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# ECONOMIC TIES AND TECH SPLITS: U.S.-CHINA RELATIONS

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## ABSTRACT

The U.S.-China relationship has long been characterized by economic interdependence and technological competition. This relationship has evolved significantly, particularly in recent years, as technological advancements have become a central battleground. The concept of “technological separation” has emerged as a significant determinant of China-U.S. relations. In order to gain an advantage in the bilateral strategic struggle, the United States has been actively seeking to sever its connections with China in the realm of developing technology. In contrast to conventional high technologies, emerging technologies possess several unclear ramifications, and the security challenges arising from these technologies have caused the United States to face the predicament of “insecurity.” Successive U.S. administrations saw “separation” as a strategic maneuver to tackle difficulties posed by developing technology and as a method to hinder China’s progress. The U.S. decision to separate technologically from China is driven by three main factors: national security concerns, ideological differences, and rivalry in the digital market. In order to achieve this objective, the United States has developed comprehensive strategies involving all branches of government and all sectors of society, with the goal of separating or disconnecting by using a mix of domestic and international policy instruments.

China, being the target of technological separation, firmly believes that the United States is responsible for this. The policy is a strategic miscalculation that is not consistent with the evolving tendencies of developing technology. China and the United States should expand their cooperation in technology, industry, security, and philosophy to minimize the chance of making mistakes and deepen their relationship in new technologies.

**Keywords:** *separation; emerging technologies; strategic competition; global governance.*

## 1. INTRODUCTION

This paper explores the dynamics of this rivalry, the strategic decisions driving technological separation, and the implications for both nations. In recent years, there has been a significant increase in technical rivalry between the United States and China, particularly in advanced areas like 5G, artificial intelligence (AI), and sophisticated semiconductors. As rivalry becomes more intense, the process of separating technologies at the bilateral level has also sped up. The United States is strategically driven to use all available methods to hinder China's technical advancement, with the aim of gaining a competitive advantage in bilateral rivalry. In line with the strategy of his predecessor, President Joe Biden has implemented more measures to limit American investment in Chinese high-tech enterprises. This is a response to perceived negative activities by China that go against the interests and values of the United States. From the Chinese standpoint, these methods of separation are not beneficial for either China or the United States in the long term (Bekkers, & Schroeter, 2020).

This article aims to examine strategies for effectively handling the continuing separation of technology between the United States and China under the Biden administration. The first section examines the technical interactions between the United States and China throughout the Cold War, specifically highlighting the overall patterns of technological separation between the

two countries since the Trump administration. The second section analyzes the underlying reasons for the United States' decision to separate its technical advancements from China. The writers examine the distinct strategies used by Presidents Trump and Biden in the third part. The article continues by examining China's suggestions for reducing tensions in U.S.-China technology relations and promoting a constructive rivalry in new technologies (Business Cornell, 2023).

### 1.1 Historical Context: U.S.-China Technological Interactions

The technological interactions between the United States and China during the Cold War set the stage for contemporary dynamics. Initially marked by limited engagement, the relationship evolved as China opened up its economy and sought technological advancements through collaboration and investment. In the decades following the Cold War, technological exchange between the two nations expanded rapidly. This period saw significant investment from U.S. companies in China, facilitating a transfer of knowledge and technology that contributed to China's rapid technological rise (Giger, & Nelson, 2011).

During the Trump administration, the term "separation" became the dominant concept in U.S. policy towards China in the realm of new technologies. It may be said that the United States' strategic heritage is reflected in it, but it also represents the United States' strategic evolution driven by practical necessities. For an extended period, the United States has been closely monitoring China's advancements in new technologies. This is not only due to China's distinct geographical and ideological characteristics but also because it aligns with the United States' fundamental objectives in maintaining technical supremacy. The United States has implemented a prolonged technology embargo on China as a result of ideological prejudices and a mindset rooted in the Cold War (Bekkers, & Schroeter, 2020).

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In the first stages of the Cold War, China was classified as a member of the opposing faction. The United States, via the Coordinating Committee for Export to Communist Countries (CCECC) in Paris, enforced a ban on crucial strategic resources to China. Specifically in the realm of advanced military technology, the United States implemented a comprehensive embargo against communist nations, including China. The U.S. embargo implemented during the Cold War primarily aimed to hinder China and other nations in the opposing alliance from obtaining crucial technology. In the 1970s, the division between China and the Soviet Union caused the United States to adopt a new view of China. They believed that China might be involved in spite of its alignment with the opposition side. This ultimately resulted in a relaxation of the embargo. Despite the Wassenaar Arrangement in the 1990s, which expanded the restrictions on exporting conventional arms and dual-use goods and technologies to China, the United States and China have engaged in extensive cooperation. This includes the implementation of the China-U.S. Science and Technology Cooperation Agreement, as well as exchanges of personnel and technology, following the normalization of China-U.S. relations. The United States did not abandon the dual-track policy of blockade and engagement, which aimed to include China in the U.S.-led liberal international order, until the conclusion of the Cold War.

Prior to Donald Trump becoming the presidency, the United States had imposed a prolonged technology embargo on China, which was mostly limited owing to the significant disparity in new technologies between the two nations. In other words, the United States' technical dominance enabled the nation to adopt cautious but adaptable strategies when it came to advanced technology. Nevertheless, China has made significant advancements in new

technologies in recent years, resulting in a reduction of the technical disparity between China and the United States (Brookings Institution, 2024).

