Proceedings of ICMRED 2026 Symposium: The Future of Work: Strategy, Workforce Transformation, and Organizational Renewal
DOI: 10.54254/2754-1169/2026.LD32851

# *From Tariffs to Composite Barriers: Strategic Differentiation of Technology Enterprises under the Evolution of the U.S.-China Trade War*

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***Abstract.*** The U.S.-China Trade War, as an ongoing social concern, has evolved from a simple tariff confrontation, to a four in one composite trade barrier system of "Tariff-Technology-Supply Chain-Industrial Policy". This study systematically reviews the evolution of the U.S.-China Trade War, reveals the logic of great-power rivalry behind it. Subsequently, this study focuses on the impact mechanism of composite trade barriers on the global technology industry, using Lenovo and ZTE as comparative cases to analyze the different effects of different response strategies on the survival and development of technology-based enterprises. Lenovo transforms external pressures into opportunities for upgrading and transformation through systematic resource allocation and capability reconstruction. ZTE, on the other hand, fell into a serious shutdown when faced with chip supply disruptions due to its reliance on core technology and weak compliance system. Both positive and negative cases confirm that in today's world, geopolitical conflicts and composite trade barriers are being normalized, technological autonomy and compliance capabilities are becoming the dual cornerstones for enterprises' survival and competition.

***Keywords:*** The U.S.-China Trade War, Composite Trade Barriers, Supply Chain Resilience, Technological Autonomy, Compliance Management.

## 1. Introduction

Nowadays, globalization is accelerating and upgrading, competition among countries is becoming increasingly fierce. One of the core features of the world economy has shifted from traditional commercial frictions to a deeper gamble of technological hegemony and dominance over global rule setting between incumbent powers represented by the United States and rising powers represented by China. The ongoing trade war between China and the United States since 2018 is a concentrated manifestation of contemporary geopolitical conflicts in the economic field.

Understanding the essence of the U.S.-China Trade War, is crucial for analyzing changes in global business strategies. Previously, the strategic core of multinational companies was to reduce costs and improve efficiency. But in today's world where geopolitical risks have shifted from "Black Swan Events" to normalized ones, the resilience and security of supply chains, the autonomy and

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controllability of core technologies, and the adaptability to complex international political rules have become key factors determining the success, failure, and survival of enterprises. This study aims to systematically analyze the evolutionary logic of the U.S.-China Trade War, focusing on its dual impact on the global technology industry. Introducing comparative cases of Lenovo and ZTE to analyze how the U.S.-China Trade War not only "Positively Incentivizes" companies to strengthen supply chain resilience and technological independence, but also "Negatively Impacts" and brings problems about key technological bottlenecks.

Theoretically, this study aims to integrate the two analytical dimensions of geopolitical risks and national industrial policy competition, enriching the research on how the U.S.-China Trade War affects the strategic choices of multinational corporations. Practically, this study can provide guidance and reference for strategic choices for multinational enterprise managers, and provide educational materials based on real business cases for university business schools, helping to cultivate comprehensive talents with dual track development of "Politics + Business".

## 2. Timeline ordering of the U.S.-China Trade War and current status of the evolution of composite trade barriers

The origin of the U.S.-China Trade War did not begin as widely believed in 2018. As early as the early stages of Reform and Opening Up, the United States had already implemented special restrictions on Chinese exports. At that time, China's main export commodity was textiles, so the trade restrictions imposed by the United States on China were mainly textile quota management, including MFA based textile quotas and other anti-dumping measures. By 1986, the coverage of special protection against China had reached a peak of nearly 40% [1]. The Most-Favored-Nation Tariff Treatment after joining the WTO in 2001, as well as the opportunity to end global textile trade quotas with the introduction of the "Agreement on Textiles and Clothing" in 2005, allowed China to expand its exports. However, the U.S. trade sanctions against China did not disappear, but instead shifted towards a "Double-Anti" policy of Anti-Dumping Duties (AD) and Countervailing Duties (CVD), focusing on chemical industries such as metals and plastics. The trade sanctions during this period were relatively scattered, but they laid the groundwork for larger conflicts in the future.

