Comments on Section 232 National Security Investigation of Imports of Semiconductors and Semiconductor Manufacturing Equipment

Bureau of Industry and Security
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Submitted by:
US-Taiwan Business Council

Introduction

The US-Taiwan Business Council (USTBC) thanks the Bureau of Industry and Security for this opportunity to comment on the *Section 232 National Security Investigation of Imports of Semiconductors and Semiconductor Manufacturing Equipment*. It is our understanding that BIS seeks to better understand the potential effects of U.S. imports of semiconductors and semiconductor manufacturing equipment (SME) and their derivative products on U.S. national security.

We note that the Bureau of Industry and Security is also conducting a "*Section 232 National Security Investigation of Imports of Processed Critical Minerals and Derivative Products*" (BIS-2025-0025 | XRIN 0694-XC124). The scope of the Executive Order instructing BIS to initiate that Section 232 investigation also covers semiconductor fab inputs, finished semiconductors, and electronics. USTBC asks that BIS try to ensure consistency and prevent contradictory policy outcomes between the two investigations.

USTBC is a member-based organization that has worked since 1976 to foster bilateral trade and business relations with Taiwan and to support U.S. companies on the island. Taiwan is a top tier trading partner for the United States and a like-minded democracy, and Taiwan also plays a crucial role in the global technology supply chain – particularly when it comes to leading-edge semiconductors. USTBC offers these comments on behalf of our member companies doing business in both the United States and Taiwan.

Background

Advanced semiconductors play a key role in many sectors identified by the U.S. government as part of its critical infrastructure – the assets essential to keep society functioning. Such sectors include telecommunications, energy, transportation, manufacturing, and financial services. Advanced semiconductors have also helped drive advances in U.S. defense and military capabilities, increasingly true as the U.S. military posture relies on a small number of high-quality systems that are underwritten by advanced microelectronics. The semiconductor industry is therefore of vital importance to both the U.S. economy and to U.S. national security; it is the backbone of the digital economy and influences every aspect of modern life.

Semiconductor manufacturing has one of the most diverse supply chains in the world, with that diversification driven by access to expertise and cost considerations. In addition, companies need access to the global market to generate the required revenue to support the large capital investments required – particularly at the leading-edge. Between design, machine and chemical production, wafer production, fabrication, assembly, packaging, testing, and down-stream applications, a chip-containing product could cross up to seventy borders before it ever makes its way into consumers' hands. While this global diversification is one of the leading reasons why chip production has been able to make so many advancements, this interconnectedness can also add unwanted risk.

Foreign countries, mostly in Asia, similarly dominate the ability to make high volumes of downstream consumer electronic products such as cell phones. The assembly of such products has evolved over the decades, driven mostly by economics. This also represents a complex global supply chain – from design and intellectual property (IP) to chip production to system integration and the assembling of parts.

The U.S. leads the world in fabless semiconductor design. However, Asia – primarily Taiwan and South Korea – serves as the location for much of the world's advanced chip manufacturing capacity. This is in large part because Asian governments have for decades provided significantly more manufacturing incentives and more investments in chip research. As the supply chain risks have become clear over the last several years, countries around the globe have

recently offered incentive plans to draw in semiconductor sector investments. Initiatives outside the U.S. include the United Kingdom through its UK Science and Technology Framework, the European Union through its EU Chips Act, along with additional funding for the domestic semiconductor industries in China, Taiwan, Spain, and India, among others.

For the last few years, the United States has similarly attempted to enhance U.S. competitiveness and support national security by introducing beneficial incentives for semiconductor investments into the United States. Ongoing reshoring projects for advanced semiconductors have been successful in bringing U.S. manufacturing capabilities closer to the leading-edge. In addition, such incentives have already brought enormous investment into the U.S. from top semiconductor firms – including a record US$165 billion investment in Arizona from Taiwan flagship company Taiwan Semiconductor Manufacturing Company, Ltd. (TSMC).

Onshoring advanced semiconductor manufacturing is an extraordinarily complex undertaking that requires long-term and coordinated planning. For example, Taiwan developed a semiconductor production strategy in the late 1970's that included workforce development, a national focus on innovation, a collaborative company ecosystem, client-driven business models, as well as government incentives. Capital investments by local and international businesses and the Taiwan government have been in the hundreds of billions since then. If the United States wants to regain a significant production capacity for semiconductors, it will need to take a similar long-term strategy and focus, as well as have patience with the length of the process.

Comments

Question iii

"The role of foreign fabrication and assembly, test and packaging facilities in meeting United States semiconductors demand, and similarly the role of foreign supply of SME in meeting domestic demand"

While U.S. tech companies are leaders in chip design, the actual production process – which includes chip fabrication, assembly, testing, and packaging – mostly takes place outside the United States. Taiwan's TSMC and South Korea's Samsung are the global leaders in advanced semiconductor fabrication. Taiwan companies lead in outsourced test and packaging, China and Southeast Asia hold a concentration of assembly operations, and China often produces legacy chips. Previous efforts to relocate some of these processes back to the U.S. have had mixed success. As automation assisted by Artificial Intelligence (AI) potentially reduces labor costs, that will better position the U.S. to compete. However, it is critical to thoroughly assess and address the longstanding reasons behind the outsourcing of the semiconductor industry and barriers that have hindered domestic developments in the sector.

