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Cross-Border Regulatory Coordination and Industrial Chain Resilience: Practices of Institutional Opening-Up in the Belt and Road Initiative and Regional Economic Integration

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ABSTRACT

In the context of the restructuring of global industrial chains and the deepening of regional economic and trade cooperation, the regulatory rules of countries along the Belt and Road Initiative (BRI) are incompatible, and institutional barriers are high, which directly affect the stable operation of regional industrial chains. In order to strengthen the resilience of the industrial chain, promote institutional opening-up and regional economic integration, this article relies on the cooperation practices of regulatory coordination between China and BRI participating countries, and combines statistical data released by the Ministry of Commerce and the General Administration of Customs to analyze the intrinsic linkage between cross-border regulatory coordination and industrial chain resilience. The article reviewed practical innovations such as the China-ASEAN Free Trade Area (CAFTA) 3.0, the Shanghai Cooperation Organization's trade facilitation mechanism, and the international trade "single window", and found that there are still shortcomings in the region, such as significant differences in regulatory rules, inadequate implementation of collaborative mechanisms, and uneven digital regulatory capabilities. Research shows that promoting cross-border regulatory coordination and deepening institutional opening-up can effectively reduce cross-border transaction costs, enhance supply chain resilience to external risks, and provide institutional references for the high-quality development of the BRI and regional economic integration.

KEYWORDS

Cross-border Regulatory Coordination; Industrial Chain Resilience; Belt and Road Initiative (BRI); Institutional Opening-Up; Regional Economic Integration.

1. INTRODUCTION

The current trend of rising anti-globalization and geopolitical economic competition is intensifying. The global supply chain is accelerating its adjustment towards regionalization and nearshoring. The resilience of industrial chains is no longer just an efficiency issue, but an important concern for countries to ensure economic security. Since the implementation of the BRI more than a decade ago, the focus of cooperation has gradually shifted from "hard connectivity" at the infrastructure level to a new stage of coordinated promotion of rules and standards, "soft connectivity" and institutional opening-up. This change is not only in line with the profound changes in the global economic and trade pattern, but also in line with the practical needs of the participating countries to deepen practical cooperation.

By June 2024, China has signed more than 200 cooperation documents with 152 countries and 32 international organizations for the BRI, covering 83% of the countries that have established diplomatic relations. In 2023, China's non-financial direct investment in BRI participating countries reached 31.8 billion US dollars, a year-on-year increase of 22.6%; The bilateral trade volume of goods reached 19.47 trillion yuan, accounting for 46.6% of China's total foreign trade, an increase of 1.2 percentage points from the previous year. The volume and quality of regional economic and trade cooperation have steadily improved.

However, there are significant differences in regulatory systems among countries along the route, with low levels of mutual recognition of standards and insufficient cross-border law enforcement coordination. This not only increases the institutional compliance costs of cross-border business operations for enterprises, but also to some extent restricts the collaborative operation efficiency of regional industrial chains, becoming an important institutional obstacle to further deepening regional economic integration.

Against this backdrop, relying on cross-border regulatory coordination to promote institutional opening-up has become a key measure to enhance the resilience of regional industrial chains and support regional economic integration. Based on the actual practice of regulatory coordination between China and the participating countries, relying on authoritative statistics and relevant research reports issued by the Ministry of Commerce and the General Administration of Customs, this paper systematically analyzes the practical logic and optimization path of cross-border regulatory coordination, with a view to providing corresponding academic reference for the institutional development of the BRI [1].

2. THEORETICAL LOGIC AND INTRINSIC CORRELATION BETWEEN CROSS-BORDER REGULATORY COORDINATION AND INDUSTRIAL CHAIN RESILIENCE

There is an inherent logic of two-way synergistic empowerment between cross-border regulatory coordination and industrial chain resilience, which is also an important lever for institutional opening-up to be implemented in regional economic and trade cooperation. The core value of regulatory coordination lies in breaking down various institutional barriers in cross-border trade and investment, reducing the risks and uncertainties of cross-border business operations for enterprises through rule linkage, mutual recognition of standards, and law enforcement coordination. This can not only improve the efficiency of collaborative operation of the industrial chain, but also enhance its ability to respond to external shocks; The continuous improvement of the resilience of the industrial chain will in turn promote the optimization and improvement of the regulatory system, forming a positive interaction between institutional development and industrial development [2].

