

## CHAPTER 1

### Behind States and Sanctions: The power game (Tentative)

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".<sup>1</sup> 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".<sup>2</sup> 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.<sup>3</sup>

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.<sup>4</sup> 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.<sup>5</sup> 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.<sup>6</sup> 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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<sup>1</sup> Mearsheimer, J. J. (2001). *The tragedy of great power politics* (p. 125). W.W. Norton & Company.

<sup>2</sup> Nye, J. S. (2009). *Understanding international conflicts: An introduction to theory and history* (7th ed., p. 85). Pearson.

<sup>3</sup> Baldwin, D. A. (1985). *Economic statecraft* (p. 214). Princeton University Press.

<sup>4</sup> U.S. Department of the Treasury. (n.d.). Sanctions list search. Office of Foreign Assets Control. <https://sanctionssearch.ofac.treas.gov/>

<sup>5</sup> European Union. (n.d.). EU sanctions map. <https://www.sanctionsmap.eu/#/main>

<sup>6</sup> 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>

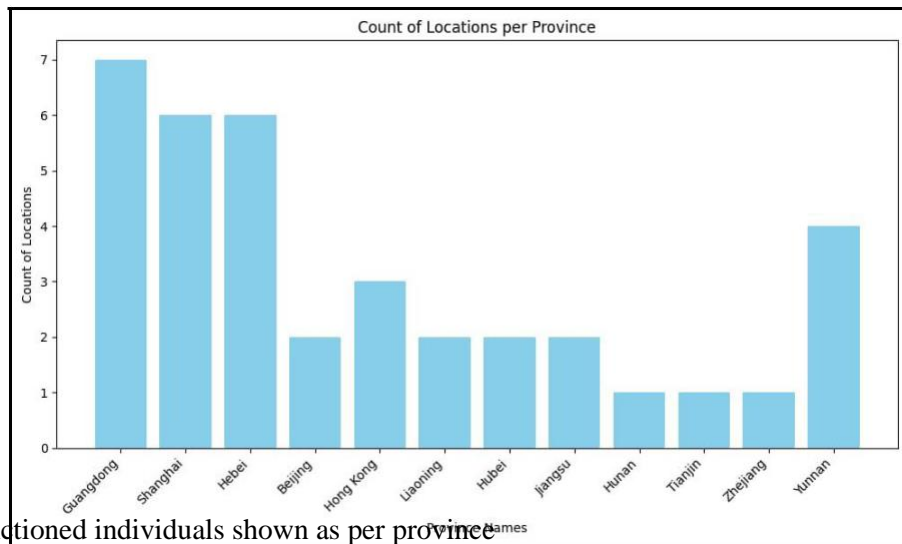


Figure 1.1: Ratio of sanctioned individuals shown as per province

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 defence 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.<sup>7</sup> 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.<sup>8</sup> 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 defence manufacturers including Shino Electronics in Shenzhen in 2022 after its arms embargo and artillery export to Russia amidst Russia's war on Ukraine.<sup>9</sup> 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

<sup>7</sup> Observatory of Economic Complexity. (n.d.). China. <https://oec.world/en/profile/country/chn>

<sup>8</sup> See Footnote 7.

<sup>9</sup> 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>

and 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.<sup>10</sup> 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.<sup>11</sup> 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 nearly 41% in 2020.<sup>12</sup> 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.<sup>13</sup> 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

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<sup>10</sup>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>

<sup>11</sup>Huawei. (2019, March 6). Huawei sues the US government. *Huawei*. <https://www.huawei.com/en/news/2019/3/Huawei-Sues-the-US-Government>

<sup>12</sup>Kharpal, A. (2021, January 28). Huawei smartphone shipments plunge 41% in Q4 as US sanctions bite. *CNBC*. <https://www.cnn.com/2021/01/28/huawei-q4-smartphone-shipments-plunge-41percent-as-us-sanctions-bite.html>

<sup>13</sup>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.<sup>14</sup> 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.<sup>15</sup> 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.<sup>16</sup> 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?

(Later parts of the chapter are in progress.)

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<sup>14</sup>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>

<sup>15</sup>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/>

<sup>16</sup>WSJ. (2003, April 27). China's Huawei wins over the carriers. *The Wall Street Journal*. <https://www.wsj.com/articles/SB10485560675556000>

## CHAPTER 2

### Are They Bypassing Sanctions? Sanctions and Circumvention: The invisible route to China (Tentative)

The previous chapter gave us a perspective on how Sanctions and tariffs have evolved over years to encompass the rugged political and economic terrain of China. However, to quote the US State Secretary of Treasury Janet Yellen, “Going forward, it will be increasingly difficult to separate economic issues from broader considerations of national interest, including national security.”<sup>17</sup> 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%.<sup>18</sup> 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 sensitive technologies. According to Moody's, sanctions evasion increased by 114% in 2023 compared to 2022, which itself saw a 71% increase over 2021.<sup>19</sup> 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. This can help future researchers establish a close study of sanction violations patterns over the years and the efficacy and implications of economic sanctions as a policy tool.

