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# The Influence of U.S. High-Tech Interest Groups on the Formation of American Technology Policy toward China: Motivations, Pathways, and Limitations (2018–2024)

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**Abstract:** The emergence of a new phase in the technological revolution has intensified U.S.-China technological competition, centered on power rivalry, with American high-tech interest groups actively shaping U.S. technology strategy towards China. This paper employs the neoclassical realist framework to analyze the internal logic driving the actions of these interest groups regarding China-focused technology policies. The increased competitiveness of China's high-tech industries has heightened their perceived threat, prompting interventions through multiple lobbying channels to achieve three core political objectives. Although significant successes have been attained, such efforts remain constrained by systemic countervailing forces. Given the growing influence of interest groups on U.S. technology policy towards China, China must expand its strategic toolkit for interest balancing, cultivate external countervailing capabilities, and deploy multidimensional strategies to address the challenges posed by technological competition.

**Keywords:** High-Tech Interest Groups; China Policy; Technological Competition; Neoclassical Realism

## 1. Introduction

Since the Cold War, the United States has maintained its predominant status in the technological domain due to its formidable technological advantages and market-driven advancements. However, as the Fourth Industrial Revolution reshapes global power structures, America's relative decline in technological capabilities has led to unprecedented challenges to its dominance in critical scientific fields from China, which is now designated as the primary strategic competitor, making technological competition the central arena of contemporary Sino-American strategic rivalry. Notably, the tightening of U.S. technology policies towards China since 2018 has coincided with various concurrent trends: record-breaking lobbying expenditures by Silicon Valley tech giants and deepening institutional ties between the technology-security complex and the national security institution. This convergence presents a critical paradox: Why have U.S. high-tech corporations, principal beneficiaries of

globalization, emerged as proactive agents of technological decoupling at this historical juncture?

Within the intensifying Sino-American technological competition, three analytical dimensions demand systematic investigation. First, concerning motivational drivers, what fundamental factors propel high-tech interest groups to intervene in China-focused technology policymaking? Second, how do these non-state actors translate industrial demands into binding policy instruments regarding operational pathways? Third, examining limitations, does their policy influence exhibit threshold effects when navigating the inherent tension between technological nationalism and market globalization?

## 2. Literature Review

Since 2008, U.S. policy toward China has undergone marked transformations characterized by intensifying strategic rigidity. Scholarly inquiry in this domain has yielded multiple theoretical frameworks to analyze determinants of America's hardening China posture.

Scholars adopting a holistic approach prioritize systemic analysis by abstracting away domestic variables and constructing theoretical propositions centered on inter-state diplomatic interactions. This paradigm manifests in three principal explanatory models. The first builds upon Robert Jervis' "Spiral Model," (Han, Z. Y., 2023) positing that mutual misperceptions and cognitive distortions exacerbate security dilemmas, culminating in cyclical conflict escalation processes. Proponents of this framework (Goldstein, 2013; Liff & Ikenberry, 2014; Bulman, 2021) identify security dilemmas as the critical impediment to Sino-American cooperation. The second theoretical strand employs John Mearsheimer's offensive realism, emphasizing power politics as the core dynamic of great power relations. This school attributes fundamental causes to the leadership rivalry within global governance frameworks between China and the U.S. (Mearsheimer, 2001) The third analytical current focuses on ideational divergences, contending that persistent ideological and value system incompatibilities constrain Sino-American collaborative potentials (Yan, X. T.,2021).

The second approach adopts an individualist analytical perspective. This state-centric viewpoint focuses on factors within U.S. domestic political ecology, investigating the formulation of China policy from the domestic political aspect, asserting that domestic politics significantly influences U.S. foreign strategy. Scholars from this perspective mainly include three views. First, those who argue that state leaders' subjective perceptions constitute critical variables affecting China-U.S. relations (Christensen, 2015). Second, researchers focus on political ideologies, believing they shape the value orientation of foreign policy, construct images of the "Other," mold the environment for policy formation, and provide legitimacy (Wu, X. B., 2022). Third, scholars note governmental and political structures, insisting that states "must consider the interests and demands of specific domestic actors forming political alliances upon which they rely during policymaking, enabling the latter to influence policy outcomes by shaping the former's political positions" (Yuan, Z., 2000; Han, Z. Y., 2001; Wang, H., 2018), as well as those examine political processes, arguing that such dynamics turn China policy into "tools of domestic politics and bargaining chips in bipartisan games".

The third perspective synthesizes the preceding two approaches, emphasizing the dual logic of

geopolitics and domestic politics alongside their dynamic evolution. This interactive paradigm combines internal and external logic and manifests primarily in three forms (Yuan, Z., 2000; Han, Z. Y., 2001; Wang, H., 2018). First, (Wang, H. & Song, T. Y., 2023) neoclassical realism posits the international system as the core variable driving states' foreign policies while introducing domestic politics as an intervening variable, thereby establishing an "externally dominant, internally supplementary" framework (Wang, H. & Song, T. Y., 2023). Building upon this, American scholar Robert D. Putnam developed the "two-level game theory," which holistically integrates international and domestic interactions through synchronic and reciprocal analytical lenses (Evans, 1993). Numerous scholars have employed this framework to scrutinize U.S.-China policy (Kong, Q. F., & Li, A., 2020; Xu, Z. W., & Wu, Y. Z., 2022; Yang, L. Z. et al., 2022; Xue, Z. W. et al. 2023). Representative theoretical extensions under neoclassical realism include Thomas J. Christensen's "domestic mobilization theory" and Fareed Zakaria's "government-centrism." Second, the social coalition theory emerging in the late 1990s attributes U.S. foreign policy formulation to endogenous factors—unique historical traditions, ideologies, social structures, and political institutions—considered superior to exogenous variables within the international system, thus forming an "internally dominant, externally supplementary" analytical framework (Trubowitz, 1998; Kupchan & Trubowitz, 2007). Several scholars have applied this theory to examine the evolution of Sino-American policy (Wang, H., 2016). Third, analytical eclecticism emerging in the early 21st century transcends paradigmatic boundaries between domestic and systemic variables, emphasizing flexibility and complementarity over theoretical exclusivity. Although nascent, scholars have conducted pioneering explorations: WANG's analysis of the Biden administration's supply chain security strategy amid Sino-American competition, alongside CUI and YIN's investigations into U.S. perceptions of China's artificial intelligence development.

