

The "Change" and "Unchanged" of Biden Administration's Science and Technology Policy toward China from the Perspective of Great Power Game

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Abstract

The new round of scientific and technological revolution and industrial transformation has provided important strategic opportunities for the high-quality development of all countries. China's level in the field of science and technology has been continuously improved, and it has been regarded as the "most serious competitor" by the United States, the field of science and technology has gradually become the main battlefield of the game between China and the United States. The United States since the Biden administration began to implement the "small yard high wall" of science and technology policy towards China, compared with the Trump administration's "full decoupling" mode, the Biden administration's science and technology policy towards China has the continuity of strategic positioning, hegemony concept, but also significant changes, and more highlights the characteristics of precision strikes, omni-directional multi-means, attaching importance to security and relying on allies. It also highlights the characteristics of precision strikes, all-round multi-means, emphasizing security and relying on allies. The Biden administration's science and technology policy toward China not only slows down America's own scientific and technological innovation, but also undermines China's confidence in scientific and technological development, worsens U.S.-China relations, cuts up the global high-end technology industry chain, impedes economic development, and even poses a threat to global security.

Keywords

The Biden Administration, The Trump administration, Science and technology policy.

1. Introduction

The world situation today is treacherous, with slowing economic growth, geopolitical shocks, frequent armed conflicts, and the overlapping of traditional and non-traditional security risks ...In the era of rapid development of high technology, all countries in the world attach great importance to the innovative development of high technology, high and new technology has become an important element affecting the balance of power between the big powers, the field of science and technology has become the main field of the U.S.-China game. From the Trump administration to the Biden administration, there has been no substantial shift in the positioning of U.S. science and technology policy toward China, the concept of absolute security outlook, or the tone of hegemony. In concrete implementation, it has shifted from a policy of "total blockade" and "total decoupling" of Chinese science and technology to a policy of "targeted blockade" and "selective decoupling" and the formation of "technological alliances" against China. "selective decoupling" and the formation of 'technological alliances' against China. From a comprehensive blockade to a "small yard and high wall", what are the reasons for the "change" and "unchanged" of U.S. science and technology towards China? What kind of impact does it have?

2. Biden and Continuity in the Trump Administration's Science and Technology Policy Toward China

2.1 Coherence of strategic objectives

The Biden administration inherited the Trump administration's strategic goal of “maintaining U.S. global technological leadership and curbing China's technological development” in relation to China's science and technology.[1] After the Trump administration took office in 2017, the U.S. National Security Strategy report called China a “competitor” and a “revisionist power,” arguing that China challenged U.S. power, influence and interests, and jeopardized U.S. security and prosperity.[2] The Biden administration views the current U.S.-China relationship as “intensely competitive,” and the “Interim National Security Strategic Guidance states that China is the only potential competitor capable of combining its economic, diplomatic, military, and technological power to pose an enduring challenge.[3] The Biden administration has repeatedly emphasized in the State of the Union address that it will strengthen competition with China in key areas, and members of the Biden administration have repeatedly mentioned in public that the United States and China will always be in a state of competition. The Biden administration's strategic positioning of science and technology competition with China as “the most serious competitor” is basically consistent with the Trump administration's strategy of “great power competition” and the tone of toughness with China.

2.2 Passing on the concept of “absolute security”

The unique natural geography, founding history and ethnic composition of the United States have entrenched the American nationalist ideology that the United States can only be number one, and that to be number two would somehow mean a denial of the existence of the United States of America.[4] As a result, the United States is quite sensitive to the rising power of others and to changes in its own power position. The United States “defines its own security interests with particular breadth and uncertainty, and sets a particularly high standard for its own security.” The end result is the pursuit of unwarranted “absolute security”, which is measured by exaggerated threats and the pursuit of excessive security. [5] Although China's individual technology to catch up with the pace of U.S. science and technology, but the overall progress of science and technology and the United States there is still a large gap, the United States will still be regarded as China as a “threat” “the biggest competitor”. The U.S. science and technology strategy towards China to maintain the U.S. global science and technology leadership and the maintenance of U.S. national security, efforts to highlight the security attributes of science and technology, and constantly rendering the “China threat theory”, showing a “pan-security” development trend.[6] Whether it is Trump's “full decoupling” or Biden's “targeted blockade”, the essence of the United States in order to maintain its “absolute security” to take the geopolitical competition in the “blockade idea”.