During the Trump 1.0 Governance, the U.S.-China Trade War entered a new phase marked by tariffs. For example, since 2018, the United States has successively imposed tariffs on imported washing machines and solar panels, global steel and aluminum products, and other Chinese exports to the U.S. (mainly high-tech products) under sections 201, 232, and 301 based on the Trade Act of 1974. By the end of that year, it had covered more than 50% of China's total exports to the United States, and the average tariff rate on China had increased from about 3% before the trade war to over 12% [1]. Then, China quickly took retaliatory measures against this, imposing tariffs on over 70% of products imported from the United States. In addition, the conflicts in this stage are no longer limited to simple commodity trade, but quickly spread to the high-tech field. For example, in May 2019, the U.S. Department of Commerce (DOC) included Huawei in the "Entity List" and restricted related companies from selling chips and other products or technologies to it [2]. This ban marks the initial integration of tariff war and technology war, and the non-tariff barriers between China and the United States have entered a more complex stage.

During the Biden Governance, the trade war did not cool down as expected, but instead exhibited a toolbox-like compound feature. Building on the foundation of the Trump 1.0 Governance, it rapidly expanded the coverage of non-tariff barriers in a more covert and destructive way. In terms of supply chain pressure, the United States attempted to strengthen domestic manufacturing and collaboration with allied countries by promoting supply chain reviews and risk reduction for key

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products such as semiconductors, pharmaceuticals, and rare earths, in order to reduce dependence on Chinese manufacturing. In terms of technological blockade, the U.S. further strengthened export controls on China's high-tech industry, especially targeting on key products such as semiconductor manufacturing equipment and advanced computing chips. The U.S. also extensively use industrial policy tools such as the "CHIPS and Science Act of 2022" and the "Inflation Reduction Act of 2022" to support the development of domestic industries and the return of the clean energy industry chain, competing with China [3]. Scholar Chen J. foresaw in 2018 that the essence of the U.S. strategy towards China is a systematic rule-based containment of rising power by established power, and its means will inevitably expand from a single economic tool to comprehensive strategic competition [4].

During the Trump 2.0 Governance, the pressure on China further escalated and became more focused. In April 2025, the United States announced the imposition of 125% equivalent tariffs on Chinese export products, and China immediately retaliated with the same magnitude. The tariffs on both sides once soared to an unprecedented level of over 200%. It is worth noting that this tariff war is not simply a superposition of tax rates, but presents obvious structural characteristics: the U.S. Customs and Border Protection quickly released a list exempting 74.4% of China's export semiconductor products after the implementation of tariffs, most of which are consumer essential goods that are difficult to replace in the short term, while maintaining high tariffs on other strategic technology products that have clear alternative sources and which China is catching up with. This indicates that the pressure tactics of the United States are becoming more "Precise Strikes", implementing more precise containment of China's industrial upgrading without harming itself [3]. The strategic competition between the United States and China has formed a composite trade barrier system of "Tariff-Technology-Supply Chain-Industrial Policy".

## 3. The impact of composite trade barriers on the technology industry

### 3.1. Composite trade barriers: from macroscopic transmission to microscopic differentiation

The formation of composite trade barriers mentioned in Section 2 implies that the impact of the U.S.-China Trade War is not limited to bilateral tariffs themselves. In today's world, intermediate goods trade dominates the global value chain, and any sanction measures will be transmitted layer by layer along the production chain, with a scope, impact, and complexity far exceeding traditional trade wars [5]. This provides a key perspective for analyzing the impact on the technology industry: the production of high-tech products is highly dependent on global division. For example, chips designed by the United States are first manufactured in Taiwan, China, then assembled in Chinese Mainland, and then sold all over the world. Any barrier at any stage will create ripple effects along the value chain.

This effect is most evident in the supply chain restructuring of the technology industry. Fajgelbaum et al. found that the trade war between China and the United States is not just about the balance of trade between the two countries but has created net export opportunities for many countries that play intermediate processing and transportation roles. The key to this difference lies in the "Substitution" or "Complementarity" relationship between products from different countries and products from China and the U.S.: countries that can replace China and export electronic products and mechanical equipment to the United States (such as Vietnam, Thailand, Mexico, etc.) are taking on orders transferred from China, resulting in increased revenue. And countries that are deeply tied to the technology industries of China and the United States (such as Ukraine, Colombia, etc.) suffer losses due to reduced demand from China and the United States [6].

