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International Legal Regulation of Cross-border Data Flows in the Digital Economy Era and China's Response

Ruiguang Li

Faculty of Law, Kanto Gakuin University, Yokohama, Japan
tt3030rg@gmail.com

Abstract. In the digital economy era, data has become an important element driving the global economy, and the issue of its cross-border flow has gradually shifted from the technical level to the institutional level. This article, starting from multilateral, regional and bilateral rules, sorts out and analyzes the existing systems regarding the international legal regulation of cross-border data flows and China's response paths. The research reveals that currently, the international community has not yet established unified rules for cross-border data flow, and the overall situation shows a fragmented characteristic. Based on this, this paper conducts a normative analysis and comparative study to summarize the data governance framework that China has established, which is oriented towards security. It then proposes ways to achieve a balance between data flow efficiency and security, such as improving classification and grading management, optimizing the security assessment mechanism, and strengthening participation in international rules. The research suggests that establishing a global unified rule in the short term is difficult. China should, while improving its domestic system, gradually enhance its international participation to better meet the actual demands of the development of the digital economy.

Keywords: Cross-border flow of data, international legal regulation, data sovereignty.

1. Introduction

With the rapid development of information technology and the digital industry, the digital economy has become an important driving force for global economic growth. Among them, data, as a key production factor, holds fundamental significance for digital services, cross-border e-commerce, fintech, and global industrial chain collaboration [1, 2]. However, compared with the vigorousness of cross-border data flows, the international community's research on related issues at the legal level still lags behind. Among them, cross-border data flow is currently a topic of considerable discussion in both theoretical and practical fields. Data cross-border flow generally refers to the cross-border transfer of data due to storage, processing, access or transmission between different countries or regions. It encompasses not only the cross-border transmission of personal information but also various types of data flows such as business operation data and public data. This concept is not merely a technical definition but involves multiple legal and policy considerations such as trade freedom, personal privacy protection, data security, and national public interests. Therefore, its regulation at the international law level is rather complex.

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From the perspective of the current international legal framework, data cross-border flow has not been systematically regulated as an independent entity, but is scattered within service trade, e-commerce, and regional digital rules. At the multilateral trade rule level, the relevant rules of the World Trade Organization (WTO) mainly focus on the principles of data regulation, lacking clear institutional arrangements for data cross-border flow [3]. At the level of regional and bilateral trade rules, different countries and regions have established distinct data rule systems based on their own economic interests and regulatory concepts [4]. This regulatory-oriented differentiation has led to the current international rules governing cross-border data flows taking on a clearly fragmented characteristic [5].

For China, on the one hand, the scale of the digital economy continues to expand, and the actual demand for cross-border data flow is constantly increasing. On the other hand, due to the extremely large scale of data in China, it is facing practical problems such as data security and protection of personal information. Given that international rules have not yet been unified and the positions of various countries are significantly divergent, how China can respond to the issue of cross-border data flow within the existing framework of international law and actively participate in the formulation of relevant rules has become an important topic that requires urgent research. Based on this, this article, taking into account the current reality of the digital economy era, examines the current international regulatory situation regarding data cross-border flow, analyzes the main challenges it faces, and then explores the possible response strategies that China might adopt.

2. Literature review

The existing literature mainly explores the legal nature, regulatory paths and international impacts of cross-border data flows from perspectives such as the development of digital trade, personal information protection, and national data security. It has initially established a theoretical framework for related research [2, 6].

In previous studies, some scholars have emphasized the significant importance of cross-border free flow of data for the digital economy and global trade. They argue that data, as a key production factor, can facilitate the free flow of data, which helps to reduce transaction costs and promote the development of digital service trade [1, 6]. This research approach is based on the perspectives of economic efficiency and trade liberalization. Its limitations are also obvious. Due to the differences in databases among various countries, the issue of national security is a real problem that some countries cannot ignore.

On the contrary, there are also some scholars who are more concerned about the risks brought about by cross-border data flows, and they advocate that the state should strengthen the protection of personal information and important data through legal means. Such studies, from the perspectives of data security, public interests and national governance, emphasize that data cross-border flow should be based on the premise of being safe and controllable [6, 7]. However, its drawback lies in that excessive emphasis on control may hinder the efficiency of data circulation and have a negative impact on the development of the digital economy.

As a result, the academic community has clearly diverged on the issue of whether data cross-border flow should be based on the principle of "freedom" or "priority given to security", which constitutes the main controversy in the current literature [2, 6, 7]. Overall, the existing literature has explored the international regulatory framework for cross-border data flowing from various perspectives. However, there is still a need for further research in terms of the overall coordination of the rule system and the relationships between different regulatory models. How to integrate

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different value orientations within the framework of international law and analyze it in light of China's institutional practices remains an important issue that requires further exploration.

3. Current situation and institutional challenges of the international legal regulation of cross-border data flows

3.1. Current situation of international legal regulation of cross-border data flows

From the perspective of the current international legal system and framework, there are no unified rules for cross-border data flows. Instead, they are scattered across multilateral trade systems, regional agreements, and bilateral agreements, presenting distinct characteristics of fragmentation and indirect regulation [3-5].