2.3 Protection of hegemonic concepts

The positional nature of international status itself and the resulting scarcity leads to the fact that there is only one hegemon in a given international system, while there are many hegemonic aspirants. When a hegemonic aspirant is close to the hegemon, or is perceived by the hegemon as having “ambitions” for hegemony, the hegemon will experience strong status anxiety. [7] The United States has seized opportunities in the two technological revolutions, creating its scientific and technological hegemony, and has been playing a “leadership role” in the world. In recent years, China has made breakthroughs in the development and application of artificial intelligence, quantum communications, 5G communications technology, mobile payments and other emerging digital technologies, while the United States has seen a relative slowdown in innovation in these areas. The United States was once concerned that the rapid development of our country in the emerging high-tech field would lead to changes in the pattern of scientific

and technological power between China and the United States, and that the United States would lose its hegemonic advantage in technology. The maintenance of international hegemony is the core pursuit of the United States, the United States will never allow other countries to overtake the United States, so that it will lose the right to formulate rules and standards, affecting the United States in the international scientific and technological field of "hegemony".

After the collapse of the Soviet Union, the bipolar pattern collapsed, and the United States became the only superpower in the unipolar world system, and has been in a hegemonic position as a "leader" in the political, economic, military, and scientific and technological fields. All the policies and measures under the Trump administration have been based on the concept of "America First", and the Biden administration is still adhering to the tradition of "hegemony" that the United States has always advocated. Compared with other competitions, technological competition can determine the fate of a big country, the United States has always regarded its advantages in the field of technology as an important political capital, and regarded scientific and technological development as an important pillar of hegemony and a guarantee to maintain its prestige and influence in the world.

3. Changeability in the Biden Administration's Science and Technology Policy toward China

Although the Biden administration's science and technology policy toward China continues the Trump administration's "containment" tone, but in the specific implementation of the process made many adjustments.

3.1 Building "high walls" around "small compounds"

Compared to the Trump administration's policy of full decoupling from China in the field of science and technology, the Biden administration is more inclined to use the "small yard, high wall" policy of preventing China's science and technology. "Small yard, high fence" was originally a military defense concept, from the Obama administration, former Secretary of Defense Gates put forward the U.S. space defense strategy, in November 2020, set up by the U.S. Congress "China Task Force In November 2020, the "China Task Force" established by the U.S. Congress submitted a report entitled "How to Meet the Challenge of China: A New Strategy for U.S. Technological Competition", formally proposing the "small yard, high fence" strategy for technological competition.[8] The Biden Administration has adopted a precisely decoupled "small yard, high wall" strategy in the technology sector, protecting specific technologies and research areas directly related to U.S. national security and drawing appropriate strategic boundaries, and advocating "selective" strengthening of "dual-use technology investment and trade restrictions" that have a significant impact on national security. It advocates "selective" strengthening of "investment and trade restrictions on dual-use technologies" that have a significant impact on national security.[9]

Under the "small yard, high wall" policy, the U.S. government has carried out precision strikes and targeted sanctions against Chinese enterprises and individuals, and the number of Chinese individuals and entities on the U.S. government's blacklist of export controls and economic sanctions in fiscal year 2023 reached a new high. According to U.S. official data, as of October 31, 2023, the total number of Chinese enterprises and individuals blacklisted was 2,545, of which the number of new additions as of the end of October 2023 was as high as 287, far exceeding the total number of new additions in the whole year of 2022 (168), with an increase ratio of 22.8%.[10] President Joe Biden issued an executive order on February 28, 2024, seeking to restrict the sale of so-called "sensitive data" from the United States to six countries, including China and Russia, in order to "better protect the security of Americans' personal data," [11] and broadly prohibiting the sale of digital data to individual countries. The broad prohibition on the

sale of digital data to individual countries is also the “latest escalation of the digital cold war” between Washington and Beijing.