In 2016, China successfully launched Micius, the world's first satellite dedicated to quantum scientific experiments. This satellite was integrated into the "Beijing-Shanghai Trunk Line," a quantum secure communication network that connects China's capital city with its economic core. China's prominent role in the global quantum communication area was underscored, garnering attention from the United States. Made in China 2025 encompasses many policies aimed at advancing future technologies in information and communication, biomedicine, and fostering self-reliant innovation capabilities. The United States has recognized the potential of China's technological growth via programs that focus on adjusting the industrial structure, educating technical specialists, and promoting international collaboration. In addition, China's expansive market and its combination of market-driven and government-supported technological ecosystem have established a strong basis for the development of innovative technologies. Within this ecosystem, Chinese technical firms such as Huawei, Tencent, and Alibaba have significantly extended their operations worldwide, hence enhancing China's influence in developing technologies (Business Cornell, 2023).

### 1.2 Technological Separation: Motivations and Impacts

The United States' choice to seek technical divergence from China is based on a convergence of strategic incentives. Primary among these concerns is national security; the United States perceives China's progress in fields such as artificial intelligence (AI) and 5G technology as substantial risks. If a competitor state were to possess this technology, it might possibly jeopardize both U.S. security and global strategic objectives. Furthermore, the division is fueled by economic competition. The United States intends to separate itself from China's

technology sector in order to preserve its supremacy in high-tech sectors, guaranteeing its continued leadership in innovation and economic expansion. The U.S. aims to restrict the impact of China's unique governance model and values on the global technology industry, which is influenced by both political and ideological disparities. The combination of these elements demonstrates a complex approach designed to maintain U.S. dominance and address perceived challenges arising from China's technical advancement (Brookings Institution, 2024).

### 1.3 Economic and Political Impacts

The technology divide between the United States and China has significant economic and political consequences for both countries. The United States is now facing immediate consequences, which include the immediate expenses of reorganizing supply networks. These supply chains have been closely connected with Chinese industrial and technological sectors. This transformation necessitates substantial investment in the research and production capabilities of local technology to compensate for the limitations resulting from decreased reliance on Chinese technology. China's decoupling from the United States limits its ability to acquire crucial American technology, impeding its capacity for innovation and impeding advancements in cutting-edge areas such as artificial intelligence and semiconductor manufacturing. Nevertheless, this also fosters a significant drive towards self-reliance and native ingenuity, as China allocates substantial resources to its domestic technology industry in order to counterbalance the repercussions of losing technical contributions from the United States. The dynamics described here demonstrate the intricate interaction between economic adaptations and strategic reorientations, as both countries negotiate the difficulties and advantages resulting from this technological divide (Fairbank Center for Chinese Studies, 2022).

## 1.4 Comparative Analysis: Trump vs. Biden Administration Strategies

### 1. Trump Administration's Approach

The Trump administration implemented a series of assertive steps to restrict Chinese access to U.S. technology, with the objective of safeguarding national security and preserving economic competitiveness. To begin with, a variety of Chinese products were subjected to tariffs and trade barriers, which had a substantial influence on the commerce between the two nations and limited the activities of Chinese tech businesses in the U.S. market. These restrictions were implemented with the goal of diminishing the economic benefit obtained by China via unjust trade practices and the theft of intellectual property (The Diplomat, 2023).

Furthermore, regulations were implemented to prohibit both American investment in Chinese technology companies and Chinese investment in American tech corporations. The purpose of these limitations was to hinder the transfer of crucial technology and intellectual property that may possibly improve China's technical capabilities and competitiveness.

Finally, export restrictions were strengthened, imposing more rigorous limits on the sale of vital technology to China. This included cutting-edge semiconductors, artificial intelligence (AI) technology, and other essential high-tech components pivotal to China's technological advancement. The purpose of these restrictions was to protect sensitive technology from being used in manners that may jeopardize the national security of the United States or weaken its technical dominance. Collectively, these policies constituted a comprehensive strategy to restrict China's acquisition of U.S. technology and diminish its capacity to compete on an equitable basis in the international technological sphere (The Diplomat, 2023).

**2. Biden Administration's Approach**

The Biden administration has upheld and broadened the initiatives introduced by the Trump administration to restrict Chinese access to American technology, but with a stronger focus on multilateralism and strategic investment. An essential element of Biden's strategy is to enhance alliances and collaborations with other democratic nations in order to establish a cohesive front against China's technical progress. The United States seeks to enhance its strategy in countering China's growing dominance in the technology sector by working closely with its allies. This collaboration aims to effectively limit technology transfers and develop a stronger and more unified approach (Brookings Institution, 2024).

The Biden administration is prioritizing not just international collaboration but also the augmentation of investment in domestic research and development (R&D). This investment is intended to strengthen the United States' technical capabilities and secure its position as a worldwide leader in innovation. The government aims to decrease dependence on foreign technology and promote a more robust and independent technical foundation by giving priority to indigenous research and development (R&D) (Center for Strategic and International Studies, 2024).

In addition, the Biden administration has implemented more extensive regulatory procedures to hinder the transfer of critical technology to China. The purpose of these laws is to eliminate any gaps in the system and guarantee the protection of crucial technology, particularly those that might have significant repercussions for national security, from being acquired by China. This entails not just enhancing export regulations but also closely examining foreign investments in U.S. tech businesses to thwart any inadvertent transfer of technology.

In general, the Biden administration's policy involves maintaining the restrictive measures implemented by the previous administration while also taking a proactive approach to collaborating with other countries and investing domestically. The goal is to ensure a competitive advantage in the global technological field.

In addition, China's increased influence and significant contributions to the global management of developing technologies have caused concern for the United States on the potential decline of its technical dominance. In light of these conditions, the United States acknowledges that China's advancements in technology are very likely to erode U.S. technical dominance. Furthermore, the effect of China's success is expected to surpass that of Japan and South Korea throughout the 1980s and 1990s. In light of this context, the United States made the decision to adopt the radical policy approach of separation from China (Center for Strategic and International Studies, 2023).