In the process of continuously promoting regional economic integration, cross-border regulatory coordination provides guarantees for the resilience of the industrial chain from multiple aspects. The integration of rules and standards can directly reduce the cross-border compliance costs of enterprises. China and ASEAN have implemented cumulative rules of origin under the RCEP framework. In 2023, China enjoyed export benefits of 270.07 billion yuan, tariff reductions of 4.05 billion yuan, import benefits of 90.52 billion yuan, and tax reductions of 2.36 billion yuan. This effect effectively stabilizes the layout of industries such as electronics and textiles in the region. The risk collaborative prevention and control mechanism has enhanced the emergency response capability of the supply chain. The China-Mongolia-Russia Economic Corridor relies on cross-border regulatory information exchange to establish a linkage mode for port clearance [3]. When encountering border logistics fluctuations, the inspection process can be flexibly adjusted to ensure the smooth operation of key supply chains such as energy and agricultural products. The collaboration of digital supervision has further optimized cross-border circulation efficiency. China–Europe Railway Express (CER Express) simplifies the customs clearance process through data sharing between customs and railways. In 2023, it operated 17,000 trips and sent 1.9 million TEUs, an increase of 6% and 18% respectively year-on-year, becoming an important logistics channel for stabilizing cross-regional industrial chains.

The practical need for resilience in the industrial chain has also led cross-border regulatory coordination to move from shallow regulatory collaboration to deeper level institutional integration. In the context of frequent fluctuations in the external supply chain, it is difficult for a single country's regulatory system to cope with cross-regional risk transmission, and it has become a practical need to establish a full-chain regulatory coordination mechanism. A number of memorandums of industrial and supply chain cooperation signed by China and the BRI participating countries all regard regulatory coordination as the core content of cooperation. This practice also fully reflects the adaptability of institutional opening-up and industrial security, providing a solid institutional support for the stable operation of regional industrial chains.

3. PRACTICE MODELS AND INSTITUTIONAL INNOVATION OF CROSS-BORDER REGULATORY COORDINATION UNDER THE BRI

Relying on the BRI cooperation framework, China and the participating countries have gradually formed a multi-level cross-border regulatory coordination system [4]. In the process of promoting institutional opening up, we have also implemented many practical and feasible rule alignment measures around core areas such as trade clearance, investment supervision, and mutual recognition of standards.

Bilateral regulatory cooperation is the most fundamental form of cooperation. The "Two Countries, Two Parks" between China and Malaysia has established a cross-border joint supervision operation mode, achieving interoperability and connection in inspection and quarantine, enterprise registration, and daily supervision of the park. As of the end of 2024, the China-Malaysia Qinzhou Industrial Park has signed a total of 345 projects, forming a coordinated development trend with the Malaysia-China Kuantan Industrial Park, gradually cultivating a distinctive cross-border processing and manufacturing industry cluster. In addition, China has also established a food safety supervision and cooperation mechanism with neighboring countries such as Vietnam and Laos, using methods such as information notification and joint sampling to ensure the quality of goods in small-scale border trade.

Multilateral regulatory mechanisms also play an important coordinating role in promoting regional integration. China has established two types of working groups, namely trade facilitation and investment cooperation, based on multilateral cooperation platforms such as the Shanghai Cooperation Organization and the China-ASEAN Free Trade Agreement. By the end of 2023, we have established trade facilitation working groups with 22 BRI participating countries and investment cooperation working groups with 55 countries, which can effectively address practical issues such as cross-border regulatory differences and customs clearance difficulties.

The innovative exploration of digital regulation has also become an important direction for improving regulatory coordination efficiency. The General Administration of Customs continues to promote the construction of "smart customs", realizing the exchange of regulatory data with multiple BRI participating countries, and continuously expanding the cross-border application scope of the "single window" for international trade. By the end of 2023, this platform can provide a total of 875 services across 23 categories, with a daily average of 26 million business declarations, achieving full coverage of all ports in the country.

In terms of the integration of rules and standards, China has carried out mutual recognition and cooperation of standards with more than 20 BRI participating countries, promoting the compatibility of technical standards in fields such as power equipment, engineering machinery, and agricultural products, effectively reducing trade barriers caused by differences in standards. These regulatory coordination practices are not limited to framework agreements, but through specific institutional arrangements, they truly transform the "soft connectivity" of rules into practical convenience for the efficient operation of the industrial chain [5].

4. THE REALISTIC CHALLENGES AND REGULATORY BOTTLENECKS OF INDUSTRIAL CHAIN RESILIENCE IN REGIONAL ECONOMIC INTEGRATION

Although some progress has been made in cross-border regulatory coordination under the framework of the Belt and Road Initiative (BRI), the resilience of the industrial chain still faces multiple regulatory constraints in the process of regional economic integration, and there is still much room for deepening and expanding institutional opening-up [6].