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However, the geographical transfer of the supply chain is not equivalent to the transfer of value. Fajgelbaum & Khandelwal's study suggests that the cost of trade barriers is mainly transmitted to domestic consumers through rising import prices, rather than being borne by foreign exporters. In the technology industry, this logic means that even if companies relocate their production lines to countries such as Vietnam, the core chips, design software, and manufacturing equipment necessary for their production are likely to still come from the United States or heavily rely on American technology. At this point, the cost of trade barriers will ultimately be transmitted to these companies' profits and end product prices through the import of intermediate goods, rather than truly avoiding sanctions. Quantitative estimates show that the actual income losses of China and the United States, in terms of GDP, are not significant (about 0.04-0.17% in the United States and about 0.29% in China). But in the technology industry, the distribution of this loss is extremely uneven, as companies that rely on imported intermediate goods bear the main cost [7].

Under the complex pressures mentioned above, the strategic choices of different technology companies will lead to vastly different outcomes. The following text will analyze the key factors that determine the success or failure of enterprises under the pressure of composite barriers through comparative cases between Lenovo and ZTE.

### 3.2. Positive impact: building supply chain resilience-taking Lenovo as an example

As a leading global PC manufacturer, Lenovo has gradually built a resilient global supply chain system through systematic resource allocation and capability restructuring. The study by Li J. et al. indicates that its sustainable supply chain governance follows a three-stage model from the inside-out [8]:

In the first stage, Lenovo internalizes international regulations and customer requirements into internal compliance standards, and solidifies the company's sustainable foundation through green innovations such as developing Low Temperature Soldering (LTS). The core lies in the reconstruction of "Commitment Capability": internalizing external pressures into corporate strategy, and making sustainable operational decisions run through the entire value chain.

In the second stage, Lenovo expands its governance scope to enterprises in upstream and downstream of the supply chain. Through Supplier Code of Conduct, Closed-Loop Recycling Collaboration, and E-Waste Recycling System, a "Centralized Resource Combination" is formed with partners to reconstruct connectivity capabilities. When the United States expanded trade sanctions from tariffs to supply chain reviews, the diverse distribution network of key suppliers reduced Lenovo's reliance on a single source and provided an important buffer.

In the third stage, Lenovo further integrates stakeholders such as government, academic institutions, and industry alliances to participate in green manufacturing projects and lead the establishment of industry alliances. By constructing a dynamic cycle of "Resource Restructuring-Capability Reconstruction-Value Creation", Lenovo is able to achieve sustainable governance of the supply chain ecosystem inside-out, and its ability to cope with complex barriers is gradually enhanced.

In addition, Lenovo's forward-looking layout in terms of technological autonomy is also the key to its survival and development in the midst of the trade war barriers between China and the United States. According to media reports such as People's Daily Online, Lenovo has been committed to promoting AI-oriented transformation in recent years. By building core technology systems such as the "Xiaotian" personal intelligent agent and the "Optimus" intelligent agent engine, as well as independently developing and mastering core architectures, Lenovo has significantly reduced its external dependence on key technologies. This strategic upgrade from passive compliance to active

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construction has enhanced Lenovo's business autonomy and resilience in the face of complex barriers.

### 3.3. Negative impact: the "bottleneck" crisis-taking ZTE as an example

Unlike Lenovo's proactive transformation, ZTE's experience reflects the other side of complex trade barriers. As a leading communication equipment manufacturer in China, ZTE's business also covers the world, but its core competitiveness is highly dependent on high-performance CPUs, storage chips, etc. monopolized by American companies, and it seriously lacks independent control capabilities in key components.

ZTE's weaknesses were rooted in the restless atmosphere prevalent in the Chinese technology industry at that time. Some enterprises and capital are eager for quick success and instant benefits, often directly borrowing or even copying foreign technologies in order to occupy the market as fast as possible, without paying attention to long-term independent development or absorption [9]. ZTE is a typical manifestation of this "Grabbism". When the United States completely cut off chip supply after the trade war broke out, ZTE's inventory quickly ran out and its main business almost came to a halt. Even worse, ZTE's lack of emphasis on internal risk prevention and compliance control has further escalated the crisis. As early as 2012, the United States had launched an investigation into ZTE's alleged violation of export controls. However, ZTE's internal compliance system is virtually non-existent, and the legal department has not effectively prevented the promotion of illegal decisions [10]. When facing the U.S. investigation, ZTE's negative confrontational measures such as false statements and concealing evidence directly intensified the conflict, making the U.S. more tough in subsequent sanctions. In the end, ZTE had to take huge fines, management restructuring, and the presence of U.S. monitoring team in exchange for the suspension of sanctions.

