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**CHINA'S STRATEGIC RESPONSE TO U. S. DECOUPLING
IN THE SEMICONDUCTOR INDUSTRY:
A NEOMERCANTILIST PERSPECTIVE**

¹Zaharul Abdullah, ²Rosyidah Muhamad & ³Aini Fatimah Roslam

¹Asia-Europe Institute, Universiti Malaya, Malaysia

²Faculty of Business, Economics and Social Development,

Universiti Malaysia Terengganu, Malaysia

³Fakulti Pengajian dan Pengurusan Pertahanan,

Universiti Pertahanan Nasional Malaysia, Malaysia

¹*Corresponding author: zaharul@um.edu.my*

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ABSTRACT

This article examines China's strategic response to U.S. decoupling in the semiconductor industry through the lens of neomercantilism, emphasizing the intersection of economic nationalism and geopolitical rivalry. It argues that the ongoing technology confrontation demonstrates how the U.S. and China deploy economic instruments as tools of strategic competition. The study finds that while Trump's first and second-term decoupling strategies share a foundation in protectionist logic, the second term transformed decoupling into an institutionalized, legal-bureaucratic framework that embedded export controls, investment restrictions, and coalition-based coordination within a broader geoeconomic strategy to preserve U.S. technological supremacy. In response, China has pursued state-driven countermeasures, including the following: export restrictions, retaliatory sanctions, R&D investment, technological self-sufficiency initiatives, sanction circumvention, and global diplomatic outreach. These actions reveal both the strengths and limits of China's neomercantilist approach—demonstrating success in developing niche technologies and domestic innovation ecosystems, yet being exposed to persistent dependence on foreign inputs in advanced chipmaking. By framing the semiconductor rivalry as a manifestation of neomercantilist statecraft, this article contributes to understanding how economic interdependence is being weaponised, transforming globalisation from a liberal order of mutual gain into a competitive arena of strategic industrial policy and geopolitical control.

Keywords: U.S.-China decoupling, semiconductor industry, neomercantilism, technological sovereignty, strategic response.

INTRODUCTION

Although China has made significant advancements in various high-tech industries, its semiconductor sector remains a critical vulnerability due to asymmetrical globalisation (Lee, 2024: 56) and asymmetrical interdependence (Grimes & Du, 2024: 594) within global value chains. China's dependence on foreign semiconductors, particularly those of U.S. origin, is substantial, encompassing both design and manufacturing stages (Li, 2021; Lee, 2024). This has placed China in a challenging situation as the U.S. implemented various measures to restrict China's semiconductor advancements and maintain its industrial supremacy (Li, 2021; Zhang, 2023; Lee, 2024). The semiconductor conflict began in 2018 when the Trump administration imposed export controls on ZTE and later placed Huawei on the Entity List, followed by sweeping regulations in 2020 restricting any semiconductor made with U.S. technology from reaching Huawei or its affiliates (Fuller, 2021; Lu & Moorthy, 2025). The Biden administration maintained and expanded these measures through export controls in 2022, tighter investment screening via FIRREA and outbound investment mechanisms, and greater coordination with allies to constrain China's access to advanced semiconductor technologies and capital (Zhang, 2023; Lee, 2024; Abdullah et al., 2024).

In this context, this article seeks to address the following questions: What are the new decoupling measures introduced by Trump 2.0? What key measures have China employed to counter U.S. decoupling measures? How effective have these measures been in reducing China's vulnerabilities and promoting its technological advancement? The existing body of scholarship on U.S.–China technological rivalry provides rich insights into how Beijing has responded to Washington's decoupling efforts, especially in the semiconductor sector. Viewed through a neomercantilist lens, these studies collectively portray China's strategy as a state-led project to preserve national autonomy, secure technological sovereignty, and accumulate strategic power.

Zhao and Yin (2019) provide an account of this transformation, highlighting how U.S. measures under the Trump administration, including tariffs and sanctions on Chinese firms like Huawei and ZTE, were justified by fears of losing technological dominance. They argue that these restrictions prompted China to adopt a doctrine of self-reliance, intensifying investments in indigenous innovation and reshaping state priorities around strategic technologies. Malkin (2020) situates this response within the broader industrial policy framework of "Made in China 2025" (MIC 2025), interpreting it as an effort to elevate China's position in global value chains by developing proprietary technologies, intellectual property, and standard-setting capabilities. From a neomercantilist perspective, this represents China's bid to convert industrial strength into geopolitical influence.

Fuller (2021) provides a more focused analysis of the semiconductor industry, examining how U.S. export controls and entity-list sanctions exposed China's dependence on foreign suppliers of essential inputs such as Electronic Design Automation (EDA) tools and chip fabrication equipment. His study shows that these vulnerabilities galvanised China to expand state-backed financing mechanisms, such as the Big Fund, to accelerate domestic chip manufacturing. However, Fuller (2021) also underscores the persistent technological gaps, particularly in advanced lithography, which constrain China's ambitions for full autonomy. Similarly, Wang (2023) traces China's progress in chip production, noting the rise in domestic output from eight percent in 2013 to 40 percent in 2023, but he also identifies systemic weaknesses—fragmented innovation systems, weak intellectual property enforcement, and limited basic research investment. His findings suggest that while neomercantilist policies can mobilise vast resources, they may fall short in fostering the creative and decentralised innovation required to compete at the technological frontier.

Bu (2024) broadens the scope to examine the geopolitical implications of U.S. and Chinese strategies. He argues that Washington's export controls, the CHIPS Act, and efforts to "de-risk" global supply chains reflect a new phase of techno-nationalism. In contrast, China's retaliatory measures—such as restricting exports of critical minerals—illustrate its determination to weaponize its own economic assets. Yet Bu (2024) cautions that these tit-for-tat actions risk fragmenting global supply chains and undermining multilateral institutions, revealing the contradictions of pursuing neomercantilist objectives in a deeply interdependent global economy. Velasco (2024), on the other hand, takes a more affirmative view of China's approach, arguing that state-led intervention and protectionism have transformed China into a global semiconductor powerhouse, with its industrial model increasingly influencing other developing economies. His optimistic reading contrasts sharply with Naughton's (2024) critique, which emphasises that excessive centralization and political control could ultimately constrain innovation, reduce efficiency, and weaken China's ability to sustain long-term technological progress.

