MADE IN CHINA: The Evolution of Chinese Manufacturers, Goods, and Services in the Face of Trade Tariffs and Sanctions

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Introduction

The trade relationship between the United States and China has been characterized by a persistent imbalance, with the U.S. trade deficit reaching $383 billion in 2023. This disparity, driven by the significant volume of imports from China relative to U.S. exports, has prompted the United States to employ sanctions and tariffs as tools to curtail China's growing global influence. A key moment in this ongoing conflict was the U.S.-China trade war, during which the U.S. imposed tariffs on $360 billion worth of Chinese goods. Additionally, the sanctioning of Huawei in 2019, which effectively restricted its access to critical semiconductor technology, led to a sharp decline in its global smartphone market share, from 18% in 2020 to under 3% by 2022. This strategic use of economic measures has not been limited to the United States. In 2023, the European Union introduced a 27.5% tariff on Chinese electric vehicles, specifically targeting firms like BYD, a company that has reportedly benefitted from approximately $86 billion in state subsidies. Similarly, the United States has implemented restrictions on Chinese solar panel imports, which are valued at over $11 billion annually. These actions reflect a broader attempt by Western economies to restrain China's expansion in key global industries.

Despite these sanctions and trade barriers, Chinese exports remain resilient, particularly in industries such as semiconductor. In first 6 months of 2024, China's semiconductor exports increased by 21.2%, reaching $62 billion, as manufacturers successfully[1] *circumvented sanctions through third-party countries. Moreover, China continues to dominate the global solar panel market, producing over 80% of the world's supply, with exports in this sector growing by 35% in 2023. These examples suggest that Chinese manufacturers have developed mechanisms to mitigate the impact of sanctions, allowing for continued large-scale exports even in heavily sanctioned sectors.*

Therefore, this paper seeks to address two central questions: To what extent are Chinese manufacturers evading sanctions, tariffs, and other trade barriers? And, if such evasion is occurring, what mechanisms and strategies are employed by China and the Chinese Communist Party (CPC) to circumvent these economic constraints?

Behind States and Sanctions: The power game

[1] Grimm, D. (2024, June 12). China's chip exports are booming but may be nearing overcapacity, stoking fears of chip glut — SMIC revenues rise as… *Tom's Hardware*. https://www.tomshardware.com/tech-industry/chinas-chip-sector-is-growing-but-may-be-nearing-overcapacity-smic-revenues-rise-as-profits-fall

Post-2000s, The People's Republic of China (PRC) has been subjected to various sanctions dispensed by different regimes around the world. In 2020 alone, the state faced an influx of economic and diplomatic sanctions following the Covid-19 pandemic and human rights violation in the Xinjiang Province. However, to psychoanalyze states' demand for the use of such extreme measures, we must understand the key composition of sanctions and why certain states decide upon such transactions. As described by John J. Mearsheimer (2001), sanctions are an extension of "coercive strategy and economic tools designed to compel a state to alter its behavior by inflicting economic pain".[2] Although traditional forms of sanctions have remained limited to economic and fiscal tools, recent years have witnessed a rise in new forms of political, diplomatic, Travel ban, Asset freezing and arms embargo sanctions deployed by strong states in a feat of dispensing their hard power. Joseph Nye (2009) describes sanctions as "measures designed to hurt the economy or restrict the international engagement of a country to force a change in behavior".[3] Further, David Baldwin (1985) extends on this as an alteration in the 'cost-benefit analysis' by stronger countries to restrict participation of subject countries in international exchange.[4]

However, in the past decade alone sanctions have trespassed such paradigmatic definitions and morphed beyond them. The United States of America has at present imposed more than Seven Hundred and Sixty such active sanctions pertaining to diplomatic, economic and arms embargo disagreements on PRC. Sanctions come in different levels for starters. The US Department of Treasury (U.S. Department of the Treasury, n.d.) has listed all sanctions under four types: Individual, Entity, Aircraft, and Vessel, of which 72% are on entities and Chinese manufacturers.[5] On the contrary, the European Union (European Union, n.d.) has imposed only seven such sanctions on China of which four alone are related to Human Rights Violations and two to Cyber Security dilemma.[6] When former US President Donald Trump openly declared an Economic tug of war with China, the first step taken was to debar all U.S agencies from importing or using equipment, service and systems from Huawei, a Chinese tech giant. This was in 2018, a time when the US government had tight surveillance over Huawei due to alleged Espionage activities.[7] On paper, sanctions may seem unilateral with little to no direct effect of international diplomatic relations or the intent at flexing one state's strength to 'contain' economic growth, and global outreach or to enable the same of another. However, sanctions are actively used as multilateral tools and as an active 'checkpoint' of a states' political presence and hegemony over the world systems.