Following the inauguration of the Trump administration, the United States underwent a significant shift in its approach towards China, giving high importance to the process of technical separation from China. Significantly, the United States is using the realm of new technologies as a platform to further technological separation. The Bureau of Industry and Security (BIS) of the United States was established in October 2018. The U.S. Department of Commerce has been granted the authority to release the Export Administration Regulations Commerce Control List (CCL) in accordance with the Export.

The Control Reform Act of 2018 encompasses fourteen distinct areas of emerging technologies, specifically focusing on information and communication, artificial intelligence, quantum technology, and control objects related to chips. Later on, the Trump administration expanded the restrictions to include Chinese businesses, organizations, and people. Several

Chinese firms, universities, and research institutes, including Huawei, Sichuan University, University of Electronic Science and Technology, and China Electronics Technology Group, have been added to the entity list. This list precludes any prospective cooperation from the U.S. side. Thus, it can be inferred that the separation policy adopted by the United States is primarily rooted in its assessment of the previous engagement strategy, aimed at restraining the progress of China's rising technologies by segregating technology and industry. The United States can only keep its technical advantages and benefits in this manner (Center for Strategic and International Studies, 2023).

### 1.5 US Technological Separation Motivations

The United States is using a strategy of separation with China, driven by its Cold War mindset, in an effort to restrict China's advancements in new technologies. This approach aims to protect national security, maintain ideological supremacy, and secure victory in the struggle for dominance in the digital economy. First and foremost, the distinctiveness of developing technologies necessitates the United States to develop broad and cautious measures. Emerging technologies, in contrast to existing high technologies, have immense importance but are also marked by substantial uncertainty. From the U.S. standpoint, emerging technologies are of utmost importance or have the potential to become of utmost importance to the United States' advantage in terms of national security, including military, intelligence, and economic benefits.

Uncertainty is the prevailing characteristic of emerging technologies as compared to existing high-technology. As to the White House National Strategy for Critical and Emerging Technologies, effectively mitigating the risk associated with emerging technologies is challenging due to their early stage in research and development (R&D), which makes it impossible to determine their specific implications for U.S. national security. Furthermore, the

advent of developing technologies will give rise to unforeseen consequences for both industrial and global systems (U.S.-China Economic and Security Review Commission, 2023).

Daniel R. Coats, the former Director of U.S. National Intelligence, highlighted the potential unforeseen consequences of developing technology on both domestic and foreign fronts. Domestically, the advancement and utilization of emerging technologies may lead to various transformations in the labor market, as well as in the sectors of health, energy, and environment. Internationally, the regulation of emerging technologies will not keep pace with their development, potentially posing a challenge to U.S. interests globally and allowing its adversaries to develop more sophisticated weaponry.

Indeed, the emergence of technologies such as artificial intelligence, quantum technology, big data, and cyber security has presented the United States with at least two issues characterized by ambiguity. One consequence of the technical dispersion to the private sector is that it has ended the U.S. government's exclusive control over developing technology. High-tech companies in the United States, rather than government agencies and research institutions like the DoD, DARPA, and NASA, are the primary custodians of emerging technologies in most fields. These technologies span twenty different fields and are crucial for the advancement of the United States. On several occasions, the Department of Defense (DoD) sought the assistance of private enterprises to collaborate on research and development (R&D) endeavors related to critical technology. However, the national security of the United States has been at risk due to security issues surrounding new technology. This is evident from incidents such as the "Cambridge Analytica" scandal, hackers interfering in elections, and the latest "Solar Wind" problem (Swedish Centre for Eastern European Studies, 2023).

Technological advantages are crucial for national security in the United States. Adopting a securitization mentality, the United States decided to pursue the separation strategy. The United States has a long history of seeing technology as matters of national security. Since the conclusion of World War II, the United States has recognized the significant importance of technology in ensuring national security, as it created its national development policy.

Nevertheless, the significant unpredictability of developing technologies might intensify the process of securitization, compelling the nation to allocate more resources and use more inventive methods to mitigate the dangers associated with these technologies. Emerging technologies have the potential to shape the national security perspective and may lead to the adoption of radical security strategies aimed at maximizing advantages and minimizing hazards associated with these technologies.

In general, new technologies pose two distinct national security dangers to the United States. Firstly, the United States is strongly motivated to maintain its dominant position in the realm of developing technologies, since this is a crucial aspect of both its worldwide dominance and its fundamental national security concerns. The United States achieved victory in the Cold War and thereafter established itself as a dominant force in global affairs, mostly due to its technological superiority. Hence, it is unavoidable for the United States to embrace a national security standpoint while confronting challenges posed by China in the realm of new technology. Hence, it is unavoidable for the United States to embrace a national security standpoint while confronting challenges posed by China in the realm of new technology. Additionally, the United States has a sense of insecurity due to the rapid advancement of modern technology. The intensification of globalization and the advancement of digitalization in the United States have

heightened the competitiveness in the realm of new technologies, which will inevitably become an integral aspect of China-U.S. ties in the foreseeable future.

In addition, ideology is seen as another influential factor in the U.S. decision to separate technologically from China. Emerging technologies are intricately connected with ideology. Within the country, the growth and advancement of new technologies is an unpredictable and unstable process that will influence how individuals see and hold their views. If the current ideology fails to align itself with advancing technology, it will erode the regime's legitimacy and hinder its capacity to mobilize society.

On the other hand, if ideology can be established at the same time as rising technology, it will help to promote successful mobilization and collective action in new areas of social growth. Hence, governments often choose to revise the ideology during the first stages of developing technologies to safeguard their legitimacy. Globally, it is a widespread practice to categorize nations based on ideological beliefs. For example, the United States has shown a tendency to distinguish between capitalist and communist nations, particularly China, dividing them into two categories: "techno-democracy" and "techno authoritarianism." (RAND Corporation, 2023).