Fragmentation of regulatory rules is currently a prominent issue. There are a large number of countries along the Belt and Road Initiative (BRI). The level of economic development and legal system vary significantly. It is difficult to achieve unified coordination between regulatory rules and technical standards for a long time. Although the five Central Asian countries belong to the Eurasian Economic Union and adopt the EAC technology certification system, there are still differences in the implementation of standards among them. The GOST standard used by Kazakhstan is not well connected with China's GB standard in terms of mechanical and electrical certification, building materials testing, etc., which directly increases the compliance cost of cross-border business operations for enterprises. RCEP provides important support for the integration of regional rules and promotes the coordination and mutual recognition of rules of origin and inspection and quarantine rules. However, there are significant differences in regulatory enforcement among member countries, and ASEAN countries and Japan and South Korea have inconsistent standards in areas such as origin verification and customs supervision, which affects the actual implementation effect of relevant systems. Most bilateral regulatory cooperation only stays at the level of memorandums. Taking the China-Singapore commercial dispute mediation cooperation as an example, the relevant agreements are mostly principled statements, lacking specific implementation rules and dispute resolution channels. It is difficult to carry out information exchange, joint law enforcement and other work on a regular basis.

The uneven development level of digital supervision in countries along the route has further increased the difficulty of regulatory coordination. Port informatization in some developing countries in Southeast Asia and Central Asia is relatively lagging behind, and manual inspection and paper documents are still the mainstream methods. It is difficult to achieve efficient data integration with China's international trade "single window", which can easily lead to cross-border logistics congestion [7]. At the same time, there is a shortage of interdisciplinary talents who have both knowledge of regulatory rules and industry operation experience in countries along the route, and regulatory coordination plans are often difficult to meet the actual needs of the industrial chain. In addition, the rules for cross-border data flow are not yet perfect, and there is a contradiction between the data localization requirements of some countries and the sharing of enterprise data, which also restricts the efficiency of digital collaboration in the industrial chain.

These regulatory shortcomings will directly translate into operational risks in the industrial chain, exacerbate regional supply chain fluctuations, and thus affect the collaborative efficiency and stable operation of regional industrial chains.

5. THE REGULATORY COORDINATION PATH TO ENHANCE THE RESILIENCE OF THE INDUSTRIAL CHAIN FROM THE PERSPECTIVE OF INSTITUTIONAL OPENING-UP

Based on the core orientation of institutional opening-up, strengthening cross-border regulatory coordination and enhancing the resilience of the industrial chain can be systematically promoted from four levels: rule integration, mechanism implementation, technological empowerment, and capacity building, in order to build a regulatory coordination system that is in line with regional economic integration and provide effective support for the stable development of the industrial chain.

The integration of rules and standards is an important foundation for cross-border regulatory coordination. Relying on regional cooperation platforms such as RCEP and the China-ASEAN Free Trade Area 3.0 negotiations, we can promote mutual recognition and cooperation in technical standards, inspection and quarantine, and certification and accreditation in key areas such as electromechanical, agricultural products, and digital products, gradually narrowing regulatory differences among countries along the route [8]. In May 2025, the China-ASEAN Free Trade Area 3.0 negotiations were officially completed, covering nine areas of cooperation including standards, technical regulations, and conformity assessment procedures, providing important support for the integration of regional rules. On this basis, China can further participate in the formulation and improvement of global economic and trade rules, and translate the practical experience of Belt and Road Initiative (BRI) regulatory cooperation into regional general rules in emerging fields such as green trade and digital trade. At the same time, a multi-level regulatory collaboration mechanism should be established to promote the extension of bilateral cooperation from framework agreements to specific rules, establish a fast track channel for cross-border regulatory disputes, and build a physical collaboration platform based on border ports and cross-border parks.

Digital technology provides a path to break through regulatory collaboration bottlenecks. By expanding the scope of "smart customs" cooperation and promoting the interconnection and data security sharing of port systems in countries along the route, the efficiency of cross-border supervision can be effectively enhanced. The customs clearance modes such as "Customs-Railway Integration" of CER Express and Railway Express Clearance of the China-Laos Railway have good promotion value. The customs clearance time of China-Laos Railway has been reduced from 40 hours to 2 to 5 hours, which has achieved remarkable results in reducing customs clearance time and reducing enterprise compliance costs.