Collectively, these studies paint a nuanced picture of China's semiconductor strategy as a deliberate neomercantilist project combining economic nationalism with industrial modernization. Yet, they also highlight inherent contradictions—between rapid state-led mobilization and the slower, uncertain process of innovation; between national security imperatives and global economic integration. While the literature richly documents China's industrial policies and countermeasures to U.S. decoupling, it remains largely descriptive and fragmented. Few studies explicitly connect China's policy behavior to neomercantilist theory, and even fewer systematically evaluate the effectiveness of these interventions in achieving true technological autonomy. Moreover, prior research has not addressed China's latest responses to U.S. decoupling under Trump 2.0. Thus, this paper aims to bridge these gaps by providing a systematic neomercantilist analysis of China's strategic response to U.S. decoupling in the semiconductor sector. The article is organised into the following five sections: an introduction, a discussion of neomercantilism, an examination of U.S. decoupling under Trump 2.0, an analysis of China's strategic response, and a conclusion.

METHODOLOGY

This study employs a qualitative, interpretive approach grounded in neomercantilist theory to analyse China's strategic response to U.S. decoupling in the semiconductor industry. It uses document analysis as the primary method, examining government policy papers, official statements, academic publications, think tank reports, and credible media sources from 2018 to 2025. Sources were selected based on their relevance, reliability, and analytical depth in linking state policy with technology and economic security. Data were analyzed thematically to identify patterns of economic nationalism, state intervention, and strategic control over technology. The researcher has adopted a neomercantilist perspective, viewing policy behaviour as driven by power, security, and competitiveness. Triangulation was achieved by cross-verifying data from official documents, secondary literature, and empirical studies to ensure analytical consistency and minimise bias. This methodological approach allows for a systematic interpretation of China's semiconductor strategy as part of broader neomercantilist statecraft.

NEOMERCANTILISM

Mercantilism, as described by Oatley (2019), is a classical economic doctrine that emerged in the seventeenth and eighteenth centuries, emphasizing the close interconnection between a nation's

economic wealth and its political and military power. At its foundation, mercantilism rests on three central propositions that shape how states should organize their trade and economic policies to enhance their strength within the international system. First, mercantilists regarded national wealth as the basis of national power. Second, they viewed international trade as a vital mechanism for accumulating wealth, but only if it generated a favourable balance of trade. To achieve this, a nation had to export more than it imported, thereby securing a net inflow of wealth. Third, mercantilists prioritized certain economic sectors; particularly manufacturing, over agriculture or raw material production, believing that industrial activities generated greater value, technological sophistication, and national strength. Ultimately, mercantilism advocates a powerful and directive role for the state in steering economic development and protecting national interests.

According to Balaam and Dillman (2019), the term neomercantilism gained prominence during the 1970s and 1980s, marking a new phase of state-led economic management under globalization. Neomercantilism arose in response to the oil shocks, growing trade imbalances, and intensifying technological rivalries of that period. Unlike classical mercantilism, which focused on bullion accumulation and colonial expansion, neomercantilism emphasises controlling strategic industries, preserving technological advantages, and managing trade through sophisticated non-tariff measures. Rather than striving for complete self-sufficiency, neomercantilist states pursue strategic interdependence; engaging in global trade while protecting critical sectors through selective protectionism. Policy tools such as subsidies, export credits, and state-led research and development initiatives serve to enhance competitiveness in high-value industries, including automobiles, electronics, and semiconductors.

The developmental states of East Asia illustrate the neomercantilist model in practice. Building on Chalmers Johnson's analysis of Japan's postwar industrial policy, Wade (1990) further elaborated the concept through his governed market (GM) theory, which challenged the neoclassical notion of self-regulating markets. According to Wade (1990), the economic success of East Asian economies stemmed from exceptionally high levels of investment in strategic industries—sectors that would not have emerged without deliberate state intervention—and from the careful exposure of industries to global, but not domestic, competition. This approach was underpinned by robust institutional arrangements that allowed the state to guide resource allocation and shape investment patterns that diverged from those expected under free-market dynamics. The complex network of incentives, regulations, and risk-sharing mechanisms that sustained this process represented the essence of strategic industrial policy and the institutional foundation of East Asian economic performance.

Balaam and Dillman (2019) interpret the recent U.S.–China economic tensions as a contemporary expression of neomercantilist rivalry, in which both powers deploy industrial, technological, and resource policies to safeguard national security and economic dominance. The U.S. has accused China of distorting markets through subsidies, dumping, and overcapacity driven by state intervention, while China defends such measures as necessary for post-crisis stabilisation and long-term development. The rare earth minerals dispute exemplifies the following dynamic: China's use of export restrictions as geopolitical leverage prompted U.S. and Japanese countermeasures, including diversification efforts, subsidies, and WTO complaints. Beneath these trade disputes lies a deeper contest over technological leadership and industrial autonomy, as China seeks to acquire advanced technologies from the West, while the U.S. responds with protectionist and security-based constraints.

In sum, neomercantilism revitalises the classical mercantilist conviction that economic policy and national power are inseparable. It manifests through state-directed industrial strategies, protection of

strategic sectors, and the integration of economic management with national security objectives. Both the U.S. and China exemplify this approach, engaging in competitive yet interdependent maneuvers to secure technological, industrial, and resource supremacy. This framework offers valuable insight into understanding China's strategic response to U.S. decoupling in the semiconductor sector, revealing how contemporary states continue to deploy mercantilist logic to navigate the complexities of global economic competition.

U.S. DECOUPLING UNDER TRUMP 2.0

The trajectory of U.S.–China relations under Donald Trump's second term has been characterised by a strategic mix of confrontation and conditional cooperation. While the administration has signalled moments of tactical accommodation, particularly in tariff truce extensions and selective export relaxations, the underlying trend is unmistakably toward structural decoupling. The measures announced between early 2025 and late 2025 revealed an intensification of protectionist, security-driven and supply chain–restructuring policies designed to reduce U.S. economic dependence on China and to constrain China's technological rise.