3.2 Combating containment on all fronts

The Biden Administration is engaged in a broader and deeper containment and suppression of Chinese science and technology at the “whole-of-government,” “whole-of-society mobilization,” and “whole-of-system” levels. During his February 10, 2021 visit to the Pentagon, Biden stated that we need a “whole-of-government” effort, congressional cooperation, and a strong system of allies as a way to meet the Chinese challenge and ensure that the American people are prepared to compete in the future .[12] In the process of combating and containing China's science and technology, the U.S. Congress, the Department of the Treasury, the Department of Commerce, the Department of Justice, the Federal Communications Commission and other administrative agencies are jointly involved. The U.S. Congress has passed a number of bills related to science and technology to provide legal support for various U.S. departments to contain and suppress Chinese science and technology. The U.S. Department of the Treasury, the Department of Commerce, the Committee on Foreign Investment, the Intelligence Community and other relevant departments have taken measures to strengthen their suppression efforts. The U.S. Department of the Treasury has increased its budget and investment in science and technology research and development to provide adequate financial support for U.S. science and technology research and development and protection. In addition, the U.S. Department of Commerce has been suppressing Chinese high-tech enterprises based on the “Export Control List” and “Entity List”, restricting the export of technology and the flow of talents. The U.S. Committee on Foreign Investment (CFI) has stepped up its scrutiny of Chinese high-tech enterprises involved in the U.S. through a specially established foreign investment approval system, in order to restrict Chinese high-tech enterprises from investing in the U.S.

The U.S. has spared no effort to create “China's science and technology threat theory” in the whole society, and science and technology enterprises can accurately place advertisements and deliver information to users by means of big data and cloud computing, so as to guide public opinion to strengthen competition with China in the field of key technologies, and make a good foundation for integrating ideology into the science and technology development of the masses. The Biden administration has used values to influence the development of science and technology, leading the U.S. public into the misconception that China's cutting-edge technology will pose a great danger to U.S. security, thus forming a consensus in favor of the U.S. to curb China's science and technology and to strengthen the competition with China's science and technology. The system-wide organization is an expansion of the Biden administration's restrictions on China's science and technology. The Biden administration has expanded the Trump-era restrictions on both technology development and product production to include restrictions on basic research, technology development, related parts and components, production equipment, digital data, etc., striking at and curbing the entire chain from the research and development side, the production side, and the supply side of China's science and technology, and the multilayered blocking of scientific and technological innovations, which has made China's scientific and technological advances China's scientific and technological progress has been made difficult by the blockage of multiple links of scientific and technological innovation.

3.3 Building a “technology alliance” against China

The Biden administration has changed Trump's “unilateralism” towards China's science and technology competition, and actively repaired alliance relations and built a “science and technology democratic alliance” against China's science and technology competition. In his speech on the approach to China, U.S. Secretary of State Anthony Blinken regarded “investment,” “synergy,” and “competition” as the three pillars of the Biden administration's overall strategy

toward China, stating that The U.S. will compete more favorably with China based on “investing in our domestic power base” and “collaborating with our allies and partners.” [13] The construction of “technology alliance” is a more precise strategic means for the United States to contain China, the U.S. government has actively drawn in allies to form the 5G alliance and the digital economy alliance, the Transatlantic Artificial Intelligence Alliance and the quantum technology alliance, and has actively joined hands with Japan, South Korea and Taiwan to form the “Semiconductor Alliance”, the International Space Alliance and so on. “Semiconductor Alliance”, International Space Alliance, etc.[14] These alliances are cooperating in multiple fields such as the field of semiconductor industry, artificial intelligence, 5G communications, space technology, quantum technology, clean energy and biotechnology. The technology alliances formed by the Biden administration to adapt to the new era are characterized by their strong relevance, the number of targets for the alliances, and the diversity of their modes of operation.

