

# Data flow legislation: practical exploration and suggestions for improvement

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**Abstract:** *As a new type of production factor, data has become an important resource to promote China's economic growth and social progress. The value of data lies in circulation, and data circulation is the pivotal link in the construction of data factor market. Currently, China's data factor market construction is developing rapidly, but there are many problems in the process of data circulation, such as difficulty in defining data ownership, high cost and risk of circulation, data monopoly, data leakage, unfair competition, etc., which impede the full release of the value of data factors. Improving the rules of data circulation through data circulation legislation is a key step in solving many problems. Data circulation legislation should follow the principles of fairness, safety and controllability, and efficiency and protection, on the basis of which it should define the rules of data ownership, strengthen the articulation of legal norms at all levels, improve the system of traceability of responsibility, and build a system of rules for data circulation, which is the way to promote the efficient circulation of data elements, stimulate the vitality of the data element market, and promote the prosperous development of the digital economy.*

**Keywords:** *data elements; data flow legislation; data flow rules*

## 1. Introduction

Data has been compared to the new oil of the digital economy era, which contains rich value. [1]Data resources, as a fundamental and strategic national resource, are an important source of digital innovation.[2] In 2019, the Fourth Plenary Session of the 19th CPC Central Committee for the first time listed data as an important factor of production alongside land, labor, capital and technology. [3]This is the first time that China has written data as a production factor in an official document. As a factor of production, the data factor market is the main position for releasing the value of data factors, and data circulation is the necessary precondition for realizing the value of data. The circulation of data elements is the key to the development of digital economy, and the examination and tracing of the origin of the circulation of data elements will help to understand and master the law of the circulation of data elements, accelerate the release of the value of data elements, and promote the sustained and healthy development of the digital economy. [4]At the present stage, China's data elements market-oriented circulation process, facing the rights and interests of participating subjects is difficult to protect, the risk and cost increase, data ownership is not clear and other problems. The healthy development of the data industry urgently needs to establish clear ownership and effective legal protection. [5]To this end, this paper examines the advantages and shortcomings of the current data circulation rules, describes the dilemmas faced by data circulation, and clarifies the principles to be followed in data circulation by combing through the legislative practices of China's governments at all levels, so as to provide constructive opinions for the construction of a perfect data circulation system.

## 2. Explanation of the need for data flow legislation

The prerequisite for deciphering the need for data circulation legislation is to understand what is data circulation? Our scholars Gao Fuping believes that: data circulation is the behavior of providing data to others or enabling others to access or use data. [6]Yan Shuqing and others believe that: data circulation refers to the data as the object of the behavior between the data provider and the data demand side in accordance with certain circulation rules. [7]China Academy of Information and Communication Research and many units jointly issued the "Data Circulation Industry Self-discipline Convention" version 2.0 stipulates that: data circulation refers to the behavior of realizing the conversion of data or data derivatives among different entities through collection, sharing, trading, transfer and other means. Combining the above views, the author believes that data circulation refers to the circulation of data as

an object, from the provider of data to the demander of data, including data trading, sharing, openness, cooperation, convergence and other forms.

The Fourteenth Five-Year Plan for the Development of the Digital Economy proposes that, by 2025, the added value of the core industries of the digital economy will account for 10 per cent of GDP. To promote the high-quality development of the digital economy and achieve the goal of standardized, healthy and sustainable development, it is necessary to effectively play the role of the rule of law as a safeguard for "solidifying the fundamentals, stabilizing expectations and facilitating the long term". In the construction of the marketization of data elements, the entire process from the generation of data to the release of data value can be subdivided into six links, namely, data collection, storage, processing, circulation, analysis and application. The above six links can be further summarized into three substantive links, namely, data generation, data circulation and data utilization. It can be seen that the circulation and transaction of data is the key link in the market-oriented allocation of data elements. [8]In order to promote the construction of China's data factor market and the healthy and sustainable development of the digital economy, it is necessary to strengthen the legislation on data circulation.

### ***2.1 Building data factor markets requires data flow rules***

On April 9, 2020, the Central Committee of the Communist Party of China (CPC) and the State Council issued the Opinions on Constructing a More Perfect System Mechanism for the Market-based Allocation of Factors, which proposes accelerating the cultivation of the data factor market. [9]The data factor market, i.e., the market formed in the process of exchange or circulation of data elements, includes both the trading relationship or buying and selling relationship in the process of data valorization, as well as the places or areas where these data transactions take place. The data factor market can be formed only after data elements are commoditized and socialized. [10]At present, China's data market construction is developing rapidly, data circulation as a key link in the construction of data marketization, data circulation rules are not sound resulting in many problems. Such as data convergence in the data controller in the winner-take-all data monopoly and unfair competition phenomenon; data use in the process of incomplete construction of the system to form the phenomenon of data islands; data trading process of imperfect procedures leading to the risk of data leakage and so on. Accelerating the legislation on data circulation and improving the system of data circulation rules can release the potential value of data elements, solve the many problems existing in the process of data circulation, thus accelerating the construction of data elements market norms and promoting the rapid development of the digital economy.