Trump 2.0's decoupling strategy remains grounded in tariffs as both a punitive and bargaining tool. Despite episodic “thaws” in bilateral relations, the cumulative tariff architecture has become increasingly complex and expansive. While the White House and China's Ministry of Commerce announced a reduction of reciprocal tariffs from 125 percent to 10 percent for 90 days, this was a tactical pause rather than structural relief. The pre-existing 20 percent “fentanyl” tariff and Section 301 tariffs continued to apply, bringing the final rate on Chinese goods to 30 percent—still a high barrier that signaled sustained protectionism. The doubling of steel and aluminium tariffs to 50 percent, alongside the pre-existing China-specific surcharges, pushed total effective rates on Chinese steel and aluminium to between 70 and 95 percent. Similarly, the 50 percent tariff on copper products and selective 25 percent levies on furniture items reflect a targeted protectionist agenda under the guise of “national security” (The White House, 2025a).

Beyond tariffs, the Trump administration's decoupling campaign is most pronounced in its technological domain. The U.S. Department of Commerce, through the Bureau of Industry and Security (BIS), has reinforced an aggressive export control regime aimed at choking China's access to advanced computing and semiconductor technologies. The BIS's warning against the use of Chinese-made integrated circuits, including Huawei's Ascend chips, represents a continuation of the U.S. policy of cutting off Chinese firms from U.S.-origin technologies. The inclusion of over 50 Chinese entities on the BIS Entity List further tightens the noose around China's high-tech ambitions, particularly in quantum computing, hypersonic weapons and exascale computing. The adoption of the “50 Percent Ownership Rule” for affiliates amplifies this reach by automatically applying restrictions to subsidiaries majority-owned by listed firms (Department of Commerce, 2025). In addition, the U.S. by ordering major software firms—Cadence, Synopsys and Siemens EDA—to halt exports of chip-design software to China underscores the drive to weaponise technological chokepoints. These companies provide indispensable tools for semiconductor design, and cutting them off from China threatens to freeze China's domestic chip innovation capacity.

Another major component of decoupling is the redirection of U.S. supply chains away from China. The Commerce Department's anti-dumping and countervailing duty rulings on solar cell imports from Southeast Asia—particularly Cambodia, Malaysia, Thailand, and Vietnam— have exposed how

Washington perceives these countries as potential “backdoors” for Chinese goods. By extending punitive measures to these economies, the U.S. seeks to prevent circumvention and encourage reshoring of critical manufacturing. Periodic thawing—such as the tariff cut on Chinese imports from 57 percent to 47 percent in October 2025, the facilitation of rare earth exports, mutual rollbacks of licensing restrictions, the temporary lifting of export bans on EDA software, the resumption of NVIDIA’s AI chip sales under licensing agreements, and the approval of TikTok’s U.S. joint venture (The White House, 2025b)—was motivated less by reconciliation and more by economic pragmatism. The broader policy pattern reflects competitive coexistence, a strategy aimed at limited engagement in low-risk sectors, paired with structural barriers in high-tech, defence-related, and critical materials domains.

In conclusion, the evolution from Trump’s first- to second-term decoupling strategies reflects a shift from reactive trade confrontation to an institutionalised form of economic statecraft. Both terms upheld economic nationalism under the “America First” doctrine, but the second term expanded beyond tariffs to include legal, bureaucratic, and regulatory tools such as export controls, investment bans, and entity lists. This broadened approach showcased greater interagency coordination and strategic planning, transforming decoupling into a sustained framework of economic containment aimed at limiting China’s technological rise and reinforcing U.S. dominance in global trade and innovation.

CHINA’S STRATEGIC RESPONSE TO U.S. DECOUPLING

The escalating U.S.-China rivalry in the semiconductor industry has prompted China to adopt a comprehensive strategy to address the challenges posed by U.S. decoupling. The Chinese government has implemented a range of measures, including the introduction of export controls and retaliatory sanctions, increasing investments in R&D, promoting technological self-sufficiency, bolstering the domestic semiconductor supply chain, finding ways to circumvent U.S. sanctions and export controls, and strengthening diplomatic initiatives and global collaborations.

Export Controls and Retaliatory Sanctions

In response to the U.S.’s entity list, China established its own “unreliable entities” list in 2019, embodying protectionist measures aligned with neomercantilist principles. This list targets foreign companies, organisations, and individuals that fail to adhere to market rules, breach contracts, block or cut off supplies for non-commercial reasons, or cause significant harm to the legitimate interests of Chinese companies. For instance, in 2023, China’s Ministry of Commerce (MOFCOM) added two U.S. defense companies, Lockheed Martin Corporation and Raytheon Missiles & Defense, to the list in retaliation for their supply of arms to Taiwan. MOFCOM stated that these companies were included to safeguard national sovereignty, security, and development interests. In April 2025, MOFCOM placed 16 American companies on the export control list and 11 on the unreliable entities list. The companies placed on the export control list included American Photonics, Novotech, Inc., Echodyne, and Firestorm Labs, Inc., all of which produced advanced technologies with potential (or explicit) military applications. Meanwhile, the six companies on the unreliable entities list included Shield AI, Inc., Sierra Nevada Corporation, Cyberlux Corporation, and Hudson Technologies Co.

China also implemented export restrictions under its Export Control Law, which was introduced in 2020. This law allowed the government to restrict exports of specific goods to protect national security, meet international obligations such as non-proliferation, and regulate export controls more effectively. In August 2023, China’s Ministry of Commerce (MOFCOM) imposed export restrictions on 14 gallium

and germanium products, which are crucial metals used in chip production and other electronic components. In April 2025, MOFCOM expanded export controls of rare earth materials, technologies and dual-use items, citing the need to protect national security and strategic interests. This decision added an additional five rare earth elements (REEs) to the control list, meaning export controls were now in place on 12 of the 17 REEs. Moreover, MOFCOM detailed additional export restrictions on 13 types of rare earth input materials (elements, alloys and oxides) of Chinese origin, as well as four types of rare earth permanent magnet materials and seven types of rare earth sputtering target materials.

