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A Comparative Study of China-US Technology Export Control Systems

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Abstract: Against the background of global technological competition, technology export control has become a core institutional instrument for major-country game-playing. Existing comparative studies suffer from fragmented analytical dimensions and insufficient systematic frameworks. This paper constructs a six-element whole-process analytical framework covering legislation-regulated object-permission-enforcement-redress-extraterritorial effect, and adopts comparative research, normative analysis, and text analysis methods to systematically compare the technology export control systems of China and the United States. The study finds that prominent structural differences exist between the two systems in legislative mode, catalogue-coding management, licensing tools, law-enforcement coordination, and extraterritorial jurisdiction. Such divergences stem from four driving factors: strategic environment, industrial status, multilateral participation and administrative tradition. China selectively draws on mature regulatory experience while adhering to institutional autonomy. This paper puts forward optimization suggestions for perfecting supporting legal norms, dynamically upgrading control lists, improving cross-departmental law-enforcement collaboration, enriching enterprise compliance guarantee mechanisms, and deepening international rule coordination, so as to gain a better understanding of the policy differences between China and the United States and balance security and development.

Keywords: Technology export control; Dual-use items; Extraterritorial jurisdiction; Sino-US technological competition; Export compliance

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1. Research background and problem statement

Under the profound restructuring of the global technological competition landscape, technology export control has evolved from a traditional anti-proliferation tool to the core institutional handle in the technological competition among major powers. Cheng *et al.* pointed out that in the context of the strategic competition between China and the United States, U.S. export control has shown characteristics such as intensified politicization, frequent use of blacklists, expansion of the reach of jurisdiction, and strengthening of joint containment. The control tools have been continuously upgraded and refined [1]. In 2020, China's "Export Control Law" was officially implemented, marking the entry of the domestic control system into a new stage of

independent construction. However, there is still significant room for improvement in terms of the refinement of the system and the coordination of law enforcement. What are the structural differences between the control systems of China and the United States at present? What are the underlying driving factors behind these differences? In which dimensions can China draw on international experience while maintaining its institutional autonomy? These questions have both theoretical value and practical significance.

1.1. Research significance

Theoretical significance: Establishing a "legislation-regulated object-permission-enforcement-relief-extraterritorial effect" six-element full-process analytical framework to address the fragmentation and insufficient comparability of existing comparative research dimensions. Practical significance: Decomposing the operational logic of U.S. regulation to provide a reference for Chinese enterprises to identify cross-border compliance risks; Accurately identifying the institutional disparities between the two countries to provide a feasible path for supporting enterprise development.

1.2. Review of domestic and international research status

The academic community has accumulated a wealth of research results: Cheng Xiaoguang systematically disassembled the legal system and organizational structure of the US export control, and quantitatively analyzed the actual impact of control measures on Sino-US technology trade; Xiong *et al.* summarized the overall framework of the US control policies and summarized the evolution characteristics and economic effects of the control over China since 2017 [2]; Han *et al.* analyzed the development process and institutional shortcomings of China's export control, and proposed a reform path that balances security and development; Song *et al.* verified the four influencing factors of US control decisions from a trade perspective.

However, the existing research still has four core gaps: G1: The comparative perspective is structurally lacking, mostly single-country institutional research, lacking systematic comparison based on a unified framework; G2: The dimension of institutional deconstruction is fragmented, often selecting a single dimension for exploration, and not establishing a full-process analysis coordinate system; G3: The international law controversy is disconnected from domestic practice, legal analysis rarely combines the two countries' control practices; G4: The precision of countermeasures suggestions is insufficient, mostly macro principles are expressed, lacking connection with the specific details at the institutional level.

1.3. Research content and methods

This paper takes the technology export control systems of China and the United States as the research object. Firstly, it defines the core concepts and the international legal framework, and establishes a six-element comparative benchmark; then it separately examines the system composition of the control systems of the two countries; subsequently, it conducts a systematic comparison and analyzes the causes of differences; finally, based on the institutional gap, it proposes optimization suggestions. The comparative research method, normative analysis method, and text analysis method are adopted, and the two systems are benchmarked based on a unified framework.

1.4. Innovation points and limitations

Innovation points: Firstly, a six-element full-process analysis framework was established to avoid the methodological flaws of traditional research that merely lists items in parallel; Secondly, a logical loop of

"institutional comparison-cause analysis-policy recommendations" was formed, with each policy corresponding to a specific institutional gap; Thirdly, the characteristics of institutions that can be borrowed and those that cannot were clearly distinguished. Limitations: The data on law enforcement practice cases in both countries is limited, and the depth of empirical analysis is insufficient; The specific rules for the regulation of emerging technologies are not sufficiently detailed.