While existing scholarship provides multi-perspective explanations of U.S.-China policy determinants, critical gaps persist. Few studies systematically examine interest groups, particularly high-tech interest groups, as political actors shaping China-specific policies. At the same time, insufficient attention is paid to China's policy agency within the international system and dynamic analyses of competitive-cooperative interactions. Crucially, this paper notes that international systemic forces, especially Chinese technological competition, fundamentally influence both high-tech interest groups' activism and U.S.-China technology policymaking. Concurrently, these interest groups, emerging as novel political forces with the internet economy's ascent, have assumed growing significance in U.S. policymaking processes. Consequently, this study adopts neoclassical realism to explicate the formation mechanisms of U.S. technology policy toward China while critically evaluating the limits of high-tech interest groups' influence within this process.

## 3. Neoclassical Realist Analytical Framework

### 3.1 Conceptual Definition: High-Tech Interest Groups

High-tech industries constitute technology-intensive sectors with substantial R&D investments, high value-added products, favorable international market prospects, characterized by intellectual

orientation, innovative capacity, strategic significance, and low resource consumption. Within this cluster, internet enterprises and hardware manufacturers represent primary constituents. This study delimits high-tech industries and their associated interest groups to three computer technology-driven sectors: the semiconductor industry, the electronic communications industry, and the computer or internet industry (Chart 1).

The high-tech interest groups under examination refer to these three computer-related high-tech industries. These groups comprise enterprises, trade associations, non-governmental organizations, and research institutions and pursue collective developmental interests. These groups, as representatives of high-tech industrial cluster interests, articulate policy positions and demands to governmental and legislative bodies through diverse channels, and exercise substantive influence over policymaking processes.

**Chart 1**: High-Tech Interest Groups and Corresponding Industries Analyzed in This Study

| Classification | Representative Sectors | Representative Corporations |
|---|---|---|
| Semiconductor Industry | Chip Design & Manufacturing, Integrated Circuits | Nvidia<br>Broadcom<br>Qualcomm<br>Texas Instruments |
| Telecommunications Industry | 5G Networks, Satellite Communications, Wireless Technologies | Amphenol<br>Cisco |
| Computer & Internet Industry | Software Development, Computer Hardware Manufacturing, Cloud Computing Services, Artificial Intelligence, Social Media Platforms | Microsoft<br>Oracle<br>Amazon<br>Google |

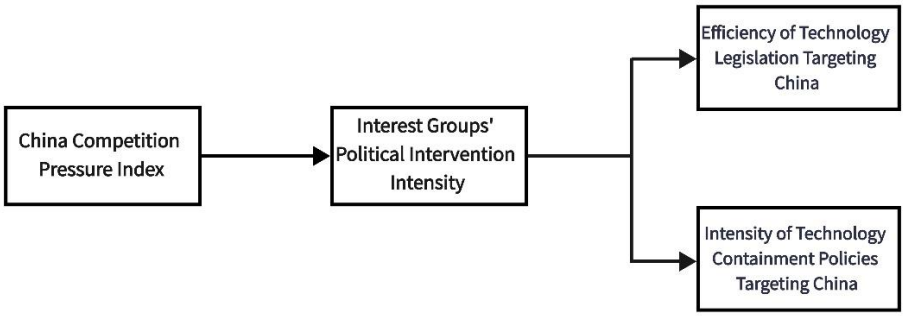
### 3.2 Neoclassical Realist Analytical Framework

This study constructs a neoclassical realist analytical framework to examine the motivations, pathways, and limitations of U.S. high-tech interest groups' influence on China-related technology policies, incorporating systemic and domestic variables.

Neoclassical realism, as a foreign policy theory, provides an integrative cross-level framework that combines international systemic forces and domestic political factors to explain state behavior and policy responses. Its theoretical model involves tripartite variables. International systems (independent variables) as structural determinants transmit pressures through domestic politics (intervening variables), ultimately shaping state policies (dependent variables). Building on fixed systemic variables, extant scholarship introduces diversified domestic intervening dimensions. Foulon identifies four filters,

including decision-makers' perceptions, ideology, interest group pressures, and resource extraction capacity, while Ripsman et al. focus on leadership views, strategic culture, state-society relations, and domestic institutions. This study accordingly develops a refined framework (Figure 2) to enhance explanatory coherence regarding variable transmission mechanisms.

**Figure 2:** Neoclassical Realist Analytical Model




This study centers on the systemic-domestic dual variable interaction as its analytical nucleus, systematically elucidating the formation mechanisms of U.S. technology restriction policies toward China. At the systemic level, it employs the "China Competition Pressure Index" in computer-related high-tech sectors as the core independent variable, revealing its foundational role in driving U.S. foreign policy adjustments and facilitating strategic responses from American high-tech interest groups through interest transmission mechanisms. At the domestic level, the analysis focuses on the mediating variable of "Interest Groups' Political Intervention Intensity". Functioning as the "political transmission belt" connecting systemic pressures with policy outputs, this investigation examines how such intervention shapes the intensity and legislative efficiency of China-targeted technology policies, ultimately delineating the dynamic interplay between international pressure transmission, domestic political mobilization, and policy implementation intensity.