Beyond critical minerals, China also announced export controls on various drone-related components, including drone engines, lasers, communication equipment, and anti-drone systems in September 2023. Notably, more than 50 percent of the drones sold in the U.S. are manufactured by the Chinese company DJI, which is also the most popular brand used by public safety agencies. New export controls were also announced in October 2025 on a broad range of lithium-ion battery products, including rechargeable batteries and cathode material-related items, as well as equipment for their manufacturing. Additionally, China's restrictions on the use of iPhones by central government employees have been extended to local governments and state-owned enterprises. Since around 2020, central ministries and agencies have limited the use of foreign-made products for official business, and these restrictions have been gradually expanded to include employees of local governments and state-owned companies since August 2023.

In response to the U.S. and EU sanctions related to trade and technology on Hong Kong and Xinjiang, China enacted the Anti-Foreign Sanctions Law in 2021. The law allows China to place individuals or entities that participate in or enforce discriminatory actions against Chinese citizens or entities on an anti-foreign sanctions list. Those listed may face entry bans to China, expulsion from the country, or the freezing, seizure, or detention of their assets within China. Additionally, Chinese authorities can impose countermeasures on individuals or organisations linked to those blacklisted. In July 2021, China imposed sanctions on seven American individuals and entities, including former Commerce Secretary Wilbur Ross, in retaliation for the U.S. sanctions on seven Chinese officials in Hong Kong. This marked the first use of China's new law for counter-sanctions. In December 2021, China also sanctioned four members of a U.S. government commission on religious freedom in response to the U.S. sanctions on four Chinese officials over alleged human rights abuses in Xinjiang.

In conclusion, China's export controls and retaliatory sanctions represent a strategic assertion of economic sovereignty grounded in neomercantilist logic. Through mechanisms such as the unreliable entities list, the Export Control Law, and the Anti-Foreign Sanctions Law, Beijing seeks to safeguard national security, protect critical technologies, and counter external economic pressure.

Investment in Indigenous Semiconductor R&D

A key aspect of China's strategy is its substantial investment in research and development (R&D) to build a strong domestic semiconductor ecosystem, reflecting a neomercantilist approach rooted in state-driven industrial policy. The Chinese government has designated semiconductors as a strategic priority under its broader "Made in China 2025" initiative and the 14th Five-Year Plan (FYP) (2021–2025), which emphasises reducing reliance on U.S.-dominated supply chains. This marks a shift from the 13th FYP, which focused primarily on increasing domestic chip production, to a broader goal of indigenizing the entire supply chain. These efforts highlight the importance of minimizing dependence on foreign technologies, while advancing indigenous capabilities in semiconductor design, manufacturing, and packaging.

China's semiconductor strategy heavily relies on the National Integrated Circuit (IC) Industry Investment Fund, commonly known as the "Big Fund". Established in 2014 and replenished in subsequent years, this state-backed fund has channelled billions of dollars into supporting domestic semiconductor companies and research institutions. Its objectives span the entire semiconductor value chain, including R&D, manufacturing, and talent development. By the end of 2018, the Big Fund had completed its first phase of investments, allocating RMB104.7 billion across various segments, namely IC design (19.7 percent), IC fabrication (47.8 percent), packaging and testing (11 percent), semiconductor materials (1.4 percent), semiconductor equipment (1.2 percent), and the broader industry ecosystem (19 percent). Key beneficiaries of the fund include Tsinghua Unigroup (RMB10 billion) for IC design and manufacturing, Yangtze Memory Technologies Co. (YMTC) (RMB19 billion) for memory chip production, SMIC (RMB21 billion) for IC foundry, and Jiangsu Changjiang Electronics Technology (JCET) (RMB4.6 billion) for IC packaging and testing (Li, 2021).

The second phase of the Big Fund, launched in 2019 with RMB204 billion, focused on specialised areas of the supply chain, including capital equipment and EDA (Electronic Design Automation) tools, particularly following Huawei's placement on the Entity List. In the EDA sector, the fund invested 20 times more in Giga-da than it had previously allocated to Huada Emphyrean during the first phase (Fuller, 2021). Unlike the broader distribution of funds in the first phase, the second tranche targeted funds more strategically. The third phase, initiated in 2024 with RMB47.5 billion, adopted a dual approach, supporting both the entire semiconductor supply chain and critical priority areas. On one hand, it fostered growth in design, manufacturing, packaging, testing, equipment, and materials, ensuring that progress in one segment would drive advancements in others. On the other hand, it has addressed critical bottlenecks that have impeded progress, such as the development of large semiconductor manufacturing plants and essential components like high-bandwidth memory (HBM). Additionally, the fund prioritises advanced chip technologies essential for artificial intelligence applications.

A key outcome of China's R&D investments has been the rise of "little giants", small and medium-sized private enterprises cultivated under the 14th FYP to lead in advanced technology sectors. Unlike large, "too big to fail" private firms, these industrial champions occupy niche and often critical roles in the global supply chain for specialised products. This emphasis on fostering private-sector "little giants" and industrial champions represents a shift from Beijing's traditional strategy of relying on the state sector and a handful of private conglomerates to drive growth and technological advancement. In recent years, particularly following the COVID-19 pandemic, greater attention has been directed toward micro-private enterprises and small firms focused on technology and advanced manufacturing. By identifying and supporting these "little giants" and industrial champions, Beijing aims to accelerate its push for technological self-sufficiency while strengthening the private economy.

The Ministry of Industry and Information Technology (MIIT) has identified 12,000 "little giants" across China, focusing on sectors such as advanced materials, semiconductor components, new energy and battery ingredients, pharmaceuticals, and life sciences (Naughton, 2024). To qualify, companies must achieve a compound annual revenue growth of at least five percent. Additional criteria include the number of patents awarded, domestic and international market shares, R&D expenditure, and the ability of their products to serve as advanced substitutes for imported alternatives. In September 2024, MIIT announced the sixth batch of over 3,000 new "little giants", predominantly concentrated in the eastern economic powerhouses of Zhejiang, Jiangsu, and Guangdong provinces. The top cities hosting the largest numbers of these newly selected enterprises include Beijing, Shenzhen, Shanghai, Suzhou, and Ningbo.