2. Definition of terms

Establishing a common terminology basis for the entire text: Technological export refers to all kinds of behaviors of transferring technologies across borders, including the export of tangible carriers and intangible services such as data transmission; Export control is a legal system implemented by a country to restrict and supervise technological exports based on national security, international obligations, and other goals; Dual-use items have both civilian and military applications and are the core objects of current control; Military-civilian dual-use technologies are the core components of dual-use items, which can serve civilian production and support military equipment research and development.

2.1. The legitimacy basis of control

The legitimacy of control is rooted in three fundamental bases: First, national security sovereignty. Preventing the spread of sensitive technologies is an inherent part of national sovereignty; second, international non-proliferation obligations, which are the legal obligations assumed based on multilateral arms control treaties; third, the basis of multilateral coordination mechanisms, such as the Wassenaar Arrangement, which provides a coordination framework for control lists and best practices [3].

2.2. International law constraints

Article 21 of GATT 1994, the "Security Exception," is the core international law basis for export control. Its application has long been subject to three major controversies: First, whether the security exception is acceptable for review by the WTO Dispute Settlement Body; second, whether national security can extend to the fields of technology and economy; third, whether unilateral extraterritorial control violates the constraints of multilateral trade rules. This article only presents the framework of the controversies and does not prejudge the conclusions.

2.3. Comparison benchmark of six elements

A six-element analysis framework of "legislation-regulated object-permission-enforcement-redress-extraterritorial effect" is constructed as the structural hub of the entire text:

1. Legislation: The legal sources and hierarchical system of regulation; 2. Regulated Object: The scope of items covered by regulation and the logic of the list; 3. Permission: The implementation means and exception rules of regulation; 4. Enforcement: The supervision and execution as well as the penalty mechanism of regulation; 5. Redress: The channels for the protection of the rights of the parties concerned; 6. Extraterritorial Effect: The extension of the jurisdictional boundaries of regulation. Subsequent country-by-country analysis and comparison strictly follow this logic.

3. Historical origin

Xiong *et al.* divided the evolution of U.S. control over China into four stages: The Cold War Origin Stage (1949–1991), with technological blockades between camps as the core; The Multilateral Coordination Period (1991–2001), with the focus shifting to the prevention of the proliferation of weapons of mass destruction; The Transitional Adjustment Stage (2001–2017), with a gradually increasing unilateral tendency; The Single-Handed Control and Alliance Coexistence Stage (2017 to present), with the politicization of control becoming prominent and the formal formation of a coalition of allies to encircle the target.

3.1. Legislative system

A three-tier decentralized authorization structure is adopted: The legislative layer of the Congress is based on the 2018 "Export Control Reform Act"; the executive order layer of the President can flexibly adjust the scope and targets of control; the departmental regulation layer, with the "Export Management Regulations" of the Bureau of Industry and Security of the Department of Commerce as the core for implementation, has regulations issued by the State Council, the Ministry of Finance, etc. as supporting rules.

3.2. Controlled objects

The ECCN coding system is implemented for precise classification of items and technologies. A five-digit alphanumeric code is used to categorize them. A three-step determination path of "code matching-country grouping-exception verification" is provided for operational convenience. A regular assessment mechanism for emerging technologies is established to dynamically update the control list.

3.3. Control measures

Establish a multi-level tool system: Implement general licensing and individual licensing classification management, set up over ten types of licensing exceptions; Implement a presumption of denial policy for high-risk entities; Establish four major "blacklist" tools such as the physical list, military end-user list, etc., to precisely control the end-users; Extend cross-border jurisdiction through the Foreign Direct Product Rule (FDPR) to achieve institutional penetration of the global supply chain.

3.4. Law enforcement mechanism

With the BIS as the core law enforcement agency, it has two business divisions: export management and export enforcement. The division of responsibilities is clear and the coordination is mature [3]. Customs is responsible for on-site law enforcement, and the Ministry of Justice is responsible for criminal prosecution, forming a complete law enforcement chain. The penalties are severe, including hefty fines, criminal imprisonment, and deprivation of export privileges, etc.; there are also dual relief channels of administrative reconsideration and federal litigation.