The research concentrates on the 2018-2024 Sino-American technology competition cycle, demarcated by the Trump administration's Section 301 investigations triggering trade warfare. This period witnessed a systematic escalation of U.S. technological restriction measures against China, constituting a critical policy window for bilateral technological relations transformation while providing a representative research sample for analyzing interest group contestation and policy output interactions.

## 4. Mechanism Analysis

### 4.1 Driving Factors

The development of science and technology is of great significance to a country's comprehensive national strength and the shaping of international relations. Currently, the technological revolution is profoundly reshaping the connotation and form of international power. Against this background, the technological competition between China and the United States has been endowed with multiple political implications, such as the struggle for international power, the competition for dominance in

technological rules, and the comparison of institutional superiority. China has always adhered to the innovation-driven development strategy and proposed to build a world-class scientific and technological nation by 2035. Under this policy guidance, China has continuously achieved breakthroughs in strategic high-tech fields, posing a certain challenge to the high-tech industry of the United States. In response and to maintain its core position in the high-tech field, the Trump administration first labeled China as a "strategic competitor" in 2017. Since then, the United States has taken various actions to constrain the development of China's high-tech industry, making China the main target of the United States' foreign technological policy.

Meanwhile, as the domestic information technology market in the U.S. becomes increasingly saturated, American high-tech enterprises are increasingly viewing overseas markets as their main growth points in the future. However, with the rapid development and expansion of the global market share of emerging technologies in countries and regions such as China, the market space of American high-tech enterprises is being squeezed. The American high-tech industry faces fierce international competition led by China and increasingly perceives a "threat" from China. Against this backdrop of intensifying technological competition between China and the U.S., American high-tech interest groups have expressed their political demands through various activities, attempting to shape a more favorable internal and external environment for further development in the international market. Then, what exactly gives rise to the "threat" perception of American high-tech interest groups? What exactly prompts their series of actions?

Accordingly, this study proposes the following hypothesis:

**H1:** The China Competition Pressure Index exhibits a positive correlation with the political engagement intensity of high-tech interest groups.

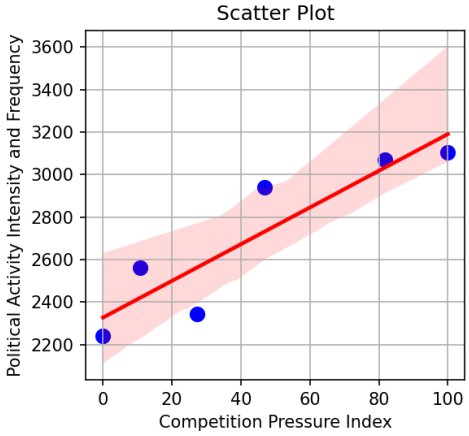
Specifically, the frequency of political activities in U.S. high-tech interest groups increases proportionally to the competitive pressure exerted by China's high-tech sector.

Analysis of Sino-American technological competition data from 2018-2024 reveals multi-dimensional evidence. At the macro-investment level, China's gross expenditure on R&D (GERD) growth rate substantially outpaced that of the U.S., especially in computing-related R&D investment, and the gap in GERD growth narrowed significantly by 2021. World Intellectual Property Organization (WIPO) statistics indicate China's global innovation index ranking ascended from 15th to the global top ten. At the same time, its total patent applications and high-tech patents surpassed U.S. figures, demonstrating China's incremental erosion of U.S. technological monopolies and enhanced supply chain autonomy. Micro-market level analyses show accelerated market capitalization growth among China's leading tech firms, markedly closing the valuation gap with U.S. counterparts, reflecting heightened market validation. Collectively, these indicators demonstrate China's systemic competitive pressure across R&D intensity, innovation capacity, patent productivity, and market dynamics, substantively challenging U.S. technological ascendancy.

Empirical analysis reveals a significantly positive correlation between China's technological competitive pressure and the intensity of political engagement by U.S. high-tech interest groups.

Longitudinal data demonstrate that post-2018, both the number of lobbyists and the scale of political contributions in the U.S. high-tech sector have shown an overall upward trend. By assigning weights of 0.4, 0.3, and 0.3 respectively to China's patent applications, innovation index, and corporate market capitalization based on their importance and conducting a weighted calculation, the Pearson correlation coefficient between the China competition pressure index and U.S. interest groups' political engagement intensity is obtained, which reaches 0.906 ($p=0.0128$). This validates the hypothesis that China's technological rise is a driving force of U.S. interest groups' political engagement. Consequently, it can be concluded that the intensity of political engagement by U.S. high-tech interest groups increases with the enhancement of competition from China's high-tech industry and that Chinese technological competitive pressure against the U.S. serves as a critical factor of political activities within American high-tech interest groups.

**Figure 3:** Scatter Plot of Competition Pressure Index Versus Political Activity Intensity and Frequency Among High-Tech Interest Groups




## 4.2 Pathways: Four Transmission Mechanisms from Capital to Policy

Based on the previous analysis, this paper has identified the logical starting point of the U.S. technology policy towards China - the continuous strengthening of China's international competitiveness and profitability in high-tech industries has led to an enhanced "threat" perception among U.S. high-tech interest groups, increasing the intensity and frequency of their political activities. The following section will discuss the pathways of the U.S. high-tech interest groups that influence the U.S. technology policies towards China, which is also the core part in the formation of such policies.