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[2] Mearsheimer, J. J. (2001). The tragedy of great power politics (p. 125). W.W. Norton & Company.

[3] Nye, J. S. (2009). Understanding international conflicts: An introduction to theory and history (7th ed., p. 85). Pearson.

[4] Baldwin, D. A. (1985). Economic statecraft (p. 214). Princeton University Press.

[5] U.S. Department of the Treasury. (n.d.). Sanctions list search. Office of Foreign Assets Control. https://sanctionssearch.ofac.treas.gov/

[6] European Union. (n.d.). EU sanctions map. https://www.sanctionsmap.eu/#/main

[7] McBride, J., & Chatzky, A. (2023, August 15). China's Huawei and its threat to U.S. national security. Council on Foreign Relations. https://www.cfr.org/backgrounder/chinas-huawei-threat-us-national-security

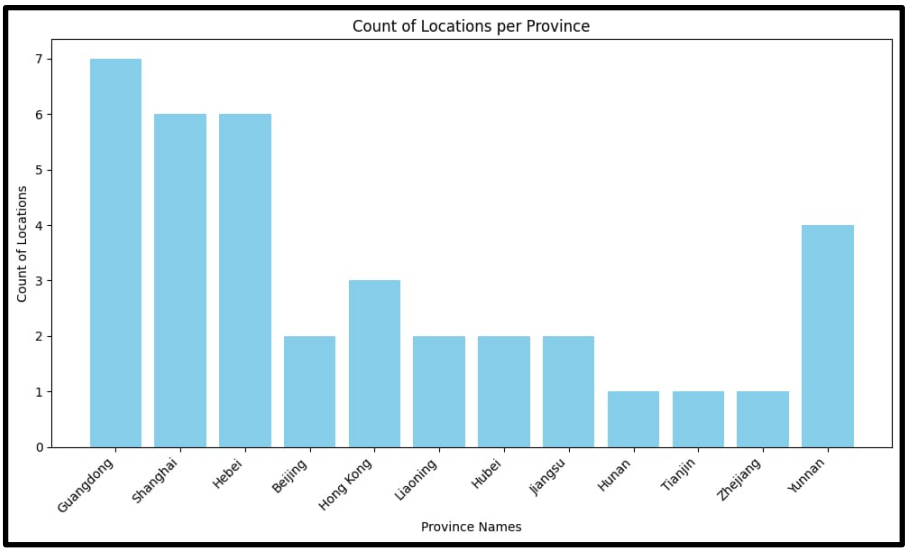

Figure 1.1: Ratio of sanctioned individuals shown as per province

American sanctions on China in this manner could be explained in terms of the former's efforts at keeping a 'check' on the latter's rapid industrial growth and booming economy. The pretense used by the US Government to bypass any such disagreement for sanctions against its UNSC co-member is on the lines of human rights violations, national defense and security dilemmas. However, this points towards a bigger fish in the sea: deployment of sanctions may be a direct acknowledgement of the US's growing economic inferiority against the rapid capturing of the trade and export market by the PRC in recent years. According to the latest export data released by The Observatory of Economic Complexity, Chinese products make up to 3.3 Trillion USD worth of exports in the market today. Although this figure suggests a 4.6% decline from 2022, the additional export numbers for Q2 of 2024 show a staggering flow of more than 300.56 Billion USD worth of exports to the international market.[8] China has also established itself as a strong contender against the hegemony of US goods by capturing 14.4% of the Merchandise exports and 6% of the services exports making it the number one exporter in the world.[9] However, the main reason behind such unprecedented growth has often been a subject of controversy.