3.5. Summary

The regulatory system in the United States exhibits the characteristics of fragmented legislation but highly specialized enforcement, high-level detail in the list, strong penetration of regulatory tools, and prominent extraterritorial effect, which serves to maintain its technological hegemony and achieve global strategic goals.

4. Historical evolution

Han *et al.* divided the development of China's control system into four stages: The compliance-oriented management stage (1980s–late 1990s) was mainly focused on fulfilling international non-proliferation obligations; The initial regulation stage (1997–2007) formed a system of administrative regulations in different fields; The systematization construction stage (2008–2019) gradually aligned with multilateral control mechanisms; The autonomous legislation stage (2020 to present) marked by the promulgation of the "Export Control Law," entered a new stage of legalization and systematization construction.

4.1. Legislative system

A unified legislative model is adopted, forming a clear three-tier structure: the legal layer is led by the "Export Control Law"; the administrative regulations layer covers regulations on dual-use items, nuclear, and military products, etc., in different fields; the departmental regulations layer mainly takes the form of license management methods and announcement of control lists.

4.2. Controlled objects

A directory-based management approach is adopted. An export license management directory for dual-use items is published, listing the items by categories such as nuclear, biological, and chemical fields. A directory licensing system is implemented. Items listed in the directory require an application for a license, while those not listed generally are not subject to control. Supplementary temporary control and embargo measures are also implemented to address specific risk scenarios.

4.3. Control measures

The core of the control measures is license management, which is divided into general licenses and special licenses. A control list for export restrictions is established, and strict control is imposed on high-risk entities. The final user and final use proof system is implemented, requiring the importer to promise not to misuse or resell the goods without authorization.

4.4. Law enforcement mechanism

A multi-departmental collaborative model is implemented. The Ministry of Commerce takes the lead in the control of dual-use items, while the General Administration of Customs is responsible for port supervision, with participation from departments such as the Public Security Bureau and the National Defense Science and Technology Commission. The supervision and inspection mainly involve document review and port inspection. Legal responsibilities include administrative penalties and criminal prosecution, but there is still room for improvement in the efficiency of cross-departmental collaboration and the depth of the entire law enforcement process [4].

4.5. Countermeasures and blocking tools

The "Anti-Foreign Sanctions Law" was promulgated, establishing a blocking mechanism to prohibit Chinese enterprises from implementing discriminatory measures imposed by foreign countries, and to counteract the adverse effects of unilateral extraterritorial jurisdiction.

4.6. Summary

The Chinese regulatory system is centered around unified legislation. The legal hierarchy is clear but lacks detailed regulations. Regulatory tools have gradually become more diverse, and coordination in law enforcement needs to be strengthened. Overall, it is in the stage of evolving from "existence" to "excellence."

5. Comparison of legislative models

The United States adopts a decentralized authorization model, which is highly specialized but fragmented in its system, with high transparency in rules and cases; China, on the other hand, follows a unified legislative model, with high integration but insufficient supporting regulations at the lower levels, and the transparency of discretion benchmarks needs to be improved [5].

5.1. Comparison of control objects

The American system of encoded management has fine granularity, clear technical parameters, and fast dynamic adjustment speed, while the Chinese directory-based management has a relatively coarse classification and mostly consists of qualitative descriptions, with a longer list update cycle.

5.2. Comparison of regulatory measures

The United States has flexible licensing discretion, a rich exception mechanism, and tools such as FDPR that possess strong cross-border penetration capabilities; in contrast, China has standardized approval standards, fewer exception scenarios, and lacks cross-border penetration tools.

5.3. Comparison of law enforcement and relief

In the United States, law enforcement entities are centralized, the procedures are highly transparent, and the relief channels are well-developed; in China, multiple departments are responsible for different aspects, coordination costs are high, law enforcement transparency is insufficient, and there is relatively less practice in judicial relief.

5.4. Comparison of extraterritorial effectiveness

The United States integrates multiple jurisdictional principles such as territoriality, personality, and effectivity to achieve actual global jurisdiction; China mainly relies on the territorial principle and is cautious in applying jurisdiction beyond its territory. The conflict between the jurisdictional boundaries of the two countries is the legal manifestation of the current technological competition.

5.5. Analysis of the causes of differences

The institutional differences are the result of the combined effect of four factors: First, there is a difference in strategic environment. The security logic in the United States takes precedence, and the regulation is aggressive; in China, a balance between security and development needs to be achieved, and the regulation is defensive. Second, there is a difference in industrial position. The United States is at the upstream of the technology chain, and strong regulation has limited impact on itself; China is in the stage of technological catch-up and needs to take into account the needs of industrial development. Third, there is a difference in multilateral commitments. The United States is the dominant force in the multilateral regulatory mechanism, while China is a participant. Fourth, there is a difference

in administrative traditions. Under the common law system, the administrative discretion in the United States is greater, while China emphasizes law-based administration and the principle of legality [6].

