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Security Council (SC)

Research Report Guide

Topic two: Reaching a peaceful solution to the China-US tensions as a result of the US Chips and Science Act.



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Introduction

One of the most important institutions in high technology history originated when Robert Noyce and Gordon Moore, two of the most well-known figures in semiconductor technology, decided to form a new firm together. With the help of a small group of colleagues and connections they had made during their years in the Silicon Valley tech industry; Noyce and Moore set out to create a new kind of company. A company dedicated to continuous innovation with the firm belief that its technologies would change the world. Furthermore, in 1968, the American chip-making company Intel was born¹. The business unveiled a number of game-changing technologies that helped the widespread adoption of low-cost computers in contemporary society. Most significantly, the business unveiled the first programmable microprocessor in history, followed by multiple generations of advancements that allowed the technology to be used at ever-higher application levels. Consequently, the growth of intel allowed the global advancement of multiple chip manufacturers and companies which control the global economy.

Glossary

Chips: integrated circuits or small wafers of semiconductor material embedded with integrated circuitry.

Semiconductor: a material that has an electrical conductivity value falling between that of a conductor, such as copper, and an insulator, such as glass. Found in many items ranging from industrial or household to weapons of war.

TSMC: Taiwan Semiconductor Manufacturing Company Limited is a Taiwanese multinational semiconductor contract manufacturing and design company.

R&D: Research and development (R&D) include activities that companies undertake to innovate and introduce new products and services.

Quantum computing: a rapidly-emerging technology that harnesses the laws of quantum mechanics to solve problems too complex for classical computers.

¹ "Explore Intel's History." Intel,

SMIC: Semiconductor Manufacturing International Corporation is a partially state-owned publicly-listed Chinese pure-play semiconductor foundry company.

Nanotechnology: also shortened to nanotech, is the use of matter on an atomic, molecular, and supramolecular scale for industrial purposes.

Overview

The US competitiveness, innovation, and national security are intended to be strengthened by the Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022 (CHIPS Act), which was signed into law on August 9, 2022. The bill aims to encourage investments in the nation's semiconductor production capability in hopes of having a larger share of this ever-growing and profitable market, currently estimated to be worth \$618 billion. It also aims to launch R&D and commercialization of cutting-edge technologies like quantum computing, AI, clean energy, and nanotechnology, as well as to establish new regional high-tech centers and a larger, more diverse STEM workforce².

\$280 billion will be spent under the CHIPS Act during the following 10 years. The majority—\$200 billion—is for commercialization and scientific R&D. With an additional \$24 billion in tax credits for chip manufacture, the total amount allocated for semiconductor manufacturing, R&D, and workforce development is \$52.7 billion. Programs focused on cutting-edge technologies, and wireless supply chains are budgeted for \$3 billion. Regarding the shortage of semiconductors in the united states, The Department of Commerce will oversee \$50 billion in investments over five years to increase domestic production of sophisticated and mature semiconductors, including \$11 billion for advanced semiconductor R&D and \$39 billion to speed up and support domestic chip production (of which \$6 billion can be used for direct loans and loan guarantees)³.

² “Fact Sheet: Chips and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China.” The White House, The United States Government, 9 Aug. 2022

³ Badlam, Justin, et al. “The Chips and Science Act: Here's What's in It.” McKinsey & Company, 6 Oct. 2022,

Subsequently, the US CHIPS act raged huge controversy between US and Chinese relations, as the US is believed to be trying to halt/slow down China's growing global market share of semiconductor sales. Despite producing more than half of the world's semiconductors, China has a modest industrial base. With a manufacturing capacity of only about 5%, the country is dwarfed by its global competitor, the United States, which has a capacity of more than 40%⁴. Moreover, US officials have worked to reduce the flow of technology products, services, and inputs to and from China during the past ten years because they have come to see China's technological interdependence with the US as a threat. The administrations of Donald Trump and Joe Biden have both tightened export controls, added Huawei and its affiliates as well as China's top chipmaker SMIC to the Entities List, limiting their access to essential US enabling technology, and obstructed Chinese attempts to acquire US-listed technology companies. This sparks huge controversy between both nations.

Major Parties Involved

United States of America

According to the US, China's use of the technology endangers its own national security. The guidelines were issued by US Commerce Department Undersecretary Alan Estevez. He stated that his goal was to make sure the US was doing everything it could to stop China from acquiring "critical technologies with military applications." Analysts claim that US restrictions could further isolate China from other chip-producing nations, despite Beijing's declaration that it plans to prioritize the production of semiconductors and establish itself as a superpower in the industry.

China

At the World Trade Organization (WTO), China has lodged a complaint against the US for its export restrictions on semiconductors and other related technology. Since President Joe Biden assumed office in January 2021, China hasn't initiated a dispute against the World Trade Organization (WTO) against the US. China claimed in its WTO application that the US was exploiting export restrictions to uphold "its leadership in the research, technology, engineering, and manufacturing sectors." Most importantly, In reaction to the CHIPS act, China planned the "Made in China 2025" plan. It lists important industries that are essential to the nation's future,

⁴ Calabrese, John. "Chips on the Table: Escalating US-China Tech War Impacts the Mideast." Middle East Institute, 15 Dec. 2022,

such as semiconductors. The authorized investment fund for the initiative is worth 340 billion yuan. By 2020, China should be able to source 40% of its semiconductors locally thanks to these investments, and by 2025, 70% of semiconductors are anticipated to come from domestic sources. However, just about 16 percent were self-sufficient as of 2020⁵.

Taiwan

More than 90% of the world's advanced semiconductor production capacity is located in Taiwan. Taiwan's semiconductor industry may be impacted by recent moves by the US to reduce reliance on the island's leading-edge technology. Leading the market is Taiwan's chip supply chain, which is centered on Taiwan Semiconductor Manufacturing Co. (TSMC), which is also developing a chip manufacturing facility in the US. The US-China conflict has long been exacerbated by Taiwan's expertise in chip manufacturing⁶.

South Korea

The semiconductor industry in South Korea is experiencing a "feeling of crisis," according to the country's science minister, as the east Asian country prepares for increased competition from the US and China in the escalating global chip war. The legislation was because Korean businesses, like Samsung, received significantly fewer tax benefits from the government and experienced a skills shortage when compared to China, the US, and Taiwan⁷.

Possible Solutions

A possible solution to the China-US tension as a result of the US Chips and Science Act is for China to agree to a third-party security check of their technology before it arrives in the US, eliminating any security threat. Another solution could be for China and the US to come to a compromise that could, for example, include reducing trade restrictions.

⁵ Schuman, Michael. "Why Biden's Block on Chips to China Is a Big Deal." The Atlantic, Atlantic Media Company, 26 Oct. 2022

⁶ Wan, Chien-Hua. Taiwan Warns of Hit to Its Exports from US Chip Restrictions. Bloomberg, 30 Nov. 2022

⁷ Davies, Christian, and Song Jung-a. "'Sense of Crisis' Has Grippped South Korean Chip Industry, Warns Minister." Subscribe to Read | Financial Times, Financial Times, 27 Sept. 2022,

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