The ZTE incident illustrates that, for technology companies and other industry enterprises, if they lack core technology autonomy and independent compliance systems, they are destined to fail in the contemporary trade war dominated by technology sanctions and "ESG Hidden Barriers". For the entire industry, it is necessary to fundamentally change the erroneous pattern of "Over-emphasizing Application, Underestimating Foundation" and build an independent and controllable industrial ecosystem.

## 4. Future suggestions

The comparative case study in the previous text reveals that, in the current era of normalized composite trade barriers, the key to decide whether enterprises can succeed has shifted from traditional efficiency competition to a systematic competition of "Technological Independence + Compliance Capability + Supply Chain Resilience".

For technology companies, their technology strategy should shift from "Grabbism", to a balance between independent controllability and open innovation. Firstly, enterprises should strengthen their emphasis and investment in basic research and development, build a "Technological Backup-tire" in key processes, and maintain an open technological perspective through participation in international standard setting, joining industry alliances, etc. Secondly, enterprises must upgrade their compliance system to a strategic capability, embedding requirements such as export control and supply chain responsibility into the entire business process to address hidden market entry barriers like ESG. Thirdly, the layout of the supply chain needs to shift from prioritizing efficiency to emphasizing both efficiency and resilience. Enterprises can optimize production capacity distribution under the

DOI: 10.54254/2754-1169/2026.LD32851

"China + N" framework by drawing on Lenovo's global decentralized production network, maintain reasonable inventory of core components, and proactively identify alternative sources.

For policy makers, industrial policies need to be shifted from scattered and fragmented investment to precise support, focusing more on "Unavoidable Processes" such as basic research and development and core technologies. At the same time, in response to the trend of "Weaponized Interdependence" pointed out by Farrell & Newman, China needs to actively participate in international rule making and strive for a fair and just institutional environment for enterprises to compete [11].

For universities, business education should go beyond traditional economics and management teaching and incorporate cutting-edge topics such as geopolitical risks, ESG compliance, and supply chain resilience into the curriculum. By combining theory with real cases in teaching, universities can cultivate students' composite ability to handle the dual logic of politics and business, and to provide comprehensive management talents with strategic vision for enterprises in the future.

## 5. Conclusion

The U.S.-China Trade War, which has evolved since 2018, is not a simple combat of trade imbalance, but a systematic game between established and rising power around technological hegemony and global rule dominance. Against the backdrop of normalized composite trade barriers, the survival rules of technology enterprises have undergone fundamental reshaping. The comparative case analysis between Lenovo and ZTE proves that technological autonomy and compliance capabilities are becoming the cornerstone for enterprises to maintain survival and competitiveness in the uncertain international trade environment.

The limitation of this study lies in the fact that Lenovo and ZTE, selected in the comparative case, both are electronic communication equipment manufacturing companies, but "Technology Industry" in a broad sense also covers multiple different fields such as biomedicine, artificial intelligence, new energy, etc. Whether the conclusions of this study can be extended to the above fields still needs further confirmation. Future researches can attempt to reveal the industry heterogeneity of the mechanism of composite trade barriers through cross industry comparative analysis. In addition, this study lacks quantitative measurement of composite trade barriers and only defines the four-dimensional framework of "Tariff-Technology-Supply Chain-Industrial Policy" from a macro perspective, and the interaction mechanism between each dimension has not been accurately quantified. Future researches can use input-output models and other methods to deeper explore the transmission pathways and cumulative effects of composite trade barriers.

With the continuous deepening and advancement of strategic gamble between China and U.S., in the future, competition among countries will further intensify, and the regionalization and diversification of the global value chain will continue. For Chinese enterprises, only by incorporating geopolitical risks into core strategic considerations and continuously strengthening endogenous capabilities can they maintain strategic initiative in the long-term process of great-power rivalry.

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