Although the pressure from China in the field of science and technology has intensified, the Fourth Industrial Revolution has pushed international politics into the "technological politics era", and the U.S. adheres to the "absolute security concept", the U.S. government and Congress have established the strategic main tone of technological competition with China, alongside the two complementary thinking patterns of "self-strengthening" and "weakening the other", supplemented by technological nationalism policies. However, the U.S. high-tech interest groups have their own demands for the U.S. technology policy towards China, which are not entirely consistent with the overall U.S. strategy towards China in

this regard.

Their demands for foreign policy are concentrated in three aspects. First, they aim to maintain intellectual property and business secrets by leveraging their technological advantages. They hope to consolidate their technological monopoly and obtain high profits in the international market by promoting the U.S. to intensify its intellectual property review of China. Second, they want the U.S. government to lead the global digital trade rules. This is due to the host countries' data localization requirements, barriers to digital flows, insufficient copyright protection, and the high operational costs caused by adapting to multiple countries' regulations. They hope to create a favorable environment for themselves, oppose the promotion of digital rules by China and other countries that are contrary to their interests, and push developing countries to open their markets. Third, they oppose the U.S. trade war with China, especially measures such as imposing tariffs and "technology supply cuts", which will directly lead to a decline in group profits and severe economic losses.

The American scholar Norman Ornstein once pointed out that "even if an interest group has a large amount of capital, it cannot guarantee that it will have a significant influence on policy." Interest groups can only convert their capital into political analysis capabilities, and take effective measures to transform their capital advantages into political influence. To achieve their political demands, the U.S. high-tech interest groups actively exert influence on the U.S. Congress and government through various means and capture political power.

### 4.2.1 Direct Participation in Political Processes

Direct engagement in policymaking constitutes the principal channel for high-tech interest groups to articulate demands, primarily through lobbying activities and political contributions. Lobbying refers to organized efforts by interest groups or their hired professionals to influence policymakers' decisions directly. The sophistication of the U.S. high-tech lobbying has intensified, with 3,105 registered lobbyists in 2023, nearly doubling since 2018, and 80% possessing revolving door experience. Expenditures have concurrently skyrocketed. Nvidia's Washington lobbying costs quintupled to over 500,000 U.S. dollars in 2023, while five tech giants, including Meta, collectively invested 65 million U.S. dollars annually. Regarding political contributions, these groups systematically fund politicians aligned with their policy preferences. Since the 2017 election cycle, total contributions have exhibited exponential growth, enabling efficient intervention in Sino-U.S. technology agendas to shape internationally favorable policies.

### 4.2.2 Revolving Door Networks

The revolving door mechanism, characterizing bidirectional career transitions among government, corporations, and think tanks, has accelerated within the U.S. high-tech sectors, revealing entrenched political-commercial collusion. Public records indicate revolving door participants increased from 1,715 to 2,241, representing a 30.7% increase between 2018-2023, exemplified by former White House Press Secretary Jay Carney becoming Amazon's Senior Vice President of Global Corporate Affairs and ex-Congressional Oversight Panel counsel William Perraut assuming Facebook's Policy Director role.

Reverse mobility proves equally significant at the same time. with approximately 40 tech executives entering federal service, including ex-Google CEO Eric Schmidt chairs the Defense Innovation Board. Through such bidirectional personnel flows, high-tech interests permeate federal policymaking institutions, constructing cross-sectoral influence networks to advance China-related technology policy objectives.

### 4.2.3 Shape the public opinion

As an important part of high-tech interest groups, in the current era of rapid development of the Internet economy, Internet giants rely on their dominant market positions to implement information control. As of 2023, Google holds a 90.7% share of the global search engine market. By 2024, Facebook's monthly active users exceeded 3 billion. The combined global digital advertising market share of the two companies is nearly 50%. It is the foundation for high-tech interest groups have huge social influence. In the process of the formation of the U.S. science and technology policy towards China, the U.S. high-tech interest groups, based on the needs of science and technology competition with China, systematically suppress narratives in favor of China through algorithmic filtering, content dilution, and false information implantation. In contrast, various unofficial think-tank platforms and media and even cyber bots, through publishing reports, presenting relevant viewpoints, and creating false information, render China threats such as digital authoritarianism, enabling the public opinion to shift in favor of achieving their interests in exchange for support for their political demands from the general public, as well as from the government and congress.

### 4.2.4 Participate in the formulation of science and technology policies

Given the limitations of government officials' insufficient expertise in specific industries, their policy-making often relies on professional evaluations and industry analyses from enterprises and think tanks while also incorporating insights from think tank experts and scientific and technological workers to form feasible solutions. This provides a channel for interest groups to intervene in policies through think tanks. The high-tech interest groups in the United States mainly construct policy discourse through two paths: First, they establish specialized think tanks to provide targeted policy advices, such as the "China Strategy Group" (CSG) led by Eric Schmidt, the former CEO of Google, which released "Asymmetric Competition: A Strategy for China & Technology" in 2021. The report explicitly proposes that the United States adopt an "asymmetric competition" strategy and implement selective decoupling measures against China. Secondly, it provides funding for relevant think tanks or research institutions to conduct interest correlation research. For instance, in 2021, a technology enterprise provided 1.5 to 2 million U.S. dollars in funding to the "Center for Strategic and International Studies" (CSIS), focusing on core issues such as the semiconductor supply chain and the digital economy, which is highly consistent with the group's foreign policy demands. In the practice of policy consultation, the Office of Science and Technology Policy (OSTP) of the White House achieves in-depth involvement of the high-tech interest groups in the decision-making process by absorbing corporate executives to form special committees, enabling them to participate in the report writing of policy-related committees directly.