Globalization and Military wars have often acted as a catalyst in the securitization of trade flows. A very recent example of this could be the subsequent sanctioning of several Chinese defense manufacturers including Shino Electronics in Shenzhen in 2022 after its arms embargo and artillery export to Russia amidst Russia's war on Ukraine.[10] USA's concerns over Russia's growing affinity towards China could also indicate tensions in the already strained diplomatic relationship between the two. From Russia's standpoint however, this could mean a decrease in its dependency on Pyongyang. US sanction in this case indicates a direct relationship between a tough political relationship with Russia and economic tussle with China. Additionally, NATO disagreements over China's arms supply to Russia have caught headlines recently. Sanctions hence, are oftentimes multilateral, pervasive and trespass the subject state's political and

[8] Observatory of Economic Complexity. (n.d.). China. https://oec.world/en/profile/country/chn
[9] See Footnote 7.
[10] U.S. Department of the Treasury. (2023, August 23). Treasury sanctions Chinese individuals and entities for involvement in the suppression of ethnic minorities in China. https://home.treasury.gov/news/press-releases/jy1978

economic environment. This gives sanctions a very interesting facade. This chapter is therefore an attempt at deconstructing what kinds of sanctions are usually imposed on the PRC and why.

Huawei, established in 1987 in Shenzhen emerged as a global tech powerhouse in the late 2010s when their world wide sales exceeded 92.5 Billion USD in 2017. A year later, the US Department of Treasury Office of Foreign Assets Control had listed Huawei in its Specially Designated Nationals (SDN) list legitimizing all the previously imposed sanctions on it. It was done with the goal of suspending any international exchange between the tech giant and US as well as US-allied nations. The stance taken by the US was amusing: Huawei's alleged aids to cyber espionage activities of the Chinese government was an attack on the national security of the US. The claims were denied by the Communist Party of China and a laboratory was established by the CPC and the British officials to verify and audit its products.[11] In the turn of events, Huawei sued the US government over a military spending bill which restricted the US Ministry of Defence from purchasing any service or equipment from the company.[12] It is not completely false that the US market was in fact the biggest for Huawei phones and other technology services. And in the wake of strict sanctions, Huawei's yearly sales plunged by nealy 41% in 2020.[13] Following the Cyber security risks concerns, Huawei's presence in advancing 5G and Artificial Intelligence was looked down upon with much suspicion forcing the company out of the United States market. Global competition against Huawei had not stopped there. In 2020, only a year following allegations of corporate espionage and intellectual property rights violations, in an article published by The Diplomat, Huawei saw its biggest blow: allegations regarding its assistance in persecuting the Uyghurs into forced labor and concentration camps.[14] Huawei was now not only included in the SDN list of the US, but the European Union sanctions list under instances of Human rights Violation in Xinjiang Province. From a distance, the sanctions would seem purely diplomatic and tools to set back the growing cyber security threats. However, a year before sanctions were imposed, Huawei had announced a gross profit of 22% percent, a much higher number than the previous roundup. Huawei was also providing strong competition to the US tech company Oracle. In the first quarter of the same year, Huawei had established itself capturing almost 7% of the world's total smartphones sold. It is hence very apparent that sanctions on Huawei did not only come as a result of political and security transactions but a greater market and trade strategy. Diplomatic sanctions had now taken the shape of economic and asset freezing sanctions.

In another case study of Artificial intelligence research in China, patenting of technologies has become a sensitive topic on accounts of intellectual property rights infringement and patent theft. To dig deeper into this, we must look into the various ways Huawei and other tech companies of China have circumvented patent royalties. In 2017, CFO of Huawei Sabrina Meng Whenzhou was arrested by Canadian authorities following reports of creation of dummy companies with the sole purpose of helping Iran bypass US