4. Impact of the Biden Administration's Science and Technology Policy toward China

The Biden administration in the implementation of science and technology competition policy with China in the “self-improvement” and “weak other” state, on the one hand, “internal self-improvement”, increase the support for domestic science and technology innovation, strengthen its own foundation to enhance scientific and technological strength, and reduce its external technological dependence to maintain the leading edge of the United States. On the one hand, “internal self-improvement”, increase the support for domestic science and technology innovation, strengthen their own foundation to enhance the scientific and technological strength, and reduce their own technology dependence on foreign countries in order to maintain the leading edge of U.S. technology. On the other hand, the United States is “weakening itself externally”, utilizing all kinds of administrative means to restrict the flow of talents and technology exports to China, and curbing the development of China's cutting-edge science and technology fields. But the center of gravity of its strategy of science and technology competition with China will be adjusted from “minimizing the rival's scientific and technological influence and the process of scientific and technological rise” to “maximizing the United States in the global scientific and technological leadership”. [15] This trend will bring a series of challenges to the economic and technological development of China and the United States, the relationship between China and the United States, and the world economy and science and technology.

4.1 Slowing the pace of scientific and technological innovation in the United States

The United States still holds the initiative in the vast majority of high-end science and technology fields, the United States high-tech enterprises on China's capital, market, supply chain, especially the market has a greater dependence on the United States to maintain the leading position can not be separated from the support of China's huge market, the United States of America to crack down on China's science and technology suppression, not only is not conducive to expanding China's market, but also increase their own innovation costs. The United States is preventing so-called “China's actions to steal knowledge and technology”, especially against the United States scientific community, which is undermining the cooperation of United States universities and hitting United States scientists and the scientific community.[16] The crackdown by the United States has caused legitimate scientific cooperation to face a “chilling effect”, whereby ongoing or upcoming cooperation is forced to be interrupted and called off, and exchanges of emerging technologies are impeded, which ultimately slows down the pace of innovation in the United States itself, and injures the foundations of scientific and technological innovation.

4.2 Undermining confidence in China's scientific and technological development

The United States Government emphasizes “America first” everywhere, especially in the field of science and technology, which has a strong protectionist overtone. The Center for a New American Security (CNAS), a United States think tank, has made policy recommendations for a national technology strategy, stating that it is necessary to resist and reduce unnecessary technology transfers, and therefore to provide more cyber-defence support for small companies, which are more vulnerable to attacks. [17] Since China's reform and opening up in the 1980s, its economy and science and technology have caught up with the “golden age” of economic globalization and international scientific and technological development. Nowadays, the U.S. implements a policy of containment of China's science and technology, and technological alliances have replaced the original open science and technology system, adding more uncertainties to the global scientific and technological environment, which has rapidly deteriorated the favorable environment for China's scientific and technological development. The favorable environment for China's science and technology development is rapidly deteriorating, and the cooperation between China and foreign science and technology enterprises is hindered. The increasingly stringent technology control and market blocking measures of the United States are gradually shifting from unilateral to multilateral, which has led to a certain degree of skepticism in the international and domestic capital markets about the development prospects of China's high-tech industry.[18] The United States “blockade” science and technology policy will objectively promote China to speed up the development of key technology independence and autonomy of the process, but the “disadvantages” far outweigh the “benefits”. China's scientific and technological field will face a more complex international scientific and technological environment, from the original “cooperation-oriented, competition as a supplement” to “competition-oriented, cooperation as a supplement”. China has fewer opportunities for exchanges and cooperation with advanced technology countries, and many advanced technologies can only be developed “behind closed doors” and “cross the river by groping the stones”, which greatly increases the cost of research and development in terms of time, labor and economic costs.