### 4.2.5 Case Analysis

Although the general stance of the U.S. high-tech interest groups on technological competition with China aligns with national interests, there exist significant tension in the critical area of semiconductors. These interest groups support technological restriction against China to maintain the U.S. technological leadership, but they also suffer economic losses due to their deep integration into the global supply chain. This contradiction drives them to intervene in policymaking through multiple channels. Taking the sanctions against Huawei since 2018 as an example, the action logic of the high-tech interest groups clearly reflects the dual demands of "containing competition" and "preserving interests".

(1) Systemic Pressure and Interest Conflict

Huawei's rise in 5G communications and semiconductors poses a significant challenge to the U.S. technological dominance. In the second quarter of 2018, its market share in smartphones surpassed Apple, ranking second globally, and it holds over 40% shares of the global 5G network market. As China is also the second-largest market for semiconductors and the Internet, Huawei has become a key node in the global supply chain, shaking the U.S. core interests and becoming the primary target of sanctions. However, the sanctions have led to the loss of the Chinese market and mature manufacturing capabilities for the U.S. upstream and downstream supply chain enterprises. In 2019, Micron Technology suffered huge losses due to the supply cut-off to Huawei. New Flyer's stock price dropped by more than 30% in a week, and Intel, Qualcomm, and other companies collectively lost over 10 billion U.S. dollars in a year. As a result, the U.S. high-tech interest groups have found themselves in a dilemma of needing to weaken Huawei's competitiveness while also maintaining supply chain cooperation to ensure profits.

(2) Path Choice

To resolve the above contradictions, the U.S. high-tech interest groups have shaped the U.S. semiconductor industry policy and China policy through two complementary strategies.

On the one hand, technology restriction-oriented agenda setting renders the "China threat" to promote industrial support policies. In 2020, the Semiconductor Industry Association (SIA), in conjunction with the Boston Consulting Group (BSG), released a report highlighting that the U.S. share of global semiconductor manufacturing capacity declined sharply, compared with China's semiconductor capacity, which is expected to rise to 40%. This will threaten the United States in terms of artificial intelligence and quantum computing leadership. At the same time, in the context of sanctions against Huawei leading to supply chain disruptions and the high cost of industrial repatriation, this interest group continues to accelerate lobbying through collective letter writing, participation in government meetings, the release of reports, and other means to obtain government policy support to strengthen the competitiveness of the local community in order to alleviate the economic pain of the repatriation of the supply chain.

On the other hand, there has been an initiative to loosen rules that promote the preservation of group interests, aiming to avoid the negative effects of supply chain cut-off from China and maintain

the ability of high-tech interest groups to make profits. In 2019, companies like Qualcomm and Intel participated in meetings to lobby the U.S. Department of Commerce, requesting the loosening of export restrictions on non-sensitive technologies. In 2020, major U.S. chip manufacturers directly lobbied the Trump administration with increasing frequency, actively applying for permission to resume cooperation with Huawei. In 2023, three major chip giants once again took advantage of the meeting opportunity to jointly pressure the Biden administration, opposing the tightening of export controls on chips and semiconductor manufacturing equipment to China. The Semiconductor Industry Association (SIA) of the United States also issued a statement warning the U.S. government and Congress that restricting chip sales to China might backfire on the U.S. itself. It once again emphasized that the Chinese commercial semiconductor market could bring huge benefits. With all those efforts, they successfully pushed for the approval of approximately 70% to 75% of sales licenses related to Huawei. Such actions demonstrate the bottom-line thinking of high-tech interest groups, which is to retain market access to China to the greatest extent within the framework of national security.

(3) Effectiveness of actions

The political activities carried out by U.S. high-tech interests did partially balance their dual claims. At the level of technological competition, the Endless Frontier Act and the Chip USA Act were introduced in 2020 and consolidated and upgraded in 2022 into the CHIPS and Science Act of 2022 under the impetus of Senator Charles Schumer, a Democrat with deep ties to the semiconductor industry, and Deputy Secretary of State in the Trump administration Keith J. Krach, the bill was passed unanimously in just over a month. The bill establishes a total of about 278.2 billion U.S. dollar in the pool of funds, covering chip manufacturing infrastructure, research, and development investment, and at the same time provides a ten-year 200 billion U.S. dollar in scientific research grants, as well as 24 billion U.S. dollar in chip business tax incentives. Superimposed on the semiconductor incentives in the 2021 National Defense Authorization Act, as of April 2024, high-tech interest groups have leveraged 447 billion U.S. dollar in investment to form more than 80 major projects covering the entire semiconductor industry chain and strengthened supply chain security collaboration with Japan, South Korea, Taiwan, Europe, and other allies. At the level of supply chain stability, the U.S. policy has also been flexibly adjusted, with the United States Department of Commerce approving 70%-75% of Huawei's sales permits, along with the Biden administration's commitment to stabilizing U.S.-China relations and easing long-standing tensions between the two sides through high-level interactions, creating a new window of policy communication for the chip industry.

### 4.3 Limits of Influence

As can be seen from the above analyses, the existence of high-tech interest groups in the United States does promote the formation and adjustment of the U.S. government and congress policies and bills, and because of the large number of enterprises, strong influence on the national economy, high-speed development of the Internet economy and strong economic strength as well as superb political communication skills, its social influence on the United States is also great. To a large extent, their

demands have been realized. In terms of the intensity of the implementation of export control policies, although the U.S. passed the Export Control Reform Act in 2018 to target leading Chinese high-tech companies by delineating a list of entities and restricting exports to China of advanced computing chips, semiconductor manufacturing equipment, etc., according to the United States Department of Commerce's public data, from 2018 to 2022, the approval rate of the applications for exporting to China involving commodities, software, and technology remains above 85%, indicating that the fundamental role of the U.S. government and Congress, as representatives of the interests of their own capitalism, is still to facilitate their own enterprises to obtain greater economic benefits. At the same time, the vast majority of the U.S. science and technology business managers attach importance to short-term interests in essence, determining that they are still willing to cooperate with Chinese enterprises, and actively circumvent the export control within the legal framework. In terms of China-related legislation, although the number of proposals involving China has soared since the 116th Congress, the number of legislations has remained stable, and the approval rate is even much lower than that of the previous Congresses. This indicates that the interests of high-tech interest groups have been realized to a great extent.