The United States aims to persuade its friends and partners to collectively and collaboratively take action against China. It seeks to get their agreement and unity, ultimately securing their universal support. For the United States, ideology serves as both a goal and a method. Ensuring the continued supremacy of Western "liberal and democratic" principles in a world where emerging technologies have become transformative forces will be crucial for preserving domestic stability and international influence, especially given the significant uncertainty arising from the advancement of these technologies. Furthermore, ideology may serve as an effective means to rally people and supporters in order to collectively apply pressure

on China. In its efforts to disengage from China in developing technologies, the United States is seeking to include ideological concerns into almost every crucial area.

The United States faces a range of current dangers, including terrorism that has significant destructive capabilities. The Internet has greatly magnified these issues, making them more difficult to avoid and identify. Furthermore, the United States has consistently cautioned against perceived adversaries such as China and Russia, alleging their use of the Internet to target American infrastructure, acquire American intelligence, and meddle in American elections. The United States, in its 2017 National Security Strategy, clearly designates China as a strategic rival, alleging that China engages in the unauthorized acquisition of U.S. patents and intellectual property in order to enhance its own influence. In addition to the 2017 National Security Strategy, the Trump administration also unveiled additional initiatives pertaining to cyber security, communication, and artificial intelligence in the realm of new technologies.

All of these papers consider China to be the primary adversary of the United States. The 2018 National Cyber Strategy asserts that China presents a strategic threat to the United States, advocating for comprehensive rivalry with China in both conventional and advanced technological domains. In 2020, the White House introduced the National Strategy for Critical and Emerging Technologies, which explicitly highlighted the threat posed by China to the United States' technological supremacy. The strategy pledged to collaborate with American allies in order to create a technologically advanced environment that is free, democratic, and harmonious. Hence, by attributing labels such as "digital authoritarianism" and "technological theft" to China, the United States aims to conceal its true motive of technological separation, which contradicts the principles of globalization and technical advancement. In order to establish itself as a frontrunner in the realm of new technologies, the United States is actively working towards

forming a strategic partnership that combines technical and ideological aspects (Wang, et al,. 2012).

The United States is using the Five Eyes alliance and the D-10 Club as significant platforms to create a system of standards and cooperation headed by the U.S. This system aims to prevent Chinese influence worldwide. Specifically, the United States has exerted pressure on the United Kingdom to prohibit and eradicate Huawei equipment. Meanwhile, the United States has been aggressively courting Japan to join the Five Eyes alliance, in order to further marginalize China's participation in international collaboration on developing technology.

Under the new Biden administration, as the new team is gradually being put into place, the reemergence of the established team has emphasized the significance of the ideological realm. The Global Summit for Democracy, organized by the Biden administration, was ostensibly aimed at "promoting" democracy. However, its true purpose was to mobilize Western nations to compete with China in the realm of developing technology.

The advantages of the digital economy resulting from developing technology have significantly reinforced the United States' determination to separate itself from China. The digital economy, as a prominent sector of developing technology, has the potential to produce substantial economic advantages. The United States is driven to technologically disconnect from China due to its pursuit of both absolute and relative gains. Generally, the first-mover advantage and the late-mover compensation often occur together in the competitiveness of developing technologies. The primary benefit of being the first mover is mostly seen in areas such as establishing industry standards, capturing a significant portion of the market, and leading in technical advancements. Amidst the current surge of technological advancements, the United States has gained a competitive advantage by being the first to adopt and profit from these new

technologies. This is due to the country's abundant technical resources and extensive industry expertise.

The United States has significant advantages in essential technologies such as creative application programming, algorithms, and processors, particularly in the domains of artificial intelligence and cloud computing. Nevertheless, in several domains, it encounters formidable competition from China as a newcomer. Huawei and ZTE's quick progress in the 5G sector is expected to result in a loss of market share for American ICT businesses like Cisco. This has motivated the United States to prioritize technical separation in order to preserve its industrial advantages.

The United States has two primary concerns in the realm of digital economy. One strategy is to optimize the advantages derived from the digital economy, considering the significance of developing technologies. In the domain of 5G communication, the Trump administration previously projected that the implementation of 5G communication systems in the United States will result in $275 billion in investments, generate 3 million jobs, and contribute an additional $500 billion to the U.S. GDP. Another factor to examine is the potential benefits that the United States may have from future technology. This is a key reason for the rivalry between the United States and China in the digital economy sector.

**US technological separation strategies**

The United States has been striving to disentangle itself from China in the realm of new technologies by using comprehensive strategies that include the whole government and society as a whole. In 2019, the Trump administration implemented the National Emergencies Act (NEA), which contains provisions prohibiting telecommunications equipment that poses national security threats. These provisions were put in place to impose limitations on Huawei's

commercial interactions with American enterprises. The U.S. government's decision to pursue a foreign corporation under the NEA was an uncommon action. Simultaneously, utilizing the authority granted by the International Emergency Economic Powers Act, the Trump administration instructed the Commerce Department to collaborate with other government entities in order to devise a comprehensive strategy within 150 days. This strategy aims to prohibit any transactions that may present intolerable risks to national security. The use of executive orders by a current U.S. president to single out Chinese enterprises marked the start of a sequence of subsequent penalties imposed by the administrative branch, specifically aimed at sovereign nations. Undoubtedly, this comprehensive government strategy has had a detrimental effect on the relations between the United States and China in the realm of developing technology (Meltzer, & Shenai, 2019).

In addition, the United States has used extensive measures of technical and economic embargo and regulation (originally developed during the early stages of industrialization) in the realm of developing technologies as effective strategies to separate technologically from China. These measures include a range of mechanisms such as export control, investment screening, market access, and security checks for technical people.

