101] Che Pan, *Dutch Minister Says She Will Fight for Open Trade in Davos Chip Panel Discussion, as US Pressure Rises on Export Controls to China*, SOUTH CHINA MORNING POST (Jan. 19, 2023), https://www.scmp.com/tech/article/3207455/dutch-minister-says-she-will-fight-open-trade-davos-chip-panel-discussion-us-pressure-rises-export [https://perma.cc/VS9A-XALF]; *see id.*
[102] *See* Pan, *supra* note 100; *see supra* text accompanying notes 44-52.
[103] *See* Kumar, *supra* note 99.

between America and China halted, but rather that such business must be approved at the discretion of the BIS before continuing.[114] Thus the United States successfully targeted China's development of advanced semiconductors through the CHIPS Act and BIS regulations, while still allowing other semiconductor businesses to continue.[115] While the restrictions from both sources are still fresh, the United States wisely limited China's ability to produce advanced chips used in weapons systems while allowing mutually beneficial trade to occur—something that critics seem to fail to address.

D. The Impact of the CHIPS Act and Subsequent Restrictions on Chinese-American Relations

Unsurprisingly, Beijing's reaction to the CHIPS Act and subsequent legislation was less cheery than semiconductor companies receiving financial incentives under the CHIPS Act. Only nine days after President Biden signed the CHIPS Act into law, Yu Xiekang, vice chairman of the China Semiconductor Industry Association spoke out against the new regulations, criticizing the CHIPS Act for unfairly targeting China's semiconductor industry and intentionally benefitting China's international competitors.[116] Xiekang, during a semiconductor industry event in China, stated that "[w]e resolutely oppose the U.S.'s restrictive actions targeting certain countries . . . [i]t contains essentially discriminatory clauses in market competition and creates an unfair playing field, which goes against the WTO's fair-trade principles."[117] The CHIPS Act and further prohibitive regulations strained already tense relations between the two nations, especially when the independence of Taiwan and territorial disputes in the South China Sea have come to a head in the recent past.[118] While Washington's passage of the act is one issue, the Biden Administration has also recruited other semiconductor producing countries to impose export controls on China—none of which helps to cool tensions between the two nations.[119] Since the CHIPS Act passed, the Administration has held talks with the host countries of ASML Holding NV (ASML) (Netherlands) and Nikon Corporation (Japan) to restrict trade between them and China in order to essentially form a "technology blockade."[120]

Reacting to the CHIPS Act as well as the Biden Administration's attempt to levy export controls against China's chip industry, China's Ministry of Commerce filed a complaint with the World Trade Organization (WTO) against the United States, using the international body to dispute the various export controls.[121] The Chinese Ministry of Commerce specified in the complaint that the

---

[114] *See* BIS Press Release, *supra* note 91.
[115] *See id.*; *see* Yang, *supra* note 97.
[116] Bloomberg, *China Attacks U.S. Chips Handouts While Warning of a Market Slowdown*, TIME (Aug. 18, 2022), https://time.com/6206951/china-us-semiconductor-chips/ [https://perma.cc/9YCM-EYHT]; Gadjo Sevilla, *China Opposes $52 Billion CHIPS Act*, INSIDER INTELLIGENCE (Aug. 19, 2022), https://www.insiderintelligence.com/content/china-opposes-52-billion-chips-act [https://perma.cc/CQH2-4SV4].
[117] Sevilla, *supra* note 115.
[118] Kristin Huang, *US-Philippines Military Bases Deal Seen as Reaction to China's Moves in South China Sea O*

United States has "expanded its concept of national security, abused export-control measures, hindered the normal international trade of semiconductors . . . threatened the stability of the global industrial supply chain and taken other steps that disrupt the international economy" in recent years.[122] In response, the Office of the U.S. Trade Representative refuted the efficacy of the complaint and noted that since such export controls deal with national security, the WTO is an improper forum for the complaint to be filed.[123]

Yet in its response, China revealed its hand: the Chinese semiconductor industry is still highly dependent on other countries to manufacture the types of semiconductors it consumes.[124] Despite Beijing's "Made in China" policy and advancement of semiconductor research/proliferation of Chinese engineers working in the Chinese semiconductor industry—which no doubt, increased China's own chip production capability—China's domestic semiconductor manufacturing can only supply ten to fifteen percent of the domestic market's demand since the country's demand is that colossal.[125] Perhaps the Chinese government's reaction to the CHIPS Act is more telling than Beijing cares to let on, but one fact is clear: as the semiconductor war rages, the United States—despite Chinese protest—appears determined to bring domestic chip manufacturers back home while attracting foreign manufacturers to its shores.

C. The Impact of the CHIPS Act and Subsequent Restrictions on Foreign Relations with Friendly, Chip Producing Nations

1.

Further, the South Korean administration worries that the United States could ask it to join the United States and other countries in imposing semiconductor trade restrictions against China.[138]

producing nations as well as further degrade relations between the U.S. and China who have already engaged each other in a tech-A.I. development war for the past few years, especially as Xi Jinping has consolidated power. Other foreign, chip producing nations, must balance their own economic and security interests with U.S.-led export controls in an attempt to keep the developing Chinese semiconductor industry at bay.

Regardless, the CHIPS Act has been a success so far from an American perspective. Though more time is needed to truly judge the outcome of the CHIPS Act, the U.S. has taken the first step in protecting an incredibly important industry—one that drives all forms of technology and technological development—my incentivizing the production of semiconductors within America. Is such a goal worth the geopolitical pushback America may encounter from other chip producers and China itself? As of now, it's too early to tell if such a trade will be worth the cost; yet in the end, America has taken the first step in securing a fragile