However, the U.S. technology companies, as instruments of national strategic competition, are also subject to the needs of the U.S. national foreign competition. With the U.S. export control measures on China being tightened again, the effectiveness of the out-of-government lobbying activities of the semiconductor-related firms in the above case, which were intended to loosen the sales restrictions, has been greatly weakened. In addition, the actions of the U.S. high-tech interests are also subject to numerous domestic and foreign factors, mainly including China's countermeasures, U.S. domestic anti-trust lawsuits against technology giants, and the impact of domestic public opinion.

First, China's systematic countermeasures. In terms of legislation, China has strengthened its technology export control by introducing or amending laws such as the Anti-foreign Sanctions Law of the People's Republic of China and the Catalog of Technologies Prohibited and Restricted from Export, and at the same time, has broadened the path of legal cooperation with the help of international rules. In the 15th WTO trade policy review, China raised written inquiry and demanded replies to the U.S. unilateral policies such as the CHIPS and Science Act. In the realm of international cooperation, China has deepened its collaboration with developing nations through the "Digital Silk Road," witnessing Huawei's counter-trend expansion in 5G market shares across Southeast Asia, Africa, and Latin America, thereby eroding the overseas operational space for American enterprises. Regarding indigenous innovation, China's national R&D expenditure reached 3.3278 trillion yuan in 2023, with patent filings in frontier fields such as artificial intelligence and quantum computing constituting over 40% shares of global totals. These technological breakthroughs have compelled the United States to recalibrate its restriction strategies.

Second, dual pressures from international and domestic antitrust policies have emerged. Domestically, from 2019 to 2023, the U.S. Congress and enforcement agencies has initiated dozens of antitrust investigations and lawsuits against tech giants like GAFA, diverting their lobbying resources

away from China-focused policies. Internationally, the European Union's Digital Markets Act and Digital Services Act came into force alongside regulatory measures such as imposing an 8.25 billion euros fine on Google, while China delayed Qualcomm's acquisition of NXP under the effects doctrine of its Anti-Monopoly Law. Concurrently, Australia and Latin American countries advanced antitrust reviews to curb the monopolistic expansion of U.S. enterprises. This global and domestic antitrust scrutiny has obstructed U.S. firms' technological integration and market expansion, compelling the U.S. government to cautiously balance corporate interests with policy efficacy, thereby hindering full endorsement of hardline China policies.

Third, public opinion has constrained high-tech interest groups. Data from the U.S. Pew Research Center indicates that 72% of citizens support enhanced regulation of high-tech companies, viewing their political influence as excessive, while nonprofit organizations and civil associations actively promote antitrust agendas. Growing public dissatisfaction with tech giants' data misuse and monopoly-driven social inequality has intensified skepticism toward exclusionary policies framed as "national security" measures, and often perceived as self-serving attempts to weaken foreign competitors. This public opinion pressure compels policymakers to weigh interest group demands against voter sentiment, avoiding public backlash over supply chain risks or industrial employment shocks, thereby ensuring social acceptability and procedural fairness in China policy formulation.

## 5. Conclusion

The U.S. high-tech interest groups act both as key drivers seeking to contain China through technological leadership and as defenders of commercial interests—a duality rooted in the intertwined interests of globalized industrial chains. However, China’s systematic countermeasures have weakened the efficacy of the U.S. technology policies toward China, American tech giants face fragmented lobbying resources due to international and domestic antitrust scrutiny and litigation, while public opinion pressure compels policymakers to weigh competing priorities. These three factors constitute an "impossible trinity" for interest group action.

This dynamic offers insights for China in countering U.S. technology sanctions: dealing increasingly complex U.S.-China relations requires targeting the core of strategic competition. China may fragment the U.S. high-tech lobbying coalitions by expanding semiconductor supply chain cooperation, leverage tools like the Anti-Foreign Sanctions Law to retaliate against U.S. tech firms and raise their lobbying costs, and dilute the restriction efficacy of America’s technological restriction policies through initiatives like the Digital Silk Road. In conclusion, the framework in this article not only validates neoclassical realist theory but also provides a novel analytical lens for studying transnational interest groups.

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## Author Contributions

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

## Availability of Data and Materials

The data and materials on which the study is based were accessed from a repository and are available for downloading through the following links.

https://www.stats.gov.cn/

https://data-explorer.oecd.org/

https://www.wipo.int/

https://www.opensecrets.org/

https://en.wikipedia.org/

https://www.oge.gov/

http://www.whitehouse.gov/

http://www.congress.gov/

https://www.statista.com/

http://hginsights.com

https://www.csis.org/

http://www.globaldata.com

https://www.beg.com/publications/2020/incentives and competitiveness-in-semiconductor-manufacturing

https://www.reuters.com/article/us-huawei-tech-usa-lobbying-idUSKCN1TH0VA.

http://intl.ce.cn/

http://www.semiconductors.org

https://www.gmanetwork.com/news/news/nation/686618/despite-us-warning-lorenzana-seesno-reason-to-be-wary-of-china-s-huawei/story/

https://thediplomat.com/2019/06/southeast-asias-huawei-responsein-the-spotlight-with-first-5g-rollout/

https://www.huawei.com/en/news/2020/7/rain-huawei-africa-first-standalone-5g-network

http://world.people.com.cn/n1/2021/0126/c1002-32011918.html

http://www.gov.cn

http://www.qstheory.cn

## Conflicts of Interest

The authors declare that they have no conflicts of interest to report regarding the present study.