Question iv

"The concentration of United States semiconductors imports (including as embedded in downstream products) from a small number of fabrication facilities and the associated risks, and similarly the concentration of United States SME imports from a small number of foreign sources."

For a detailed discussion on potential risks, please see the US-Taiwan Business Council and Project 2049 Institute report "*U.S., Taiwan, and Semiconductors: A Critical Supply Chain Partnership*" from June 21, 2023.

The report concluded that disruptions to the semiconductor industry come in all shapes and sizes, from severe weather events to large swings in demand to potential armed conflicts, with new capacity potentially not able to mitigate such

disruptions. Even as new capacity comes online, demand will continue growing as well.

The report also concluded that a significant disruption to the chips supply coming out of Taiwan would not just shut down current production of personal electronics, telecommunications products, automakers, and computer manufacturers, but it would seriously cripple efforts to develop emerging areas like autonomous systems, electric vehicles, artificial intelligence, cloud computers, infrastructure, and defense. It would be one of the greatest disruptions to the U.S. and global economies seen in modern times.

While the likelihood of a complete disruption is low, it underscores the vital importance of Taiwan's semiconductor industry to the U.S. economy. The report concluded that Taiwan would remain a critical partner for the near future, and that the U.S. must do everything it can to ensure that Taiwan remains a close ally.

Question v

"The impact of foreign government subsidies and predatory trade practices on United States semiconductor and SME industry competitiveness."

The Chinese government has made becoming self-sufficient in semiconductors – particularly DRAM – a top strategic priority. National policies like "*Made in China 2025*" reflects the government's substantial support for domestic chipmakers. Escalating global tensions, particularly with the United States, have highlighted the risks of relying on external sources for essential components, prompting China to prioritize supply chain resilience and independence.

China serves as one of the largest global electronics markets and consequently sees a substantial demand for DRAM. Ramping up domestic production could both lessen reliance on outside suppliers and gain greater control over the market. China is therefore aggressively scaling its DRAM industry through state-backed funding, allowing companies like Changxin Memory Technologies (CXMT) to invest in research and development and to build capacity. Ramping up of production also appears to signal a strategic push to close the current technology gap.

China's efforts in DRAM production are evolving but still face challenges in competing with established industry leaders like Samsung, SK Hynix, and Micron when it comes to technology levels, manufacturing volume, and market share. However, Chinese companies are attempting to penetrate both domestic and international markets, leveraging aggressive pricing strategies that could distort global DRAM pricing dynamics and raise concerns about market stability. China's growing presence in the DRAM market is having a noticeable impact on the industry.

In addition, China is rapidly expanding its capacity to produce legacy/mature chips. While not the most advanced semiconductors, such chips are essential components in a wide range of devices including cars, appliances, and industrial tools. China could potentially use its dominance in this sector to put economic and political pressure on other countries by manipulating prices or controlling supply chains. The small price margins for these types of chips means that China could easily target competitors to undercut pricing, which has the potential to drive them out of business. The threats posed by legacy chips from China require a comprehensive and coordinated response from both industry and governments.

Question vii

"The potential for export restrictions by foreign nations, including the ability of foreign nations to weaponize their control over semiconductors and SME supply chains."

The semiconductor supply chain is both global and complex, offering potential opportunities to introduce counterfeit or otherwise compromised components. Adversaries could insert hardware Trojans or make malignant modifications for espionage, sabotage, or other harmful purposes. Such compromised components could have negative consequences for national security, with the potential to disrupt critical infrastructure, jeopardize military systems, steal sensitive information, and even to provide a backdoor for unauthorized access and data exfiltration. Extracted information could be used to provide substantial economic intelligence or for political manipulation.

Counterfeit chip components – fake or substandard components misrepresented as genuine – are also a fundamental problem that can lead to issues such as failing or malfunctioning devices, degraded performance or reliability, security vulnerabilities, and damage to other components. Such counterfeit components could also damage the reputation of the legitimate manufacturers whose products serve as the model for counterfeits. China is currently a major supplier of counterfeit components in the semiconductor supply chain.

The semiconductor industry also has several critical chokepoints, with key technologies, materials, or manufacturing processes controlled by specific companies or by specific countries. Examples include control over most essential raw materials like gallium or germanium, dominance in the production of specialized equipment like lithography machines, and the concentration of a substantial portion of manufacturing capacity in a geographic region. Disrupting these critical elements could cause widespread shortages and global economic damage.

Foreign companies, backed by their governments, could potentially exploit these dependencies in the semiconductor supply chain to gain strategic advantages and harm competitors, all while advancing their country's geopolitical interests. Such companies could use unfair pricing practices, including dumping subsidized chips on the market, to drive competitors out of business and gain a dominant market share. They could then raise prices, assert control over access to key technologies, and exert economic pressure on other countries.