[11] McCaskill, S. (2023, August 24). Huawei: US has no evidence for security claims. *TechRadar*. https://www.techradar.com/news/huawei-us-has-no-evidence-for-security-claims
[12] Huawei. (2019, March 6). Huawei sues the US government. *Huawei*. https://www.huawei.com/en/news/2019/3/Huawei-Sues-the-US-Government
[13] Kharpal, A. (2021, January 28). Huawei smartphone shipments plunge 41% in Q4 as US sanctions bite. *CNBC*. https://www.cnbc.com/2021/01/28/huawei-q4-smartphone-shipments-plunge-41percent-as-us-sanctions-bite.html
[14] Alton, D. (2020, February 5). Huawei's human rights record has been shamefully ignored. *The Diplomat*. https://thediplomat.com/2020/02/huaweis-human-rights-record-has-been-shamefully-ignored/

sanctions.[15] As a major telecommunication and tech service provider, Huawei has for years hired former engineers of major companies like Apple, Microsoft and IBM in an attempt to gain access to US technology. However, if we compare the number of patented technologies owned by China and USA each, Tencent, a Chinese multinational technology conglomerate tops the list with over 2000 active and owned patents. The list does not stop here; Chinese tech companies like Baidu, Pingan, Alibaba and ByteDance have more registered patents than all of Oracle, IBM, or Microsoft combined. Chinese companies take 7 spots for the top 10 most patent-owned companies in the world and this only invalidates claims of theft by the global west. However, there have been many instances of such, for example, in 2010, former Motorola engineer Shaowei Pan was convicted of selling wireless technology to Huawei under a shell company named Lemco which still operates to this day.[16] Huawei has since built an empire of wireless technology with a 31% share of the global market. Another case of Huawei's theft is Cisco's Source code, although the case was settled with Huawei removing the source code, the blatant use of patented technology by Chinese manufacturers has been a trend in the last decade.[17] Sanctions on technology imported from China have since been successful in pushing indigenous companies out of the spotlight however, while China remains the largest exporter of goods and services, USA remains its largest importer. This brings one important question to our attention: can we really deem sanctions successful and China's efforts at bypassing them unsuccessful?

Sanctions and Circumvention: The invisible route to China(Are Chinese Firms Bypassing Sanctions)

In her addressing speech at the Atlantic Council in April 2022, US State Secretary of Treasury Janet Yellen, made one point clear - "Going forward, it will be increasingly difficult to separate economic issues from broader considerations of national interest, including national security."[18] And to This has started a trend - almost every 'reason' to release sanctions is seen from the purview of a threat to National Security. This restricts the dynamic nature of why sanctions are imposed. Nonetheless, the overarching goal of the United States is to prevent China from achieving self-sufficiency in critical and high-end technologies. To achieve this, the US has continued to issue new export control, tariffs and economic sanctions aimed to hamper China's ability to build critical lead in Tech industries like Artificial intelligence, Quantum Technology and development of smaller, faster and more efficient chips. According to the U.S. Department of State's sanctions directory, between March 2019 and Aug 2023 about 30% of all the sanctioned entities were located in China with Russia following at 15%.[19] However, the legitimacy of sanctions is being challenged by an all-time high record in sanctions evasion practiced by China. Research indicates that despite stringent sanctions, Chinese firms were able to circumvent US export control, evade sanctions and access critical

[15] Chen, C. (2018, December 6). Huawei's CFO Sabrina Meng Wanzhou has been arrested in Canada. *South China Morning Post*. https://www.scmp.com/tech/tech-leaders-and-founders/article/2176654/huaweis-cfo-sabrina-meng-wanzhou-has-been-arrested

[16] Reuters. (2009, February 11). Motorola accuses China's Huawei in theft of secrets. *Reuters*. https://www.reuters.com/article/world/motorola-accuses-china-s-huawei-in-theft-of-secrets-idUS2023937612/

[17] WSJ. (2003, April 27). China's Huawei wins over the carriers. *The Wall Street Journal*. https://www.wsj.com/articles/SB10485560675556000

[18] U.S. Department of the Treasury. (2022, December 16). Treasury targets Chinese companies and individuals for their roles in human rights abuses. https://home.treasury.gov/news/press-releases/jy0714

[19] U.S. Department of State. (2023, August). Sanctions chart [PDF]. https://www.state.gov/wp-content/uploads/2023/08/MASTER-Sanctions-chart-508-Updates-Aug-2023.pdf

sensitive technologies. According to Moody's, sanctions evasion increased by 114% in 2023 compared to 2022, which itself saw a 71% increase over 2021.[20]

On this note, this chapter will focus on understanding whether Chinese firms are evading and bypassing sanctions imposed by the United States of America and other Western Countries and establish a close study of sanction violations patterns over the years and the efficacy and implications of economic sanctions as a policy tool.