## References


[1] Ao, L. J., Tang, C., & Wang, W. J. (2025). Research on the source system of American science and technology policy toward China based on multi-streams theory. *Journal of Intelligence*, *44*(1), 88–94,87.

[2] Xu, F., & Shi, B. (2024). Techno-nationalism and its influence on U. S. technology policy towards China. *Contemporary American Review*, (2), 60–81,127–128.

[3] Han, Z. Y., & Wang, Y. H. (2023). An analysis of the domestic political logic of the United States' policy towards China. *Quarterly Journal of International Politics*, *8*(2), 1–25.

[4] Bulman, D. J. (2021). The economic security dilemma in US-China relations. Asian Perspective, 45(1), 49-73.

[5] Goldstein, A. (2013). First things first: The pressing danger of crisis instability in US-China relations. International Security, 37(4), 49-89.

[6] Liff, A. P., & Ikenberry, G. J. (2014). Racing toward tragedy?: China's rise, military competition in the Asia Pacific, and the security dilemma. International Security, 39(2), 52-91.

[7] Mearsheimer, J. J. (2001). The Tragedy of Great Power Politics. New York: W. W. Norton & Company.

[8] Yan, X. T. (2021). The competition between China and the United States in the early Digital Age. *Quarterly Journalof International Politics*, *6*(1), 24–55.

[9] Christensen, T. J. (2015). The China challenge: Shaping the choices of a rising power. New York: WW Norton & Company.

[10] Wu, X. B. (2022). How the changing U.S. domestic political ecology is reshaping its China policy. *The Chinese Journal of American Studies*, *36*(4), 30–46.

[11] Wang, H. (2018). The dual logic of the Trump Administration's strategic adjustment towards China and its interaction. *World Economics and Politics*, (3), 47–69,156–157.

[12] Yuan, Z. (2000). Interest group politics and the United States' policy towards China. *Journal of Contemporary Asia-Pacific Studies*, (6), 8–14.

[13] Han, Z. Y. (2001). Public diplomacy: An important tool of American foreign policy. *Nankai Journal (Philosophy Literature and Social Science Edition)*, (6), 89–96.

[14] Wang, H., & Song, T. Y. (2023). Integrating the dual logics of domestic and foreign affairs-the Biden administration's national Supply Chain security strategy in the context of Sino-US competition. *The Chinese Journal of American Studies*, *37*(1), 82–112.

[15] Evans, P. B. (1993). Building an integrative approach to international and domestic politics. Double Edged Diplomacy. International Bargaining and Domestic Politics, 397-430.

[16] Xu, Z. W., & Wu, Y. Z. (2022). A two-tier game analysis of the United States' soybean trade with China. *Economic Relations and Trade*, (12), 16–23.

[17] Xue, Z. W., Sun, Y., & Guo, L. Q. (2023). New changes in the US Taiwan strait policy from a two-tier game perspective: A study of the biden administration. *Cross-Taiwan Strait Studies*, (4), 94–106.

[18] Yang, L. Z., Luo, S. S., Wu, F., & Liu, X. (2022). Analysis of the trend and response strategies of Sino-US economic and trade frictions from the perspective of two-layer game theory. *Journal of Chongqing Technology and Business University (Social Sciences Edition)*, *39*(3), 136–148.

[19] Kong, Q. F., & Li, A. (2020). The United States' trade war against China from the perspective of the two-tier game. *Issues of Contemporary World Socialism*, (3), 147–157.

[20] Trubowitz, P. (1998). Defining the national interest: conflict and change in American foreign policy. Chicago: University of Chicago Press.

[21] Kupchan, C. A., & Trubowitz, P. L. (2007). Dead center: The demise of liberal internationalism in the United States. International Security, 32(2), 7-44.

[22] Wang, H. (2016). The logic of social alliances and the evolution of the United States' foreign strategy (1945-2015). *World Economics and Politics*, (7), 58–88.

[23] National Bureau of Statistics of the People's Republic of China. (2025, April 09). *How are high-tech industries defined and statistically analyzed*. https://www.stats.gov.cn/zs/tjws/t

jbz/202301/t20230101_1903766.html

[24] Wang, S., & Li, Y. (2023). System pressure, domestic politics and the conservatism of South Korea's foreign policy: An interpretation based on neoclassical realism. *Northeast Asia Forum*, *32*(5), 65–83,127–128.

[25] Feng, W. (2024). Not all domestic variables are mediating variables: Distinguishing between mediating and moderating variables in neoclassical realism. *World Economics and Politics*, (10), 109–137,163.

[26] Foulon, M. (2017). Neoclassical realist analyses of foreign policy. In Oxford Research Encyclopedia of Politics.

[27] Ripsman, N. M., Taliaferro, J. W., Lobell, S. E., & Yesilyurt, N. (2017). Neoclassical Realist Theory of International Politics. Uluslararasi Iliskiler/International Relations, 14(55), 119-125.

[28] Tang, X. H. (2021). Power and strategy in the era of technological politics. *Quarterly Journal of International Politics*, *6*(2), 59–89.

[29] Stat, OECD. (2016). Main science and technology indicators (MSTI database). Retrieved May 6, 2025, from https://data-explorer.oecd.org/vis?lc=en&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_MSTI%40DF_MSTI&df[ag]=OECD.STI.STP&dq=.A.G%2BT_RS...&lom=LASTNPERIODS&lo=5&to[TIME_PERIOD]=false.