4.3 Deterioration of China-United States relations

For a long time, China and the United States have been each other's number one trading partners, and the friendly economic and trade cooperation between China and the United States has contributed to the benign development of China-United States relations. In the 1970s, the U.S. and the Soviet Union were at war for supremacy, and under the severe situation of “bipolar pattern”, the U.S., in order to leverage China's “counterbalance” to the Soviet Union, relaxed the blockade on Chinese science and technology and intended to carry out scientific and technological cooperation with China on the basis of the principle of equality and mutual benefit. China's science and technology got a better environment for development and made great progress. With the dramatic changes in Eastern Europe, the collapse of the Soviet Union, the United States of America's interaction with China by the international environment “constraints” gradually declined, no longer urgently need China's power to counterbalance the Soviet Union, the science and technology in China is still the implementation of the “long-term contact” strategy, the United States and China in the scientific and technological fields to the main cooperation, the United States and China in the field of science and technology is also maturing. The division of labor and economic and trade exchanges between China and the U.S. were also becoming more mature. At the beginning of the twenty-first century, China seized the opportunity of joining the World Trade Organization to achieve economic and technological take-off, and the division of labor between China and the United States has become increasingly refined, forming a close relationship of mutual complementarity and interdependence, and a

good situation of “political cold and economic hot” has been formed between the United States and China. Economic and trade relations have always been the “ballast” of Sino-US relations, but nowadays the increasingly fierce competition in science and technology between China and the United States has aggravated the uncertainty of the development between China and the United States, and the shaking of the “ballast” has made the Sino-US relations increasingly tense.

4.4 The fragmentation of the global high-end technology chain as an obstacle to economic development

The global industrial division of labour is becoming increasingly refined, and the production chains of all countries in the world have long formed a close relationship of “you have me and I have you”. China and the United States, as the two countries with the largest economic entities in the world, are the ballast and stabilizer for the stable development of the world economy and politics. In order to safeguard the hegemony of “America First”, the United States has acted against the law of the market, stirred up Sino-US scientific and technological disputes for no apparent reason, initiated a “war of science and technology” against China, and utilized administrative means to create obstacles to the scientific and technological development of China and the United States. The “high walls of small yards” and “technological alliances” have resulted in “choosing sides” and the formation of antagonism among countries around the world in the field of technology, which has had a significant impact on the production chain and supply chain of the science and technology industry, and this will cause supply chain disorder and resource mismatch, and accelerate the fragmentation of the global high-end technology industry chain. The new crown epidemic sweeping the globe has pressed the fast-exit button on the world economy, which is in dire need of recovery. The United States, as the world's largest economy, has implemented a policy of scientific and technological suppression against China at a time when the world economy is in dire need of recovery, making it more difficult for the world economy to recover.

4.5 Threats to global security

Emerging high technologies, such as 5G technology and artificial intelligence, have brought more convenience to the development of society, but likewise non-traditional security issues. In July, the Center for a New American Security (CNAS) launched a report “U.S.-China Competition and Military AI—How Washington Can Manage Strategic Risks amid Rivalry with Beijing”, [19] This report explores how the United States can effectively manage a series of strategic risks arising from the militarization of artificial intelligence in U.S.-China relations against the backdrop of intensifying U.S.-China gaming and the rapid development of artificial intelligence technology. The development and use of AI smart weapons poses a greater threat to global security. With the Biden administration's technological embargo on China, China will face greater security problems caused by the militarization of AI, and other countries and societies will face more unpredictable and complex situations when dealing with non-traditional security issues.

5. Conclusion

The changes in the Biden government's scientific and technological decision-making towards China mean that the Sino-US scientific and technological competition is a “prolonged war”, and China and the US will be playing around scientific and technological competition for a long time in the future, and we need to fully recognize the long-term nature and complexity of the competition. In the era of scientific and technological competition, “whoever masters advanced technology will gain the first-mover advantage”, China should strengthen the national strategic scientific and technological power, focus on key technology fields to strive for scientific and technological leadership, adhere to the strategy of independent innovation and technology to

enhance the strength of scientific and technological innovation, and adhere to the opening up to the outside world to expand the circle of friends to enhance their own scientific and technological influence.

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