The prominent example of sanction evasion is use of advanced Graphics Processing Units and high processing chips by the China Academy of Engineering Physics (CAEP), the country's leading state-run nuclear research center. Headquartered in remote Sichuan province, CAEP has been in the U.S. Entity Control List since 1997 due to its active role in the development and testing of nuclear weapons.[21] Publicly, China maintains a no-first-use policy, however private firms in China have enabled the most rapid expansion and platform diversification of China's nuclear arsenal in all of its history.[22] The research conducted at CAEP is directly integrated with China's military, making it a key player in advancing artificial intelligence and modern warfare capabilities of the Chinese armed forces. However, according to a recent investigation report by the Wall Street Journal, sanction efforts appear to have done very little to stop CAEP from obtaining US-made chips for research and use.[23] An examination of research papers published by CAEP over the past decade uncovered at least 34 references to the use of American semiconductor chips. More critically, in seven of these cases, the research conducted by CAEP has direct implications for maintaining and potentially expanding China's nuclear stockpile. CAEP has been particularly focused on obtaining Intel Xeon Gold and NVIDIA GeForce RTX chips, both of which are highly advanced 7nm and 14nm semiconductors.[24] This allows CAEP to access more computational power, training large datasets enabling them to perform more calculations simultaneously. This is one of the many examples of sanction breach performed by the Chinese manufacturers.

In another striking case, the startups (mostly AI-focused), researchers, gamers and even local government authorities in China have emerged as another sector regularly circumventing sanctions. Both China and US seek to maintain their lead and impede other's ability to develop large language models (LLMs) and autonomous AI agents. As one expert put it, "The United States is saying to China, 'AI technology is the future; we and our allies are going there—and you can't come"[25]. Starting year 2023 US has restricted sales

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[20] Moody's. (2023, August 24). Sanctions compliance: Sanctions evasion, increased enforcement, and evolving tactics. https://www.moodys.com/web/en/us/kyc/resources/insights/sanctions-compliance-sanctions-evasion-increased-enforcement-evolving-tactics.html

[21] WSJ. (2023, September 3). China's top nuclear weapons lab used American computer chips decades after ban. *The Wall Street Journal.* https://www.wsj.com/amp/articles/chinas-top-nuclear-weapons-lab-used-american-computer-chips-decades-after-ban-11674990320

[22] Brown, G. C. (2021, June). Understanding the risks and realities of China's nuclear forces. *Arms Control Association*. https://www.armscontrol.org/act/2021-06/features/understanding-risks-and-realities-chinas-nuclear-forces

[23] Shilov, A. (2023, January 30). Chinese nuclear lab uses Intel, Nvidia chips despite ban. *Tom's Hardware*. https://www.tomshardware.com/news/chinese-nuclear-lab-used-intel-and-nvidia-chips-despite-ban

[24] Farrell, N. (2023, January 31). China Academy of Engineering Physics runs on Intel and Nvidia chips. *Fudzilla*. https://www.fudzilla.com/news/56242-china-academy-of-engineering-physics-runs-on-intel-and-nvidia-chips

[25] Liu, Q. (2024, September 4). Chinese companies resort to repurposing Nvidia gaming chips for AI. *Financial Times*. https://www.ft.com/content/eeea7c4d-71f0-454f-bd16-b2445cb3bbb0

of chip making equipment and design software that can produce logical chips with non-planer transistors on 14nm or below. This is having significant effect since majority of Chinese logical chipmakers can barely produce and maintain equipment apart from SMIC and handful of other logical chipmakers. Recent investigation and various reports suggest otherwise that Chinese companies were able to evade sanctions and access Chips despite export restrictions.[26]

(Further sections under progress)

[26] Fist, T., Heim, L., & Schneider, J. (2023, June 21). China evades U.S. semiconductor sanctions. Foreign Policy. https://foreignpolicy.com/2023/06/21/china-united-states-semiconductor-chips-sanctions-evasion