The long-term construction of cross-border supervision also requires continuous efforts. China can engage in regulatory technology training and experience exchange with BRI participating countries, relying on universities and industry associations to cultivate interdisciplinary talents with both international regulatory knowledge and industrial practical abilities, providing long-term support for regulatory coordination. Through the coordinated efforts of institutional improvement and technological application, the institutional advantages of cross-border regulatory coordination will be effectively transformed into the core competitiveness of stable industrial chain operation [9].

6. PRACTICAL VERIFICATION: THE REAL COOPERATION EFFECTS OF REGULATORY COORDINATION EMPOWERING THE RESILIENCE OF THE INDUSTRIAL CHAIN

From the actual implementation effect of the BRI cross-border regulatory cooperation, a mature cross-border regulatory coordination mechanism can effectively consolidate the resilience foundation of the regional industrial chain. Relevant cases and data are from official public disclosure, which has a solid factual basis.

The cross-border regulatory collaboration model established by the CER Express is a typical practice for stabilizing the cross-border industrial chain. Customs and railway departments continue to streamline cross-border customs clearance processes through data exchange, joint inspections, and other means. By 2023, the operation network of the CER Express has covered 217 cities in 25 European countries, carrying key categories such as electronic equipment, mechanical equipment, and daily consumer goods that maintain the core operation of the industrial chain [10]. Against the backdrop of continuous fluctuations in the global logistics landscape, the CER Express has maintained stable operation, effectively ensuring the smooth operation of cross-regional supply chains and becoming an important channel for stabilizing the international industrial chain.

Under the RCEP framework, the regulatory coordination and cooperation between China and ASEAN have achieved particularly outstanding results. In 2023, the bilateral trade volume reached 6.41 trillion yuan. With the implementation of rules of origin, simplified customs procedures and other regulatory arrangements, the regional division of labor and cooperation in industries such as electronic information and textile and clothing has continued to deepen, and the supporting efficiency of technology-intensive and labor-intensive industries will also steadily improve.

The exploration of regulatory system innovation in the SCO Demonstration Zone also provides valuable experience for regional industrial collaboration. The zone has built an integrated cross-border economic and trade service platform in the demonstration zone, integrating multiple regulatory links such as customs, taxation, and foreign exchange, to provide one-stop customs clearance services for enterprises in SCO member states. In 2023, the demonstration zone operated 863 CER Express trips, with a year-on-year increase of 11.4%, achieving an import and export value of 7.124 billion yuan, effectively promoting the regional integration and linkage development of characteristic industrial chains such as machinery and agricultural products.

A series of practices are sufficient to demonstrate that cross-border regulatory coordination is not a hollow institutional arrangement, but a practical measure that directly affects the entire process of industrial circulation. By reducing customs clearance costs, improving the efficiency of goods circulation, and preventing operational risks in the industrial chain, regulatory coordination can effectively enhance the resilience of regional industrial chains, laying a solid foundation for the improvement of industrial chain resilience in the process of regional economic integration at the regulatory level [11].

7. CONCLUSION

From the perspective of institutional opening-up, this paper focuses on the internal relationship between cross-border regulatory coordination and the resilience of the BRI industrial chain. Research has shown that cross-border regulatory coordination is not only an important foundation for promoting institutional opening-up, but also a key support for stabilizing regional industrial and supply chains and promoting regional economic integration. The practical exploration of mutual recognition of rules and standards, law enforcement coordination and linkage, and digital supervision application between China and BRI participating countries has effectively eliminated cross-border institutional barriers, reduced cross-border operating costs of industrial chains, and significantly improved the resilience of supply chains to external fluctuations. According to the data of the General Administration of Customs, in 2023, China's import and export volume to BRI participating countries reached 19.47 trillion yuan, which directly confirms the significant role of regulatory coordination in promoting coordinated industrial development.

At the same time, this article also found that the phenomenon of fragmented regional regulatory rules is still prominent, and there are problems of inadequate implementation of some collaborative mechanisms in the implementation process. There is a significant gap in the digital regulatory capabilities of countries along the route, and these factors jointly constrain the further improvement of the resilience of the industrial chain.

In the future, it is still necessary to be guided by institutional opening-up, continuously deepen the alignment of regional regulatory rules, improve the actionable and normalized coordination mechanisms, use digital technology to break through the bottlenecks and difficulties in the regulatory process, and strengthen the co-construction, sharing, and experience learning with BRI participating countries in terms of regulatory capabilities. By solidly promoting cross-border regulatory coordination and constantly consolidating the stable foundation of the BRI industrial and supply chains, it can not only promote regional economic integration to a deeper level, but also provide a practical Chinese solution for building an open, safe, stable and more resilient global economic system.

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