China's investment in R&D has also fueled the growth of unicorns and gazelles—start-ups valued at over USD1 billion and USD100 million, respectively. Beijing is actively working to expand its stock of gazelles and foster the development of new unicorns. Currently, China has 369 unicorns with an average valuation of USD3.8 billion, with artificial intelligence (AI) and semiconductor firms dominating the list. However, China still trails the U.S. in the size of its unicorn cluster. Of the global total of 1,453 unicorns, the U.S. hosts over 700, compared to 340 in China. In 2023, China added 56 new unicorns, a decline from 74 in 2022 (Chen, 2024). Between 2015 and 2018, China emerged as a hotspot for unicorns, driven by its large market and diverse application scenarios. However, since 2018, factors such as the U.S.-China trade war, escalating geopolitical tensions, Western tech containment measures, and decoupling strategies have slowed the growth of Chinese unicorns.

China has overtaken the U.S. in generative artificial intelligence (GenAI) patent filings, recording six times as many patents between 2014 and 2023. According to the World Intellectual Property Organisation (2024), China filed 38,210 GenAI patents, accounting for roughly 70 percent of the 54,000 patents submitted globally over the past decade. The U.S. ranked second with 6,276 filings, followed by South Korea, Japan, and India, which had the highest average annual growth rate in patent filings at 56 percent. The intense competition in AI innovation has driven Chinese companies to become dominant players, with six of the top 10 GenAI patent applicants hailing from China. These included Tencent Holdings, Alibaba Group, ByteDance, Baidu, Ping An Insurance, and the Chinese Academy of Sciences. Shenzhen-based Tencent led the global rankings with 2,074 patent filings. Baidu, Alibaba, and ByteDance ranked 3rd, 6th, and 9th with 1,234, 571, and 418 filings, respectively. Other top applicants included U.S.-based companies such as International Business Machines (IBM), Alphabet, and Microsoft, alongside South Korea's Samsung Electronics.

In conclusion, China's vast investment in indigenous semiconductor R&D demonstrates a long-term, state-led commitment to achieving technological self-reliance and reducing dependence on foreign supply chains. Through strategic initiatives like the Made in China 2025 plan, successive Five-Year Plans, and the multibillion-yuan Big Fund, Beijing has built a robust ecosystem encompassing chip design, manufacturing, packaging, and materials. The rise of "little giants," unicorns, and AI-driven innovation highlights the dynamism of China's private sector in advancing national objectives.

Promoting Technological Self-Sufficiency

In addition to supporting its "little giants," gazelles, and unicorns, China has embraced a strategic vision rooted in neomercantilism, focusing on achieving technological self-sufficiency. This includes efforts to develop a robust software industry to support IC design. At this stage, Beijing-based Huada Epyrean, a Chinese EDA company, offers toolsets that cover the complete design flow for IC chips (Fuller, 2021). However, most Chinese design houses, including Huawei's HiSilicon, still rely heavily on EDA software from the following three dominant American firms: Synopsys, Cadence, and Mentor Graphics (Li, 2021; Grimes & Du, 2024). These U.S.-based companies controlled 73 percent of the global EDA market in 2018 (Fuller, 2021), underscoring their stranglehold on the industry. By contrast, Chinese EDA vendors accounted for just 10 percent of China's domestic EDA market as of 2020 (Lee, 2024), highlighting the significant gap China must close to reduce reliance on foreign technology.

In the realm of intellectual property (IP), an area where China remains heavily dependent on foreign technology (Grimes & Du, 2024), Chinese companies are increasingly investing in alternative chip design architectures to bypass restrictions on traditional x86 and ARM-based designs (Li, 2021). Alibaba's Pingtougou (T-Head) subsidiary, Huawei's HiSilicon, and Tencent have developed processors

based on RISC-V, an open-source architecture not subject to the same export controls as proprietary designs. Companies like T-Head, Xiangshan, and ByteDance are all working on developing RISC-V chips in-house. HiSilicon has even released its first RISC-V board for Harmony OS developers. The Chinese government has also established a consortium, the Beijing Open Source Chip Research Institute, to develop RISC-V, an open-source chip architecture. It has produced “Xiangshan”, a high-performance RISC-V processor designed to compete with SoftBank-owned Arm’s IP and promote the growth of China’s domestic chip design market. However, RISC-V chips have yet to see widespread adoption, even by the companies that developed them. Alibaba continues to rely primarily on U.S.-designed chips for its cloud computing business (Lee, 2024).

In response to the U.S. restrictions on advanced general-purpose chips, Chinese tech companies have increasingly focused on developing specialised chips tailored for artificial intelligence (AI) and machine learning applications (Grimes & Du, 2024). To reduce reliance on U.S.-made GPUs, such as those from NVIDIA and AMD, Huawei has emerged as China’s leading AI chip producer. The company is currently testing its latest AI chip, the 910C, an upgraded version of the 910B, with server companies. Huawei has been working to fill the gap left by NVIDIA after the U.S. banned the company from shipping its most advanced GPUs to China. Huawei’s Ascend 910B chips, which it claims rival NVIDIA’s popular A100 chips, have become a top alternative in several industries across the country. Other domestic AI chip manufacturers include Kunpeng-920 (7 nm), Baidu’s Kunlun Gen 2 (7 nm), Alibaba’s T-head (12 nm), Tencent’s Zixiao (12 nm), and Taishan’s V120 (7 nm). These homegrown solutions are helping China build its AI chip capabilities while reducing dependency on foreign technology.

In terms of chip applications, state-owned carrier China Telecom has developed two large language models, both of which were trained entirely on domestically produced AI chips. SenseTime’s next-generation AI Data Center (AIDC) in Shanghai is outfitted with chips from all major domestic manufacturers, including Huawei and Biren Technology. SenseTime’s edge lies in providing both AI infrastructure, through its SenseCore cloud service, and the models that run on that infrastructure. iFlytek’s Spark large language model was trained entirely on Huawei’s domestic and self-controlled platform. Infinigence offers on-demand computing powered by chips from a variety of brands, including Nvidia, AMD, Huawei Technologies, Cambricon, Iluvatar Corex, and Moore Threads, through its cloud platform Infini AI. This platform integrates 10 different chips and has been used by prominent Chinese AI startups such as Zhipu AI and MiniMax to develop models and applications.