The export control system (ECS) has been extensively used to prevent U.S. corporations from exporting crucial items of new technology to China. The ECS originated from the armaments embargo regulations established during World War II. Subsequently, the ECS saw an expansion both in terms of the quantity and range of its punitive measures. The ECS, in conjunction with other laws such as the Arms Export Control Act, the International Traffic in Arms Regulations, the Export Administration Act of 1979, the Export Administration Regulations (EAR), the Enemy Trade Act, and the International Emergency Economic Powers

Act, has emerged as the most advanced and influential policy tool for the United States to disengage from China in the realm of emerging technologies.

The ECS selected Huawei as its first focus, specifically targeting the supply of semiconductor chips, particularly the internally created "Kirin" processors. This action dealt a significant hit to Huawei's smartphone industry. Additionally, a robust investment screening mechanism has been implemented to dissuade Chinese corporations from making investments in U.S. startups operating in the realm of new technology. The investment screening system, which originated during World War I as a conventional means of economic management in the United States, has undergone continuous evolution since its inception. In 2018, a significant event occurred when President Donald Trump enacted the Foreign Investment Risk Review Modernization Act (FIRRMA), which marked the completion of the legislative overhaul of the Committee on Foreign Investment in the United States (CFIUS). As a result, the Committee on Foreign Investment in the United States (CFIUS) increased its level of activity inside the investment screening system (Meltzer, & Shenai, 2019).

**The historically significant Chinese direct investment**

Furthermore, the market access system has been established to restrict the activities of Chinese technological enterprises deemed "unsafe" in the United States. This is achieved via the evaluation and disclosure of the fairness and openness of the Chinese technology market. The market access system deliberately categorized the Chinese technology industry and market as "unsafe" and "unfair" under Section 232 of the Trade Expansion Act (TEA) and Section 301 of the Omnibus Trade Competition Act of 1988. This was done with the intention of limiting the presence of Chinese companies in the U.S. market and expediting the process of technological separation between the U.S. and China. The Office of the U.S. Trade Representative (USTR)

launched a Section 301 investigation into China in 2017. This inquiry primarily focused on technical transfer, intellectual property rights, and technological innovation in China. It ultimately sparked the current trade war between the United States and China. China remained on the priority watch list and was subject to the regulation of Section 306 in the 2021 edition of the annual "Special 301 Report" released by the USTR Office. Within the realm of new technologies, the "Special 301 Report" specifically highlighted security apprehensions over China's measures that aim to compel knowledge-intensive companies to transfer their innovations and reveal their intellectual property rights, under the guise of being "secure and controllable." Meanwhile, the research contended that China deliberately erected market barriers under the pretense of "avoiding risks."

Implementing market access regulations would not only expedite the process of separating the United States and China in terms of developing technologies, but also provide a valid rationale for the United States' actions of disengaging from China and portraying it in a negative light. Furthermore, the United States implemented more rigorous security screenings for technical workers, significantly impeding scientific and technology exchanges between the U.S. and China. Artificial intelligence and 5G are knowledge-intensive domains that need a strong emphasis on worker safety to ensure technological security. Security checks for technical people are essential measures to a certain degree. Regrettably, these measures have now become means to restrict the regular interactions between American and Chinese experts. Specific actions to address this issue include, but are not limited to, enhancing the scrutiny of visa applications and customs inspections, reducing the duration of visas for science and engineering students, imposing stricter regulations on collaborative projects between the United States and China, and

increasing the efforts of the “China Expert Group” within the Department of Justice to gather intelligence on Chinese scholars.

The purpose of this action was to establish a coalition against China in the realm of developing technology. The United States proposed several measures, including: (1) Restricting Chinese telecommunications companies from providing international telecommunications services between the United States and other countries, in order to ensure data security. (2) Removing untrusted Chinese applications, such as TikTok, from the U.S. app store, due to concerns that they pose a threat to the data security of U.S. citizens and can be used for content censorship and intelligence gathering by the Chinese government. (3) Blocking Chinese carriers like Huawei from accessing downloadable U.S. apps. (4) Protecting sensitive data and intellectual property from being accessed by Chinese cloud systems. (5) Ensuring that information transmitted through international submarine cables is not obtained or compromised by China. The United States intends to implement specific actions in order to establish a comprehensive technology barrier and disengage from China in the areas of network and communication services. Moreover, the United States intends to establish a “clean alliance” consisting of technologically advanced democratic nations, with the exclusion of China. As of November 2020, the U.S.-backed CNI has attracted the participation of 180 telecoms corporations and other prominent businesses from 53 nations. The CNI serves as a crucial means for the United States to rival China in the realm of new technology, using its strengths derived from the alliance system and Western media (Meltzer, & Shenai, 2019).

The Trump administration’s adoption of the whole-of-government approach of separation demonstrates the United States’ commitment to preserving its technical advantage and protecting its development interests. Nevertheless, adopting such a radical strategy may not align with the

best interests of the United States, nor does it conform to the regulations and trends of technological advancement. Consequently, the United States was compelled to reconsider and modify the separation strategy towards the conclusion of Donald Trump's administration. As Samm Sacks, a cyber policy scholar at New America, has shown, there is no distinct demarcation between China and the United States when it comes to developing technology. The implementation of the "hard separation" approach would undoubtedly undermine the interests of the United States and simultaneously position China as an adversary, significantly limiting the scope for China-U.S. collaboration. She suggested the concept of "small yard, high fence," which promotes the notion that the United States should have restricted areas of disconnection while yet maintaining openness and safeguarding the security of technology advancement. Simply put, the United States should enhance its supremacy in the realm of new technologies by strengthening its own strengths instead of criticizing China.