#### 2.1 Sanction Violation By State owned Enterprises

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 centre. 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.<sup>20</sup> Publicly, China maintains a no-first-use policy, however private firms in China have enabled the most

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<sup>17</sup>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>

<sup>18</sup>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>

<sup>19</sup>Moody's. (2023, August 24). Sanctions compliance: Sanctions evasion, increased enforcement, and evolving tactics. <https://www.moody's.com/web/en/us/kyc/resources/insights/sanctions-compliance-sanctions-evasion-increased-enforcement-evolving-tactics.html>

<sup>20</sup>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/articles/chinas-top-nuclear-weapons-lab-used-american-computer-chips-decades-after-ban-11674990320>

rapid expansion and platform diversification of China's nuclear arsenal in all of its history.<sup>21</sup> 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.<sup>22</sup> 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.<sup>23</sup> This allows CAEP to access more computational power, including generating algorithms, analysing large datasets enabling them to perform more calculations simultaneously.

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<sup>21</sup>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>

<sup>22</sup>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>

<sup>23</sup>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>

<sup>24</sup>Ye, J., Kirton, D., & Lin, C. (2023, June 21). Inside China's underground market for high-end Nvidia AI chips. Reuters. <https://www.reuters.com/technology/inside-chinas-underground-market-high-end-nvidia-ai-chips-2023-06-19>

<sup>25</sup>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>

<sup>26</sup>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>

## 2.2 Sanction Violation By Startups

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'".<sup>25</sup> Starting year 2023 US has restricted sales of advance chip making equipment and design software that can produce logical chips with non-planer transistors on 14nm or below. This has forced Chinese companies to source chips from homegrown buyers. But to the disappointment homegrown chips of Huawei, SMIC or Xiaomi are still in initial stage are unable to perform high precision tasks. ( they can currently produce only 14nm chips at mass which are three times less efficient when compared to smaller 5nm chips.)* With no clear alternative, AI startups and research centres in China are resorting to desperate moves and illicit ways to access high end NVIDIA chips. According to recent report in financial times AI companies like SenseTime<sup>27</sup>, iFlytek and AI-Galaxy<sup>28</sup> are stripping thousands of NVIDIA gaming graphics cards from their core components and install them in new circuit boards. While NVIDIA gaming chips provides high raw computing power they are not the right chips to perform high precision calculations which are must for training large language models. These workarounds, while not ideal, demonstrate China's determination to progress in the AI field despite export controls.

## 2.3 Sanction Violation by Universities

Collages and research institution are the backbone of innovation. But lesser known they are also at forefront and first to breach sanctions and doge export controls. a top aeronautics university located in Guangdong province near Industrial park-. Beihang University<sup>29</sup> has been caught using software's without licence approval. The university has been obtaining MATLAB and Adobe Creative Cloud software's using different means. Notably the collage has been in US sanction list from almost 20 years due to connection with Chinese Military and contribution to missile proliferation. However this is not the first instance, in 2012 courier giant FedEx, has been fined for violations by Export administration regulations for unlicensed export of flight simulation software to Beihang university.

One such more entity Sichuan University has sought access to OpenAI GPT-4 model by purchasing Microsoft OpenAI tokens. OpenAI GPT-4 has been restricted and banned from use in China. However, University was able to access AI chatbot and advance features released by OpenAI. Meanwhile, the university has been in US export control list since 2012 due to serve and deep involvement in nuclear activities of PLA army.

Another research firms USTC Suzhou Institute of Advance Research has released tender request for 8 NVIDIA A100 chips each rented by 500 cloud servers. Shenzhen University using AWS cloud services sought to access NVIDIA A100 and H100 chips for some unspecified projects. Even so USTC is on US Entity List the institute tender for chips and server has been fulfilled by some third-party providers.[\[30\]](#)

*"Eyebrows on fire" was how the Chinese Academy of Sciences computer science professor Bao Yungang described the loss of access to MATLAB for engineers. In a June 19 post on his microblog, Bao said there was no product that offered the same functionalities as MATLAB .Shen Zimo from China CNTC International Tendering Corporation*

2.5 Sanction Violation by Military Industrial Complex

2.4 Sanction Violation by Financial Banks

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<sup>27</sup>Wired. (2023, September 14). US chip sanctions kneecap China's tech industry.

*Wired*. <https://www.wired.com/story/us-chip-sanctions-kneecap-chinas-tech-industry/>

<sup>28</sup>Charlotte, T. (2023, September 6). Chinese institutions acquired Nvidia AI chips despite US export ban – report. <https://www.datacenterdynamics.com/en/news/chinese-institutions-acquired-nvidia-ai-chips-despite-us-export-ban-report/>

<sup>29</sup>Lew, L., & Lew, L. (2020, June 25). Another Chinese school dodges US software export controls, as Beihang University gets MATLAB engineering program. South China Morning Post. <https://www.scmp.com/news/china/diplomacy/article/3090615/more-eyebrows-fire-another-chinese-university-dodges-export>

<sup>30</sup>Financial, A. (2024, August 23). China using Microsoft, Amazon Cloud to beat AI chip sanctions. Asia Financial. <https://www.asiafinancial.com/china-using-microsoft-amazon-cloud-to-beat-ai-chip-sanctions>

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