At the multilateral level, the existing rules of the WTO do not specifically address the cross-border flow of data. The General Agreement on Trade in Services (GATS) mainly covers data flows through indirect means by means of service provision models such as "cross-border supply" and "commercial presence". Within the current framework, GATS only indirectly covers data flows through the service trade model. It neither establishes specific obligations for data cross-border flows, nor clearly defines the legal boundaries for core matters such as data localization and security supervision. This unstructured institutional arrangement was still able to play a certain role in the early stage of the digital economy. However, as the digital economy has continued to thrive and data has become the core production factor, the problem of insufficient regulation has gradually emerged [3].

In recent years, the Joint Statement Initiative (JSI) for e-commerce promoted under the WTO framework has attempted to fill this institutional gap through plurilateral negotiations, but member countries have significant differences on key issues. This fundamental difference in stance makes it difficult to reach a unified regulatory model through multilateral rule negotiations in the short term. Currently, it remains at the stage of principle-based consensus [3, 5].

At the regional and bilateral levels, the development of cross-border data flow rules has been relatively active. Compared to the complexity at the multilateral level, regulations at the regional and bilateral levels are more flexible, but there are still issues that cannot be unified [4, 5]. Specifically, it can be understood from the following aspects.

The content of the rules is fragmented. There are significant differences among various agreements in terms of core obligations regarding cross-border data flow, exception clauses, and regulatory measures. Some agreements base their principles on economic development and emphasize the principle of free movement, with restrictions only being permitted in very few cases. Some agreements, however, take national security and public interests as prerequisites, granting the state considerable regulatory leeway [4, 8].

The scope of application is fragmented. Some of the rules are applicable only to the digital service trade sector, mainly focusing on data transmission between enterprises. However, some of these rules extend to the realm of personal information or public data, but their scope of application has obvious limitations. This results in different legal standards being applied to different types of data when they flow across borders [4, 5].

The execution mechanism is fragmented. Currently, there is a lack of a unified dispute resolution mechanism to handle disputes related to cross-border data flows. Different agreements have their own resolution mechanisms and standards, and there is relatively weak coordination between the two parties. This results in enterprises having to comply with multiple sets of rules in their actual

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operations, often facing the practical predicament of "high compliance costs and uncertain rule applicability" [5, 9].

Overall, the current international regulatory system has not yet established a unified framework. Multilateral rules remain at the principal level, while regional and bilateral rules are constantly evolving but with significant differences. This structural differentiation has laid the foundation for subsequent institutional conflicts [3, 5].

3.2. Core controversies and institutional dilemmas in the international regulation of cross-border data flows

Under the current institutional framework, the core controversy regarding cross-border data flow mainly lies in the balance between "freedom" and "security", and this issue shows significant differences among different countries and regions. Essentially, the root cause of this controversy lies in the differences between the national interest structure and governance concepts [2, 6, 7]. Countries like the United States and Singapore, which are trade-oriented, view data as an important production factor in digital trade. They place greater emphasis on trade benefits as the core and advocate for strengthening the obligation for free data flow through international rules. They oppose data localization requirements and, to a certain extent, limit the regulatory space of each country regarding data. Therefore, such countries tend to ensure the free flow of data across borders through international rules [1, 6].

In contrast, countries or regions such as the European Union and China place greater emphasis on data security and the protection of personal information. Take China as an example. Due to the large scale of the database and the complexity of the involved entities, a data leak could have a significant impact on social order and national security. Therefore, the design of its system places greater emphasis on imposing necessary restrictions on cross-border data flows through legal means, in order to safeguard data sovereignty and public interests [6, 7].

Based on the aforementioned theoretical disputes, the current international data rules are also confronted with a series of deeper institutional dilemmas. Firstly, there are significant differences in the levels of digital economic development among countries. Developed countries hold a dominant position in rulemaking, while developing countries have relatively limited say in rule participation. This imbalance has exacerbated the inconsistency of rules [1, 7].

Secondly, data cross-border flow has both "trade attributes" and "security attributes", and different international organizations have different focuses when formulating rules. For instance, the WTO focuses on trade liberalization, the United Nations Commission on International Trade Law (UNCITRAL) pays attention to the legal framework for e-commerce, while the European Union strengthens data protection through regional legislation. This kind of multiple actors and multiple domains rule lacks an effective coordination mechanism, which further exacerbates the institutional fragmentation [1, 5].

Furthermore, geopolitical factors also play a certain role in shaping the data rules. Some countries use data regulation as a tool for international competition and trade negotiations, by setting different standards to maintain their own advantages or restrict the entry of foreign enterprises. This trend not only exacerbates the fragmentation of rules but also limits the space for international cooperation [8, 10]. Overall, the core issue of international regulation of cross-border data flows is not the absence of rules, but rather the difficulty in achieving a unified institutional balance under the complex interplay of multiple interests and value orientations. In the short term, this "coexistence of freedom and security with persistent and unresolvable differences" will continue to persist and will continue to have a profound impact on the development of the international rule system [2, 5, 8].