Despite signs of progress in adopting domestically produced chips and the government’s push for faster integration, foreign chips continue to dominate in China. Huawei remains far behind Nvidia, holding around 10 percent of the Chinese market, while Nvidia controls nearly 90 percent (Zhou et al., 2021). In 2020, U.S. firms alone accounted for nearly 50 percent of global semiconductor sector revenues, underscoring the dominance of U.S. companies in chip design, which makes up about 50 percent of the sector’s total value added. Chinese companies’ market share was around five percent (Lee, 2024). While the Chinese government has urged companies to rely more on domestic chips, Nvidia continues to receive unexpectedly high orders for its H20 chips, which are less powerful, on a monthly basis. In fact, Nvidia is projected to deliver over one million H20 GPUs in China in 2024, generating approximately USD12 billion in sales (Bradshaw and McMorrow, 2024).

In conclusion, China’s pursuit of technological self-sufficiency is reflected in its promotion of RISC-V architecture, expansion of EDA tool development, and enhancement of domestic chip production and applications—demonstrating a comprehensive push toward autonomy. Nonetheless, continued reliance on U.S. technologies, especially in areas such as EDA and GPUs, highlights the scale of the obstacles China faces. Overall, the trajectory indicates gradual but consistent progress.

Strengthening the Domestic Semiconductor Supply Chain

China's strategy also focuses on strengthening its domestic semiconductor supply chain to reduce vulnerabilities exposed by U.S. decoupling, in line with the neomercantilist goal of achieving technological self-sufficiency. This approach includes efforts to develop local capabilities in semiconductor equipment manufacturing, raw materials production, and fabrication. To address its reliance on foreign semiconductor manufacturing equipment, China invested in domestic companies that produce key tools like lithography machines, etching equipment, and other critical manufacturing devices. Among these, Shanghai Micro Electronics Equipment (SMEE) is working on developing lithography machines capable of fabricating chips at more advanced nodes (Lee, 2024). Currently, SMEE produces lithography machines for older 90-nm processes (Li, 2021). However, the company has made some progress, recently filing a patent for extreme ultraviolet (EUV) lithography equipment. SMEE plans to begin delivering equipment capable of 28 nm chipmaking, though this is still significantly behind the industry's leading-edge 2 to 3 nm processes.

China has made significant efforts to expand its domestic semiconductor fabrication capacity, with state-backed companies like SMIC taking the lead. While U.S. restrictions have limited SMIC's access to advanced equipment for nodes smaller than 10 nm, the company has made strides in developing "legacy chips" – older-generation semiconductors made using 28-nm or larger etching technology, which are commonly used in automobiles and household appliances. SMIC remains the only foundry in China capable of processing 7 nm chips, utilising existing equipment from ASML (Lee, 2024). Driven by strong domestic demand for legacy chips, SMIC saw its third-quarter revenue increase by 34 percent from 2023, reaching USD2.17 billion. The company's net profit for the quarter rose 58.3 percent to USD148.8 million. Meanwhile, Hua Hong Semiconductor, another Chinese producer of legacy chips, experienced a 7.4 percent decline in third-quarter revenue, which dropped to USD523.6 million due to a decrease in the average selling price of its products. However, its net profit surged by 222 percent to USD44.8 million (Pan, 2024b).

On the other hand, Yangtze Memory Technologies Co. (YMTC) concentrated on NAND flash memory production, with the goal of becoming a global player in the memory market. By 2018, YMTC began mass-producing 32-layer 3D NAND memory, and in 2020, it introduced its own 128-layer 3D flash memory (Li, 2021). The company has made strides in chip-design architecture, with its 512-Gb triple-level cell chip, featuring 160 active layers, reducing the bit-density gap with global industry leaders. Semiconductor manufacturing also relies on a variety of raw materials, such as silicon wafers, specialty gases, and photoresists. In this aspect, China has made it a priority to develop local suppliers for these critical materials to reduce its reliance on imports. Naura Technology has emerged as a key producer of etching equipment, positioning itself against major international competitors such as the U.S.-based Applied Materials Inc. and Lam Research Corp., as well as Japan's Tokyo Electron Ltd. Nevertheless, Naura's most advanced etching systems currently support only 55 nm and 28 nm chip production technologies, which remain far behind the cutting-edge capabilities of global industry leaders. The company also produces deposition machines, which apply chemicals and gases to silicon wafers throughout the chipmaking process, servicing the 14 nm to 28 nm process nodes.

Advanced Micro-Fabrication Equipment Inc. (AMEC) also manufactures etching equipment, which is used to remove excess material from the surface of silicon wafers. Some of its machines have been integrated into production lines for chips using as advanced as 5 nm technology, making it closer technologically to competing with industry giants like Lam Research and Applied Materials. Beijing E-Town Semiconductor Technology Co., Ltd. (BEST) produces degumming equipment to remove

photoresist chemicals during the lithography process, as well as etching machines. ACM Research Inc. (ACM) designs wafer cleaning equipment, competing with companies such as Lam Research, Tokyo Electron, Japan's Screen Holdings Co. Ltd, and South Korea's Mujin Electronics Co. Ltd. In terms of semiconductor materials, Shanghai-based Zing Semiconductor Corporation (ZingSemi), a leading Chinese silicon wafer producer, launched China's first domestically made 12-inch silicon wafers in 2018, ending the country's full reliance on imported 12-inch wafers for IC fabrication (Li, 2021).