In the following year, Scott Kennedy, an analyst from the Center for Strategic and International Studies, conducted another assessment on the advantages and disadvantages of the separation of U.S. and China in terms of technology, specifically in relation to the Huawei issue. He contended that American enterprises positioned at the beginning of the value chain would be unaffected by China's technical advances, even with the significant advancements made by Chinese tech behemoth Huawei. Nevertheless, the process of technical separation between the United States and China will force China to intensify its efforts in self-reliant innovation and seek new collaborations with nations such as Japan and Europe. This shift in partnerships will present a more significant challenge to the interests of the United States. Consequently, he suggested that the United States maintain a "principled interdependence" with China and substitute the term "separation" with "diversified competition." (Meltzer, & Shenai, 2019).

As a result, the Biden administration is working to adjust the separation strategy. The American Innovation and Competitiveness Act and the Endless Frontier Act, both approved by the U.S. Senate in June 2021, established the foundation for President Biden's emerging China policy in the field of technology. President Biden to some degree inherited the approach of "separation-from-China" from his predecessor. On June 3, 2021, President Biden issued an executive order that designated 59 Chinese businesses, such as Semiconductor Manufacturing International Corporation (SMIC) and Huawei, as blacklisted entities. This order prohibits these corporations from engaging in any transactions with U.S. organizations. In addition, President Biden has made a commitment to extend this blacklist throughout his tenure, indicating that there would be further limitations and inspections on Chinese high-tech enterprises by the United States. However, the technical competition plan developed by the Biden administration focuses more on fostering U.S. advantages, using ideological instruments, encouraging international collaboration, and deploying aggressive methods in some specialized sectors.

Significantly, recent expenditures in technology and incentives for research and development have been clearly stated in newly disclosed papers. Meanwhile, the Biden administration is determined to cultivate alliances and partnerships with tools with ideological prowess to compete with China. For example, the United States has suggested creating a technological alliance among democratic nations. This alliance would be built on existing platforms like the Quad Critical and Emerging Technology Working Group and the U.S.-EU Trade and Technology Council. The purpose of this alliance would be to enhance policy coordination in order to effectively address shared threats from common adversaries. This policy change suggests that the United States has abandoned certain stringent measures to separate itself from China across the entire supply chain. However, it also implies that the United States will

now focus on implementing more specific measures in certain technological areas where China is behind and the United States has an advantage. Considering this, China should exercise more caution in managing the risks arising from the policy shifts of the Biden administration.

### 2.1 Chinese Positions and Plans for Technological Separation

An outcome of separation was the significant decrease in Chinese investment in the United States, resembling a steep drop-off. Based on data provided by China's Ministry of Commerce, Chinese investment in the United States in 2018 amounted to $5.06 billion, representing a 33.4 percent reduction compared to the previous year. The number is 28. In 2019, Chinese firms invested $3.81 billion in the United States, marking a 49.1 percent decline compared to the previous year. Regarding interpersonal encounters, Gallup surveys have shown that the impression of China by the United States has increasingly been more hostile since 2018. Furthermore, the percentage of individuals in the United States who see China as their primary adversary has consistently risen. The U.S.-China technological separation is partly a consequence of the conflict in their bilateral strategic relationship. Additionally, this separation further exacerbates their conflict, which has permeated various aspects such as politics, economics, society, and ideology.

In order to effectively handle this dispute and protect national security, China must actively participate in productive collaboration with the United States in the realm of technology. China, as the recipient of the U.S. technological separation, should adopt a logical approach towards the U.S. policy that is not aligned with the growing technology trends and is not beneficial for the growth of both China and the United States. The primary rationale for the implementation of the separation strategy is the United States' apprehension over China's fast

advancements in new technologies, which pose a threat to its technical dominance. Regrettably, this is a miscalculation in terms of strategy (Pangestu, 2019).

China does not want to challenge the dominant influence of the U.S. in developing technologies. Rather, China seeks to actively participate in global technical innovation. The proposition to "attain global dominance in the fields of science and technology" is a deliberate decision taken by China at a critical juncture, with the objective of advancing its own progress and ensuring the prosperity of its people. In his article "Strive to Become the World's Major Science Center and Innovation Highland," President Xi Jinping emphasized the need for China to actively integrate into the global network of scientific and technological innovation. He also highlighted the importance of enhancing the level of openness in China's national scheme of scientific and technological development. These actions will enable China to contribute its unique insights to global technological governance.

### 2.2 China's Response and Proposals

**1. China's Strategic Adjustments**

China has implemented a dual approach of self-sufficiency and international engagement in response to the United States' efforts to limit its technical progress. China is making significant investments in local research and development (R&D) in order to decrease its reliance on foreign technologies. This substantial investment is intended to improve its capabilities in crucial domains such as artificial intelligence, semiconductors, and 5G technologies. China aims to reduce the effects of U.S. limitations and establish a self-reliant technical foundation by promoting a strong local tech sector. In addition, China is enhancing its technology collaborations with other nations, namely in Europe and Asia. China seeks to broaden its technical resources and mitigate the hazards associated with excessive dependence on U.S.

technology via these collaborations. China's collaborations with other countries provide its access to novel technology and markets, hence promoting innovation and encouraging economic development. These foreign collaborations also assist China in forming a coalition that can offset the influence of the United States in the global technology sector. China's objective is to maintain its technical advancement and establish itself as a prominent participant in the worldwide technology arena by prioritizing these strategic modifications. Furthermore, China has always adhered to the ideal of openness in the realm of technology (Pangestu, 2019).

China, as the biggest Internet market globally, strives for both self-sufficiency and global collaboration. Clearly, the United States has a deficient comprehension of China's cyber policy, leading to many misunderstandings. Furthermore, deliberations within the Chinese government and academic circles have shown China's reluctance to sever ties with the United States in the realm of developing technology (Brzoska, 2012).

China is highly dependent on the United States for several key sectors of developing technology and lacks the ability to quickly produce alternative goods using its own skills. The cessation of supply and service due to separation clearly has a detrimental impact on Chinese businesses and customers. Furthermore, due to the technical interconnectedness and the advanced stage of international industrial chains, both China and the United States cannot bear the economic consequences of separating their rising technology sectors.