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4. China's institutional responses to cross-border data flows

4.1. China's digital economy development and the institutional demand for cross-border data flows

Against the backdrop of the rapid development of the digital economy, China's demand for cross-border data flow has been continuously increasing. In areas such as cross-border e-commerce, digital service trade, and fintech, a large number of business operations rely on cross-border data transmission. This has led to the gradual transformation of data flow from a "technical issue" to a "systemic issue" [1].

Meanwhile, China has already initially established a relatively complete institutional framework for data governance. The institutional framework centered around the "Data Security Law", "Personal Information Protection Law" and "Cybersecurity Law" has established the regulatory principles of "safety and controllability, classification and grading, and risk assessment", providing an institutional foundation for cross-border data flow. Through classification and grading management, different types of data are assigned with differentiated flow rules. On this basis, a security assessment mechanism is introduced to focus on supervising data that may involve national security or public interests. This institutional design, to a certain extent, addresses the balance requirement between the development of the digital economy and data security [7, 10].

4.2. Institutional responses to data security and personal information protection in China

At the specific institutional level, in recent years, China has continuously adjusted and refined its regulations on data cross-border flow in light of data security and personal information protection. From a holistic perspective, the core of this approach lies in enhancing the efficiency of data flow while ensuring safety [7].

First, refine the classification and grading standards for data, and clearly define the cross-border flow rules for different types of data. Based on the existing framework, further clarify the distinctions between personal information, important data and general data, simplify the cross-border flow procedures for non-sensitive data, and enhance the efficiency of data flow.

Secondly, improve the security assessment mechanism for cross-border data flow. By optimizing the evaluation process and clarifying the evaluation criteria, etc., the operability of the system can be enhanced, enabling enterprises to conduct cross-border business more efficiently while complying with the rules [7, 11].

In addition, efforts can also be made to establish a mutual recognition mechanism for cross-border data flows. In the context of the fragmentation of international rules, China can give priority to promoting regulatory mutual recognition arrangements with RCEP member countries and countries participating in the "Belt and Road Initiative". In terms of personal information protection and security assessment standards, they can achieve equivalent recognition, thereby reducing the repetitive compliance costs for enterprises. If regulatory standards can be mutually recognized to a certain extent among different countries, it will help reduce the compliance pressure on enterprises under multiple regulatory systems and promote the development of the digital economy [10, 11].

4.3. The pathways China chooses for participating in the construction of international rules

In the face of the current fragmented regulatory situation, China not only needs to improve its domestic systems, but also should actively participate in the construction and coordination of

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international rules [5, 11].

At the multilateral level, people can leverage the WTO's e-commerce negotiations to put forward a rule proposal that balances freedom and security. Given the significant differences among various countries at present, it is rather difficult to establish a completely unified institutional framework. Therefore, aiming at the "minimum standards" and "principles of consensus", people can seek balance points among different countries and gradually narrow the institutional disparities [3, 5].

At the regional level, efforts should be continued to deepen cooperation with neighboring countries in the field of digital trade. Actively participate in the follow-up negotiations of the Regional Comprehensive Economic Partnership (RCEP), promote the improvement of the cooperation mechanism for cross-border data flow, and at the same time explore joining a higher-standard regional rule system, and learn from advanced rule experiences [4, 11].

At the bilateral level, it is possible to enhance communication and coordination with major trading partners by signing relevant cooperation agreements, thereby reducing the uncertainties brought about by institutional conflicts for enterprises. Especially when dealing with countries with different regulatory orientations, a dialogue mechanism should be established to gradually build a foundation of trust and create conditions for rule coordination [10, 11].

5. Conclusion

At present, the international community has not yet established a unified and systematic rule framework for cross-border data flows. The multilateral regulations are relatively principle-based, while the regional and bilateral rules show significant differences. This kind of institutional division is not an isolated phenomenon; rather, it is a practical outcome that emerges under the circumstances where different countries are at different stages of development, have different governance concepts, and have concurrent security concerns.

From the perspective of system operation, the core issue of data cross-border flow regulation is not whether data can flow, but rather how to establish a stable institutional balance between efficiency and security. Overemphasizing free flow may weaken the country's regulatory capabilities in terms of privacy protection and public governance; overly strengthening security control might restrict the rational allocation of data elements and affect the development of the digital economy. This kind of tension structure is a significant cause of the fragmentation of international rules, and it also determines that a highly unified global institutional situation will be difficult to form in the short term.

According to current research, the international regulations governing cross-border data flows are more likely to develop along a path of gradual coordination. Regional and bilateral rules will still play a significant role, while at the multilateral level, efforts may focus on reaching a principle-based consensus and setting minimum standards, gradually narrowing the institutional differences. In this context, China's institutional choices regarding data cross-border flow should place greater emphasis on enhancing the adaptability of the rules and the level of participation. At the level of domestic institutional construction, it is necessary to continuously improve the legal framework for data security and personal information protection, providing a stable and predictable institutional foundation for cross-border data flow. At the international level, China should actively participate in regional and multilateral rule discussions on the basis of respecting the existing international legal framework and gradually enhancing its voice in practice. In this way, China can not only meet the actual demands of its own digital economy development but also contribute to promoting the international data rules towards a more coordinated and unified direction.

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