A foreign government could also use export controls to restrict the sale of critical semiconductor technologies or products to certain countries, hindering their technological development and economic competitiveness. The foreign government could also leverage a specific company's dominance in a particular segment of the semiconductor supply chain to exert political or economic pressure on other nations – for example by threatening to restrict supply in response to unfavorable policies.

Question viii

"The feasibility of increasing domestic semiconductors capacity (in different product types and node sizes) to reduce import reliance, and similarly the feasibility of increasing domestic SME capacity to reduce import reliance."

It is important to differentiate between inputs for which the United States can develop its own domestic sources and inputs for which it cannot. The bottom line is, however, that it is absolutely feasible to produce advanced semiconductors in the United States to reduce import reliance.

While moving production from overseas to the U.S. is extremely challenging, time consuming, and pricey, the U.S. has

already made tremendous progress in onshoring advanced semiconductor manufacturing. According to a Semiconductor Industry Association report, since President Trump's first term there have been over 100 new semiconductor initiatives introduced in 28 U.S. states, for over US$540 billion in private investments. These initiatives will create and support over 500,000 U.S. jobs, with the U.S. in the process of tripling its chip manufacturing by 2032 and capturing a meaningful share of global advanced chip production. Pro-growth policies such as tax incentives and further reduction of regulatory barriers could help sustain these investments.

Question ix

"The impact of current trade and other policies on domestic semiconductor and SME production and capacity, and whether additional measures, including tariffs or quotas, are necessary to protect national security."

Additional measures such as tariffs or quotas are not necessary. We would instead encourage tariff exemptions for all projects deemed critical to national security. Any new import barriers would disrupt the ongoing investments by companies already committed to onshoring U.S. semiconductor production. Other measures, such as incentives and a reduction in regulatory barriers, would offer a more positive way forward.

New import restrictions and their accompanying costs increases, along with market uncertainty, would undermine the ability of companies to fully execute their ambitious onshoring plans, slow the deployment of leading-edge semiconductor manufacturing in the United States, and reduce the productivity and competitiveness of U.S. fabrication plants. For example, industry estimates are that the *Liberation Day* tariffs proposals could increase capex costs between 5-25% depending on the company. Indeed, current import restrictions serve as an anticompetitive government regulation that has pushed key technology partners to deepen their ties with Chinese firms as a hedge against U.S. uncertainty.

At a minimum, any new tariffs or quotas should offer flexibility and provide realistic adjustment times for U.S. businesses and investors who have already committed to expanding U.S. semiconductor production.

Question xiii

"Where the U.S. workforce faces a talent gap in production of semiconductors, SME or SME components."

Access to talent is the most significant issue that our member companies contend with. Current critical workforce requirements in the United States concentrates in two areas: skilled technicians and specialty professionals.

Skilled technicians support semiconductor manufacturing in numerous ways, including as clean-room technicians, related facility operations personnel, and factory automation and logistics specialists. These jobs require vocational school courses, apprenticeships, or informal on-the-job training and life-long learning. There is an exceedingly high demand for these types of workers, as they represent skills critical to all advanced manufacturing across industries – including automotive, pharmaceutical manufacturing, and even automated warehouse logistics.

Specialty professionals have professional manufacturing skills in areas such as quality control, yield optimization, failure analysis, and process development. These jobs require 4-year and advanced degrees in engineering, materials sciences, chemical engineering, and automation/robotics – areas where experience is paramount and highly valued. U.S. universities are developing curricula in semiconductor manufacturing to train these types of workers, but the workforce requirements remain enormous, especially for those who are U.S. citizens.

Conclusion

The U.S. must maintain a leadership role in this critical industry for both economic and national security reasons. The reshoring of manufacturing capabilities for semiconductors is progressing well. However, it will require a sustained investment of time and capital, alongside a foreseeable and coherent regulatory regime – particularly with respect to export controls, tariffs, and related trade policies – to ensure long-term viability and strategic resilience for the U.S. semiconductor industry.

In examining potential impacts of the U.S. reliance on semiconductor imports, it is important to differentiate between advanced node chips and legacy chips. It is also crucial to avoid undercutting semiconductor manufacturing with policies that reduce demand for end market products.

Many semiconductor manufacturers have already made long-term, capital-intensive commitments in the United States based on existing U.S. policy frameworks. Large-scale investments require that companies can rely on stable and predictable government actions and regulations. To secure these strategic semiconductor investments, thereby strengthening national competitiveness, it is critical that the United States maintain consistent, forward-looking policies that do not undermine the progress already made. We encourage the U.S. to focus on permitting reform, removing regulatory barriers that throttle growth and innovation, as well as on the removal of trade and export barriers for U.S. made products around the world.

The U.S. is grappling with how to balance the economic benefits of global trade with the need to protect national security and economic interests. Policies aimed at reducing reliance on imported semiconductors could lead to higher costs for both U.S. companies and consumers. International cooperation with allies such as Taiwan to address these challenges would help ensure a secure and resilient global semiconductor supply chain. We need sustained, positive U.S. government support of the semiconductor sector to facilitate innovation, provide opportunities for high-paying jobs in the United States, and support the development of the next-generation products and technologies that underpin our national security.