Despite these advancements, China remains reliant on global leaders in semiconductor technology. In 2023, only 1.2 percent of the lithography systems used by Chinese foundries were sourced locally. In the second quarter of 2023, ASML's shipments to mainland China amounted to USD2.5 billion, nearly half of its total global system sales, indicating China's ongoing dependence on ASML tools for legacy nodes not subject to U.S. sanctions (Pan, 2024a). Chinese companies have heavily invested in DUV lithography equipment from ASML, as SMEE, China's lithography leader, still lags behind ASML in producing reliable lithography gear for processes below 28 nm at scale. In terms of new fabrication capacity, China's IC production remains relatively small, making up 16.7 percent of the nation's USD186.5 billion IC market in 2021, up from 12.7 percent in 2011. Out of the USD31.2 billion worth of ICs manufactured in China in 2021, Chinese companies produced USD12.3 billion (39.4 percent), accounting for just 6.6 percent of the domestic IC market. Foreign companies like TSMC, SK Hynix, Samsung, Intel, and UMC, which operate IC wafer fabs in China, contributed nearly 60 percent of the total production (IC Insights Research Bulletin, 2022).

In the expanding market for DRAM and NAND, foreign company fabs such as Samsung, SK Hynix, Intel, and UMC accounted for 93.4 percent of China's USD186.5 billion semiconductor market in 2021. China's leading memory firms, Yangtze Memory (YMTC) in NAND and ChangXin (CXMT) in DRAM, still trail market leaders by several generations and have heavily relied on South Korean engineers for expertise. The loss of these engineers due to U.S. sanctions is a significant factor hindering the further development of YMTC (Grimes & Du, 2024). Additionally, the local supply rates for ion implantation and inspection/metrology systems were just 1.4 percent and 2.4 percent, respectively. China's imports of ion implantation systems rose 20 percent year-on-year to USD1.3 billion in 2023 (Pan, 2024b). Chinese wafer fabs depend on U.S. firms like KLA and Applied Materials, as well as Japan's Hitachi, for metrology systems. Moreover, the quality of domestically produced semiconductor materials like silicon wafers and photoresists often fails to meet international standards, which affects the efficiency and yield of manufacturing processes.

In conclusion, substantial progress has been made in developing local capacity for equipment manufacturing, raw materials, and fabrication, with firms such as SMIC, YMTC, Naura, and AMEC advancing China's position in the global semiconductor landscape. Yet, the country remains deeply dependent on foreign technologies, particularly in lithography, metrology, and advanced chip design. While China's policy-driven investments have expanded domestic production and reduced certain vulnerabilities, achieving full self-sufficiency remains a long-term challenge.

Circumventing U.S. Sanctions and Export Controls

China has adopted various strategies to bypass U.S. sanctions and export controls, utilising both legitimate and controversial tactics to gain access to critical technologies. These approaches reflect a neomercantilist principle, aimed at securing critical technologies and being driven by a nationalistic desire to maintain competitiveness. As mentioned earlier, immediate responses to U.S. sanctions included stockpiling essential semiconductors and equipment, such as DUV lithography machines and

Nvidia chips. Chinese firms have proactively acquired advanced chips and manufacturing tools before export controls took effect, building strategic reserves to mitigate future restrictions (Fuller, 2021). Furthermore, Chinese companies have turned to indirect procurement channels, collaborating with third-party firms in countries that do not fully adhere to U.S. policies. This has allowed for continued, though limited, access to critical semiconductor components and equipment. A report from the Canadian research firm TechInsights revealed that Huawei Technologies' top AI chip, the Ascend 910B, incorporated integrated circuits produced by Taiwan Semiconductor Manufacturing Company (TSMC) (Haldane, 2024). This highlights potential loopholes in U.S. sanctions and underscores China's ongoing efforts to secure advanced foundry technologies.

Despite these efforts, the effectiveness of circumventing U.S. sanctions is limited and comes with significant risks. Relying on indirect procurement and grey market channels exposes Chinese firms to legal and reputational risks. The U.S. government has aggressively enforced export control regulations, imposing fines, sanctions, and criminal charges on companies and individuals found in violation of the sanctions. The U.S. fined New York-based GlobalFoundries, the world's third-largest contract chipmaker, USD500,000 for shipping chips without authorization to an affiliate of the blacklisted Chinese company, SMIC. GlobalFoundries shipped 74 shipments worth USD17.1 million to SJ Semiconductor, an SMIC affiliate, without obtaining the necessary license (Reuters, 2024). Both SMIC and SJ Semiconductor were added to the U.S. Entity List in 2020 due to alleged links to China's military-industrial complex. This has created an uncertain environment for firms considering such strategies, as they risk facing severe consequences.

Furthermore, the long-term effectiveness of circumventing sanctions is uncertain. As the U.S. continues to refine and expand its export control measures, options for indirect procurement are gradually being restricted. Enhanced cooperation between the U.S., EU, and key Asian allies has further limited China's access to critical technologies. This development prompted TSMC to halt shipments to an unnamed customer after one of its chips supplied to the client was found in a Huawei product. The company also suspended shipments to two other chip developers suspected of attempting to bypass U.S. export controls on Huawei. Additionally, Washington has intensified its export control enforcement in Taiwan, Japan, and South Korea, including the stationing of a regional export control officer in Taiwan for the first time. This is also aimed at overseeing Japan and South Korea as well (Cheng & Li, 2024).

In addition to circumventing sanctions, Chinese companies are actively acquiring technology and talent from around the globe across the entire spectrum of IC design, production, and related machinery. Three recently established Chinese companies—X-Epic, Shanghai Hejian Industrial Software, and Amedac—have hired industry veterans from Synopsys and Cadence Design Systems to develop domestically produced electronic design automation (EDA) tools. Taiwanese authorities have also accused eight mainland Chinese tech companies, including Naura, iCommsemi, Shanghai New Vision Microelectronics, Nanjing Aviacomm Semiconductor, Emotibot, Tongfang, Chengdu Analog Circuit Technology, and Hestia Power, of illegally recruiting talent from Taiwan (Wang, 2021).

In conclusion, China's efforts to circumvent U.S. sanctions and export controls reflect a strategic determination to preserve technological autonomy and sustain industrial competitiveness under external pressure. Guided by neomercantilist logic, these actions have combined strategies in proactive stockpiling, indirect procurement, and aggressive talent and technology acquisition. However, such measures expose Chinese firms to mounting legal, reputational, and diplomatic risks as Washington strengthens its enforcement measures, and allies coordinate export restrictions.