As the global ecosystem of new technologies transitions from fragmentation to unification, it would be very detrimental for both China and the United States to divide cyberspace and create two separate technical ecosystems via separation. Furthermore, China has been prompted to expedite its own technical advancement due to concerns created by the U.S. separation strategy. China should intensify market reforms, safeguard intellectual property rights,

and strengthen its innovation system in order to answer global concerns. From a broader perspective, the obstacles of long-arm jurisdiction and the Wassenaar Accord are not the main factors hindering China. Rather, the key challenge lies in how China can enhance its soft power during its economic and technological growth, and earn trust and respect from the global community in order to influence a favorable international order for its future progress.33

The primary objective is to collaboratively enhance the security and dependability of developing technologies and alleviate the security apprehensions of the United States. In general, the security of developing technologies is primarily a technical matter and should not be evaluated based on political considerations. According to cybernetics, sharing harmful information and useful knowledge helps increase policy transparency and reduce security risks. However, excessive political interference leads to distrust, undermines cooperation, and worsens security risks, resulting in a blame game between parties. Hence, it is imperative for China and the United States to actively pursue enhanced collaboration in the advancement of digitalization and artificial intelligence. More precisely, establishing cooperation on technological standards might serve as a first measure, despite being a significant obstacle in their technical interactions. The two nations may collaborate in establishing standards to strengthen the security and dependability of developing technologies via discussions involving several parties and stakeholders.

Furthermore, it is imperative for both China and the United States to pursue the course of integrated growth in emerging technological sectors. China has the highest number of Internet users globally and holds the greatest market share in the digital economy. In recent years, the collaboration between China and the United States in the realm of digital economy has achieved remarkable success. Prominent American technology corporations, like Apple, Microsoft, and

Qualcomm, have generated substantial revenues in the Chinese market. These businesses have also directed their investment efforts towards growing Chinese Internet firms. Additionally, these Chinese corporations acquired a substantial sum of money from the American capital market, while simultaneously, their quick expansion yielded significant favorable returns for U.S. technology firms (Pangestu, 2019).

Undoubtedly, this kind of mutual reliance has positively impacted the overall bilateral ties and has played a significant role in enhancing the productivity of their industrial networks. However, many individuals in both the United States and China continue to have skepticism over this collaborative framework. There are some individuals in the United States who believe that China has obtained a substantial quantity of American technology via collaboration with U.S. corporations. Similarly, some individuals in China hold the belief that the entry of American corporations into the Chinese market has resulted in Chinese Internet companies relinquishing control via investment, so causing China to lose its self-reliance and authority over developing technology. Regrettably, these two perspectives neglect to accurately depict the fact that both nations benefit from worldwide collaboration and do not provide a comprehensive overview of China-U.S. cooperation in the supply networks and industrial chains of developing technologies. Consequently, both sides will soon experience significant financial losses as a result of technological separation. Furthermore, it is imperative for China and the United States to collaboratively investigate and establish a mutual agreement about the extent and limitations of "national security" to prevent its misuse (Center for Strategic and International Studies, 2023).

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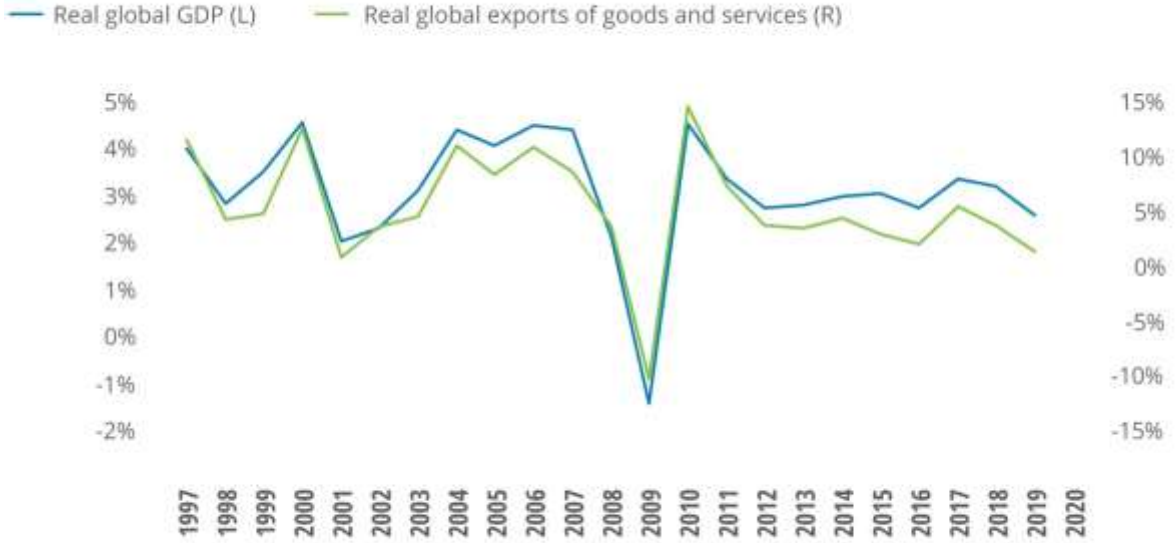
FIGURE 1

**Global trade leads to higher economic and productivity growth**




Source: Oxford Economics.

Deloitte Insights | deloitte.com/insights

The United States' relentless pursuit of hegemony and unwavering focus on achieving absolute security is a primary factor contributing to the decline in China-U.S. contacts in the realm of new technologies. Historical evidence indicates that striving for complete security would simply heighten feelings of insecurity, and attempting to establish dominance unilaterally is likewise not a viable answer. China and the United States urgently need a consensus that developing technologies should not be excessively securitized, and that the bilateral relationship should not be evaluated only based on absolute security concerns. Essentially, developing technologies provide both advantages and potential dangers. Their sensitivity may be mitigated by discourse, whereas confrontation is not an effective means of resolving conflicts. The 5G Security Report, released by the China Academy of Information and Communications Technology (CAICT) in February 2020, provides a comprehensive analysis of the development and risks associated with emerging technologies in China. The report suggests preventive

measures and emphasizes the importance of a collaborative approach based on mutual trust among all parties (Congressional Research Service, 2023).

