Universitat Autònoma de Barcelona

Faculty of Political Science and Sociology

Bachelor's Dissertation

Executive Summary

Title: Geopolitics of Innovation: U.S.-China Technology Competition and Implications for Technology Governance

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Emerging technologies have increasingly become a key point of contention in U.S.-China relations. The U.S. regards technological leadership as a prerequisite for economic and military capabilities, and subsequently, its respective position in world politics as a Great Power (SWP, 2020). China has gone from being the hub for assembling high-tech products, to becoming a key player in cutting-edge technological innovation (Sun, 2019). Also, the disruptive characteristics of emerging technologies create new challenges especially because of their applications to military capabilities. In a globalized world where technologies permeate national boundaries, cross-border collaboration has a vital role in setting global standards in order to avoid regulatory discrepancies (Word Economic Forum, 2020).

Most of the literature surrounding the topic of the strategic rivalry between the U.S. and China has focused on diplomatic and territorial aspects. However, with the advance in technologies, competition for innovation became one of the most complex challenges in U.S.-China relations. Thus, the research focused on one research question and one sub-question. First, how has the United States responded to China's technological progress, and second, can technological competition hinder cooperation in the governance of emerging technologies?

The paper took into account Kennedy & Lim's (2018) theoretical approach to illustrate how a rising state's innovation activities have the potential to challenge a dominant state's strategic interests by generating *security* and *order externalities*. In the first case, the dominant state experiences a risk to its security environment as a result of the rising state's activities, and in the second, it experiences a threat to its preferred international order. These externalities form the link between technology and strategic competition. To answer the research question, two hypotheses were developed based on the model. First, China's innovation imperative generated negative security externalities for the United States, and second, China's innovation imperative generated negative order externalities for the United States.

To test the hypotheses, the paper followed a qualitative research approach through a review of primary sources, specifically, official U.S. government documents from the year 2017 to 2022. The document review covered commercial practices, domestic measures, and alliances. These documents were selected as they reflect U.S. foreign policy on China in the area of technology. The sub-question was approached by focusing the analysis on a case study of Lethal Autonomous Weapon Systems. This topic is a

representative case of a currently disputed subject in the area of governance, specifically how technologies are governed in practice within intergovernmental institutions and a technology that the U.S. regarded as important for national security relative to its relations with China. Therefore, it reflects how states perceive this technology for military use and their intentions in regulating them.

The analysis found that China's innovation activities generated security and order externalities which prompted a response from the U.S. As for security externalities, Chinese technological progress has been increasingly targeted as it challenges U.S. military leadership. The Biden administration increased or formed new alliances with a key focus on emerging technologies to contain China and further U.S. influence in the Indo-Pacific, securing a preferred technology ecosystem. The U.S. restricted investment in dual-use technologies, imposed tariffs on Chinese technology products, and tightened export controls to block access to advanced technologies.

Concerning order externalities, both Trump's and Biden's National Security Strategy documents reflect how China is regarded as an 'authoritarian state' that challenges U.S. interests and position on the global stage by using technology to accelerate its economic and military capabilities. Since the Trump administration, China has been accused of using measures that go against the rules-based order that the U.S. prefers, such as illegal trade practices, cyber theft, and coercive economic practices to acquire U.S. technology and intellectual property.

Regarding the case study, there have been several concerns raised on the topic of LAWS such as a lack of global consensus on the definition and regulation of autonomy in weapon systems, their compliance with International Humanitarian Law, and the trigger of a low-barrier arms race, among others. The U.S. considers autonomy a cornerstone of its military modernization plans and regards negotiations of a new international treaty on LAWS as premature. China seeks to dominate AI and autonomous technologies as laid out in its *Made in China 2025* plan and it has called for a ban on fully autonomous weapons but limited to use only, not development and production.

In conclusion, the U.S. responded to China's innovation activities by implementing a whole-of-government approach to slow down its progress in innovation. The theoretical model reflects how technology can be considered a locus of Great Power interaction, as the rising state's innovation activities could directly influence the strategic interests of the

dominant state. The case of LAWS was able to reflect the current and potential gaps that exist in the area of technology governance. If further negative security and order externalities arise, U.S.-China relations will increasingly exhibit characteristics of a classical security dilemma where each side's striving for greater security will ultimately generate more insecurity on both sides. If emerging technologies are seen primarily as a source of military capabilities and central to national security, regulation of such technologies can be to a great extent hindered.

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