Diplomatic Efforts and Global Collaboration

China's response to U.S. decoupling extends beyond technology and economics, incorporating diplomacy and global collaboration to protect its economic sovereignty. Through multilateral forums like the WTO and United Nations, China has argued that U.S. unilateral tariff and export controls violate free trade principles and hinder global technological progress. It has called for a fair, non-discriminatory trade environment, emphasising the harmful effects of unilateral sanctions on the semiconductor supply chain. At the 2024 APEC summit in Peru, Xi Jinping stressed the importance of global cooperation, asserting that economic globalisation is irreversible and warning against isolationist policies that would impede progress and mutual development.

Moreover, China has taken the lead in regional efforts to counter protectionism. The Shanghai Cooperation Organisation (SCO) condemned unilateral sanctions in October 2024, highlighting violations of WTO rules, especially as members Iran and Russia face trade restrictions. While smaller nations avoid trading with these states, major economies like China and India continue importing their energy. Through the Belt and Road Initiative (BRI), a USD1 trillion global infrastructure project, China has strengthened ties with emerging markets in Asia, Africa, and Latin America (Zhang, 2024). With more than 200 agreements concluded across five continents, the Belt and Road Initiative (BRI) seeks to strengthen global connectivity and build partnerships through policy coordination, trade, finance, infrastructure development, and people-to-people exchanges (Khalid & Mat, 2024; Abdullah et al., 2025). China has also strengthened ties with key semiconductor players like South Korea and Japan through diplomacy and economic incentives, urging them to maintain trade relations and resist U.S. decoupling pressures. At the ninth Trilateral Summit in May 2024—the first in over four years—Chinese Premier Li Qiang urged renewed China-Japan-South Korea cooperation to promote regional prosperity through enhanced industrial and supply chain connectivity, accelerated free trade negotiations, and the establishment of an Innovation Cooperation Center in China.

China's diplomatic efforts with key semiconductor players have yielded mixed outcomes, with South Korea responding more favourably than Japan. South Korea, a member of the Chip 4 Alliance, has been less proactive in semiconductor decoupling due to its deep integration with China's supply chain. In 2022, over 70 percent of South Korea's memory chip exports were sent to China and Hong Kong, while more than 75 percent of its raw materials were sourced from China—far higher than Japan's and Taiwan's levels (Moriyasu et al., 2024). Major South Korean companies like Samsung and SK Hynix maintain significant manufacturing operations in China, relying on the country as both a production base and market. Consequently, South Korea has prioritized securing U.S. waivers to continue sourcing chip equipment for its Chinese factories. Japan, by contrast, has pursued a more assertive strategy to reclaim global semiconductor competitiveness. In June 2021, Japan's Ministry of Economy, Trade, and Industry (METI) introduced a strategy emphasising domestic manufacturing, advanced semiconductor design for post-5G systems, and international collaboration on critical technologies. Japan allocated significant funds, including USD1.5 billion for post-5G and USD15 billion for green innovations.

In conclusion, China's diplomatic outreach and global collaboration form a crucial dimension of its strategy to counter U.S. decoupling. By leveraging multilateral platforms such as the WTO, UN, SCO, and BRI, China positions itself as a defender of globalisation, free trade, and equitable technological development. Its engagement with emerging economies and key semiconductor partners underscores a pragmatic mix of coalition-building and regional diplomacy. While partnerships with nations like South Korea show promise, Japan's alignment with U.S. strategies reveals persistent geopolitical limits.

CONCLUSION

From a neomercantilist perspective, this article arrives at three central conclusions that underscore the fusion of economic statecraft and geopolitical competition in the U.S.–China semiconductor face-off. First, Trump’s first and second-term decoupling strategies reflect a distinctly neomercantilist logic in which economic instruments—particularly tariffs, trade barriers, and technology controls—serve as extensions of state power. The shift from *ad hoc* protectionism to an institutionalised, legal-bureaucratic framework illustrates the consolidation of economic nationalism into a coherent strategy aimed at preserving U.S. technological primacy and industrial leadership. By embedding export controls, investment restrictions, and coalition-based coordination into formal policy architecture, Washington has effectively weaponized interdependence, transforming economic competition into a mechanism of geopolitical containment.

Second, China’s strategic response mirrors the same neomercantilist logic, wherein the state mobilizes national resources to defend its industrial sovereignty and reduce external vulnerabilities. Beijing’s countermeasures—including export restrictions, retaliatory sanctions, massive R&D investments, and the drive for technological self-sufficiency—reflect a state-led developmentalist approach rooted in security-oriented economic governance. Initiatives such as the Big Fund demonstrate how the Chinese state uses financial and industrial policy to cultivate indigenous innovation, foster “little giants,” and elevate domestic firms within critical technology sectors. These efforts not only aim to offset U.S. coercion, but also to reconstruct global production hierarchies in favor of China’s long-term strategic autonomy.

Third, the effectiveness of China’s measures reveals both the promise and limits of neomercantilist statecraft in a globalised technological ecosystem. While export restrictions and counter-sanctions have constrained U.S. access to key materials and markets, structural weaknesses persist in China’s semiconductor ecosystem, particularly in high-end fabrication, lithography, and software design. The state’s interventionist approach has succeeded in nurturing specialized capabilities in AI-oriented chips and strengthening the domestic innovation base, yet dependence on foreign inputs and technological chokepoints remains a significant vulnerability. Meanwhile, China’s diplomatic outreach through the BRI and partnerships with the Global South underscore its attempt to reconfigure global economic alliances as a counterweight to Western-led coalitions. Nevertheless, cooperation with advanced semiconductor nations such as Japan and South Korea remains circumscribed by geopolitical caution and supply chain interdependence.

Overall, through a neomercantilist lens, the U.S.–China semiconductor rivalry embodies the reassertion of state control over markets in pursuit of strategic advantage. Both powers deploy industrial policy, trade instruments, and international alliances not as ends of liberal economic exchange, but as tools of national security and global influence. These dynamics underscore the broader transformation of globalization into a contested geopolitical arena—one where economic interdependence is no longer a source of mutual gain, but a weaponized domain of power competition.

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