[30] World Intellectual Property Organization. (n.d.). Home page. World Intellectual Property Organization. Retrieved May 6, 2025, from https://www.wipo.int/portal/en/index.html.

[31] Open Secrets. (2025). Original Reporting. Retrieved May 6, 2025, from https://www.opensecrets.org/.

[32] Long, C. S., & Yuan, Z. (2023). Analysis of the United States' science and technology strategy towards China in the era of great power competition. *The Chinese Journal of American Studies*, *37*(4), 47–72.

[33] Xia, M., & An, Y. N. (2020). Impact from high-tech internet companies on American domestic politics and foreign economic policies. *The Journal of Jiangsu Administration Institute*, (2), 94–102.

[34] Wikipedia contributors. (n.d.). Ashkan Soltani. Wikipedia. Retrieved May 6, 2025, from https://en.wikipedia.org/wiki/Ashkan_Soltani.

[35] Office of Government Ethics. (n.d.). Home page. Office of Government Ethics. Retrieved May 6, 2025, from https://www.oge.gov/.

[36] The White House. (n.d.). Official website of the White House. Retrieved May 6, 2025, from https://www.whitehouse.gov/.

[37] Library of Congress. (n.d.). Congress.gov. Retrieved May 6, 2025, from https://www.congress.gov/.

[38] Statista GmbH. (n.d.). Statista - The Statistics Portal. [Website]. Retrieved May 6, 2025, from https://www.statista.com/.

[39] HG Insights. (n.d.). Google Cloud Market Share & Buyer Landscape in 2024. HG Insights. Retrieved May 6, 2025, from https://hginsights.com/blog/google-cloud-market-share-report.

[40] China Strategy Group. (2020). Asymmetric Competition: A Strategy for China & Technology.

[41] Center for Strategic and International Studies. (n.d.). CSIS Home Page. Retrieved May 6, 2025, from https://www.csis.org/.

[42] Zhai, M. Y., & Li, Q. S. (2020). Analysis of the trump administration's science and technology prevention policy towards China. *Research on International Relations*, (4), 129–150.

[43] 199IT. (2020, August 14). *Annual report of Huawei investment & Holding Co., Ltd. for 2019*. http://www.199it.com/archives/1100833.html#google_vignette

[44] Boston Consulting Group. (2020, September 16). Government Incentives and US Competitiveness in Semiconductor Manufacturing. Boston Consulting Group. Retrieved May 6, 2025, from https://www.bcg.com/publications/2020/incentives-and-competitiveness-in-semiconductor-manufacturing.

[45] U.S. (2019, June 17).chipmakers quietly lobby to ease Huawei ban. https://www.reuters.com/article/us-huawei-tech-usa-lobbying-idUSKCN1TH0VA.

[46] Liao, Q. (2023, July 19). *Biden is brewing new restrictions, and the Big three chips are lobbying the US government to "stop"*. http://intl.ce.cn/sjjj/qy/202307/19/t20230719_38637184.shtml

[47] United States Congress. (2022, August 9). CHIPS and Science Act, Public Law 117 - 167, 117th Cong., 2nd sess., Division A and Division B.

[48] Semiconductor Industry Association. (n.d.). Semiconductor Industry Association | SIA | Voice of the Semiconductor Industry. Retrieved May 6, 2025, from https://www.semiconductors.org/.

[49] GMA News. (2019, March 1) Despite U.S. Warning, Lorenzana Sees No Reason to Be Wary of China's Huawei. Retrieved May 6, 2025, from https://www.gmanetwork.com/news/news/nation/686618/despite-us-warning-lorenzana-seesno-reason-to-be-wary-of-china-s-huawei/story/.

[50] Prashanth Parameswaran. (2019, June 25) Southeast Asia's Huawei Response in the Spotl ight with First 5G Rollout,"The Diplomat, Retrieved May 6, 2025, from https://thediplomat.com/2019/06/southeast-asias-huawei-responsein-the-spotlight-with-first-5g-rollout/.

[51] Wang, X. W., & Ma, M. J. (2022). The US digital competition strategy towards China: Driving factors, implementation paths and impact limits. *International Forum*, *24*(1), 78–97,158–159.

[52] Huawei. (2020, July 19). Rain and Huawei Jointly Launches Africa's First Standalone 5G Network. Retrieved May 6, 2025, from https://www.huawei.com/en/news/2020/7/rain-huawei-africa-first-standalone-5g-network.

[53] Lu, D. X. (2021, February 26). *5G cooperation between China and Latin America holds great promise*. http://world.people.com.cn/n1/2021/0126/c1002-32011918.html

[54] National Bureau of Statistics. (2024, September 18). *Innovation-driven development has a chieved remarkable results, and the construction of a science and technology power has been vigorously advanced-The twelfth report of the series on the economic and social de velopment achievements of new China over the past 75 years*. https://www.stats.gov.cn/sj/sjjd/202409/t20240918_1956553.html

[55] The Central People's Government of the People's Republic of China. (2024, February 18). *Opinions on promoting the innovative development of future industries by seven departm ents including the ministry of industry and information technology*. https://www.gov.cn/zhengce/zhengceku/202401/content_6929021.htm

[56] Qstheory. (2024, July 26). *Improve the mechanism for independently cultivating talents to foster a high-level* innovative *talent team*. http://www.qstheory.cn/qshyjx/2024-07/26/c_1130185712.htm

[57] Sun, J. (2023). The institutional evolution and practical effects of anti-monopoly in the United States. *People's Tribune*, (19), 76–80.