Conversely, the strategic studies issued by the U.S. government in recent years have clearly expressed worries and animosity against China. Therefore, it is important for both nations to show self-control, continue their discussions and strategic communication, and strive to establish clear limits on conduct that will provide a feeling of safety for all sides (Brzoska, 2012).

China and the United States should make a concerted effort to avoid interpreting technical exchanges based on ideology and prevent any escalation of tension. Due to the United States using ideology as a means to rival China in the realm of developing technologies, there are significant obstacles to China-U.S. technical exchanges. It is worth mentioning that U.S. officials and media continued to exaggerate China's disinformation campaign and interference in the 2020 presidential election until the very end. However, the U.S. intelligence community had to retract their previous assessments and state that "China did not interfere in the U.S. election and had no reason to do so."China explicitly states that it does not want to spread its own values via developing technology, nor would it meddle with Western ideals. Considering this perspective, it is crucial for China and the United States to minimize the influence of ideological elements on the advancement of emerging technologies. Specifically, the United States should avoid using ideology as a means to hinder the progress of emerging technologies in China (Bown, 2019).

**2. Proposals for Reducing Tensions**

China has proposed various strategies to mitigate tensions, including:

Bilateral Dialogues: Establishing regular high-level dialogues to address technological and economic concerns.

Mutual Agreements: Seeking agreements on specific areas of technology where cooperation can be mutually beneficial.

Global Governance: Advocating for a more balanced and inclusive approach to global technology governance.

**Conclusion**

The technological rivalry between the United States and China is complex and multifaceted, driven by a mix of strategic, economic, and political factors. While the separation process poses significant challenges, there are opportunities for both nations to navigate this competition constructively. Effective management of this rivalry requires a nuanced understanding of the motivations, impacts, and potential pathways for cooperation. Ultimately, the U.S. separation policy towards China is driven by a careful analysis of historical and current factors. Its purpose is to deliberately increase the technological disparity between the two nations and maintain long-term U.S. technological dominance, all in the interest of safeguarding national security. Nevertheless, this article demonstrates that the United States' endeavor to decouple is, in fact, a strategic miscalculation

The separation strategy implemented by the Trump administration has been ineffective in ensuring the continued dominance of U.S. technical power. Instead, it might exacerbate the United States' interests and have a growing detrimental effect on China-U.S. ties and the global technological system. President Biden seems to have assimilated a valuable insight from his predecessor. However, his approach towards China's rising technologies has so far had no impact on China and has resulted in selective disengagement in certain domains. In light of this situation, China must intensify its efforts to investigate novel approaches to both healthy

competition and collaboration with the United States. This is necessary to safeguard national security and ensure the advancement of the country's technical progress.

**Recommendations**

First, the most strategically vital technologies, such as semiconductors and 5G telecommunications equipment, are already subject to stringent constraints established by the United States government. These technologies are limited in number. It is possible that some technological domains, such as drone swarms, the bulk power system in the United States, and technologies that are supplied to Xinjiang, need more stringent limitations that are geared towards China. However, many limitations that are centered on China seem to be counterproductive in a number of other high-profile sectors, such as relocation data, social media platforms, and consumer electronics like smart phones. Even if there is a possibility that future events would necessitate a greater degree of isolation, the United States should not significantly extend its technological restrictions at this time.

Second, the declared policy aims of the United States continue to be extraordinarily ambiguous and open-ended across the board. For the purpose of combating techno-authoritarianism, preserving a military advantage over China, and avoiding Chinese espionage, sabotage, and influence operations, the United States government has to publicly explain its vision for the global trade of technology and establish more attainable goals. Although all of these are significant interests for the United States, none of them would now justify widespread technological constraints. Despite this, the language and actions of the United States government continue to imply the potential of an expanding China-oriented control system that would be both expensive and unrealistic. In order to limit the temptation of China and other countries to gain control of the separation process, clearer and more specific public message from the leaders of the United States would be helpful in focusing the attention of the agencies on the issues that they are able to actually address with restricted instruments.

`Third, "offensive" policies, often known as self-improvement policies, have the greatest potential to boost the technological leadership, competitiveness, and resilience of the United States and the world over the long run. To be fair, the execution of a great number of aggressive

measures is met with significant obstacles. The United States of America has not yet shown the political will to speed up the transformation of its armed forces, establish national cyber security and data privacy standards, or begin the process of repairing the domestic information ecosystem, which is precisely what the centrists are concerned about. However, if these and other necessary changes are not implemented, it would imply that the additional time that "defensive" measures may afford would be wasted, which would put the safety and prosperity of the United States at jeopardy. It is possible that the development of a serious state adversary like China would finally convince the leaders of the United States to focus on basic difficulties that are occurring inside their own country.

It is not likely that all individuals will support a centrist approach for technological separation or the particular measures that are suggested in this article. There are others who would question whether or not a comprehensive approach is even feasible or even beneficial. However, everyone ought to be in agreement that the United States of America needs more robust public discussions on this essential group of concerns. In any case, it is imperative that officials and experts from the United States face the most difficult issues head-on. The United States of America has high hopes for the technological future it will build. The question is, how may the instruments of government policy contribute to the creation of such a world? Throughout the years to come, the manner in which American leaders respond to these concerns will have a significant impact on the strength and well-being of the United States of America. They need to proceed with caution. On the other hand, they must first think clearly.

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