5.6. Summary

Experiences in areas such as list coding, law enforcement transparency, and compliance guidance systems can be learned from; the establishment of global extraterritorial effectiveness in the United States is based on technological hegemony and alliance systems, which is different from China's strategy.

6. Forecasts on China's future export control policies

In response to the gap in the refinement of subordinate laws, China will accelerate the improvement of supporting administrative regulations and departmental rules, and further elaborate on the principle-based provisions of the "Export Control Law"; enhance the transparency of control rules by releasing discretion benchmarks and typical cases, and increase enterprises' expectations for compliance.

6.1. Dynamic optimization mechanism of the list

China may introduce the concept of encoded management, gradually establish the technical coding system for dual-use items in China; establish a regular assessment mechanism for emerging technologies, dynamically adjust the control list; optimize the initiation and withdrawal procedures for temporary control, balancing security and flexibility.

6.2. Law enforcement collaboration and procedural guarantee

China will strengthen cross-departmental law enforcement collaboration, clearly define the boundaries of responsibilities among various departments, establish an information-sharing and joint law enforcement platform; refine law enforcement procedure standards, disclose typical law enforcement cases; enhance the cultivation of multi-skilled law enforcement personnel, and improve the professional level of law enforcement.

6.3. Enterprise compliance and remediation channels

Expand the scope of permitted exceptions, and set exemption rules for low-risk civilian transactions, scientific research collaborations, etc.; issue industry-specific compliance guidelines to assist enterprises in identifying compliance risks; improve administrative reconsideration and judicial remedy channels to balance regulatory power with the legitimate rights and interests of the parties.

6.4. Selection of international coordination paths

Deeply participate in multilateral regulatory mechanisms, enhance the voice in rule-making; strengthen bilateral regulatory cooperation with friendly countries, promote the mutual recognition and alignment of rules; improve the implementation details of countermeasures and blocking systems, and properly handle conflicts arising from unilateral regulations.

7. Research findings

First, there are significant structural differences between the regulatory systems of China and the United

States in five aspects: legislative model, regulated objects, regulatory measures, enforcement remedies, and extraterritorial effect. Second, these institutional differences are the result of the combined influence of four factors: strategic environment, industrial position, multilateral commitments, and administrative traditions, and they have profound practical logic. Third, China's regulatory system will not copy the American model; instead, China will distinguish between elements that can be borrowed and those that cannot, and focus on enhancing regulatory capabilities. Fourth, China will precisely exert efforts in five dimensions: legal system, list management, law enforcement collaboration, enterprise compliance, and international coordination, to achieve a systematic improvement in the level of regulatory governance.

7.1. Research limitations

This study focuses on the comparison at the institutional and normative level, but the empirical analysis of the law enforcement practices of the two countries is not sufficiently comprehensive; the research on the specific rules for regulating emerging technologies is not deep enough.

7.2. Research prospects

Future research can be expanded in three aspects: conducting case studies in the industry to analyze the actual impact of regulations and the compliance paths of enterprises; deepening research on the regulation of emerging technologies; exploring the reform direction of multilateral regulatory mechanisms.

Disclosure statement

The author declares no conflict of interest.

References

[1] Cheng H, Xing Z, 2025, The Situation and Trend of US Export Controls on China under the US-China Competition. International Economic Cooperation, (1): 23–32 + 91.

[2] Xiong Q, Huang L, 2025, The Framework, Impact and Outlook of US Export Control Policies. International Finance, (03): 18–25.

[3] Cheng X, 2021, The US Technology Export Control System, Its Impact and Suggestions for China. Global Science and Technology Economic Outlook, 36(11): 1–8.

[4] Han S, Han L, 2021, Balancing Security and Development: The Development Path of China's Export Control. Economic Reform, (05): 34–40.

[5] Song G, Zhang J, 2023, Strategic Competition, Export Controls and High-tech Product Trade between China and the US. World Economy and Politics, (3): 2–31.

[6] He D, Li G, Tang F, et al., 2024, Analysis of the Evolution of Foreign Technology Export Controls and Research on Countermeasures. China Science and Technology Resources Journal, (First Online).

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