### ***2.2 Protection of data security and personal information requires data flow rules***

Network security is an important part of national security, which is related to the fundamental interests of the country and cannot be compromised, and there is no national security without network security. [11]In recent years, the frequent occurrence of cybercrime, cyberattacks and cyber eavesdropping cases in the international arena has put forward higher requirements for our national cybersecurity management system. Cyberspace is the main ground for data transactions, data interconnection and data sharing, and data elements are vulnerable to cyber attacks in the process of circulating in cyberspace, and there is the risk of data information being stolen and leaked, which seriously threatens the protection of national data and personal information security. Therefore, enhancing network security defense capability, safeguarding data security, ensuring the security of data and information circulation requires data circulation rules, accelerating data circulation legislation, and building a data circulation security management system in order to effectively protect data security and personal information security.

### ***2.3 Fair justice requires data flow rules***

Along with the rapid development of China's data trading market and the sharp increase in the volume of data, disputes over data circulation have also emerged in large numbers. The data circulation disputes are mainly reflected in the unfair competition and formation of monopoly status by some data platforms, as well as the different understanding of the need for re-authorization by users in the circulation of personal data. Tencent Technology (Shenzhen) Co. Ltd. v. Sushi (Hangzhou) New Media Technology Co. Ltd. In the case, Sushi used web crawlers to obtain data resources of Tencent's WeChat public number and operated it externally to obtain economic benefits, which was in violation of the "Law of the People's Republic of China Against Unfair Competition", which stipulates that the acts of hindering or destroying the normal operation of network products or services legally provided by other operators constitute unfair competition. Unfair competition. In the User v. Tencent Infringement Dispute, the court of first instance

held that Weixin and WeChat belonged to Tencent's affiliates, and that data could be shared between the two parties in their operations, and that the use of the public's personal information did not require the user's consent, and found that Tencent acted lawfully, and that there was no infringement of rights; the court of second instance held that although Weixin and Wechat were affiliates, and that data could be shared with each other, the circulation of personal information required the user's knowledge and consent. The second trial held that although WeChat Microvision is an affiliated enterprise, it can share data with each other, but when it comes to the circulation of personal information, it needs the user to be informed and agree again, and found that Tencent's behavior is lawful and there is no infringement. Therefore, accelerating data circulation legislation and building a system of rules for the circulation of data resources will help clarify the application of the law in case adjudication and realize judicial justice.

### 3. Practical exploration of data flow legislation

Accelerating the legislation on digital economy is necessary to promote the high-quality and efficient development of China's digital economy. As a key link in realizing the value of data resources, accelerating the legislation on data circulation, improving the institutional mechanism of data circulation, and constructing a system of data circulation rules is an inevitable requirement to better serve the healthy development of the digital economy. In recent years, the number of data circulation disputes in China has been increasing, and the state, local governments and industries are actively trying to establish and improve the data circulation rules. The current stage of China's data circulation rules involved in the combing of normative documents can be an in-depth understanding of the operation mechanism of data circulation rules, clarify the current status of data circulation legislation, which can be seen in Table 1.

Table 1: Classification of normative documents mainly involved in data flow legislation

legal norm	National legislation	Data Security Law of the People's Republic of China, Network Security Law of the People's Republic of China, Personal Information Protection Law of the People's Republic of China, Electronic Commerce Law of the People's Republic of China	
	local legislation	Provincial development of legislation	Beijing Digital Economy Promotion Regulations, Hebei Digital Economy Promotion Regulations, Zhejiang Digital Economy Promotion Regulations, Henan Digital Economy Promotion Regulations, Shanxi Digital Economy Promotion Regulations, Guangdong Digital Economy Promotion Regulations, Sichuan Digital Economy Promotion Regulations, Shanghai Data Regulations, Shaanxi Data Regulations, Chongqing Data Regulations, the Liaoning Provincial Big Data Development Regulations, Heilongjiang Provincial Regulations on Promoting the Development and Application of Big Data, Fujian Provincial Big Data Development Regulations, Anhui Provincial Big Data Development Regulations, Guangxi Zhuang Autonomous Region Big Data Development Regulations, Guizhou Provincial Information Infrastructure Regulations
		Local and municipal enactment of legislation	Suzhou Data Regulations, Guangzhou Data Regulations, Guangzhou Regulations on Optimizing Business Environment, Nanchang Data Regulations, Wuxi Regulations on Promoting Digital Transformation, Wuxi Regulations on Optimizing Business Environment
		Development of legislation for special economic zones	Shenzhen Special Economic Zone Data Regulations, Xiamen Special Economic Zone Data Regulations
Local government regulations	Measures for the Management of Public Data in Jiangsu Province, Measures for the Management of Public Data in Jiangxi Province, Measures for the Management of Public Data in Guangdong Province, Measures for the Promotion of the Economy in Hubei Province, and Interim Measures for the Management of Public Data Openness and Security in Zhejiang Province		
industry regulation	Self-Regulation Convention for the Data Circulation Industry 1.0 Self-Regulation Convention for the Data Circulation Industry 2.0		

#### 3.1 Data flow legislation at the central level

Legislation at the central level dealing with the regulation of data circulation mainly includes the Data Security Law of the People's Republic of China, the Network Security Law of the People's Republic of China, the Personal Information Protection Law of the People's Republic of China, and the Law of the People's Republic of China on E-Commerce. Data use, processing, transmission, provision and disclosure in the concept of data processing in Article 3 of the Data Security Law are in line with the connotation of data circulation and are expressions of the form of data circulation; Article 7 stipulates that the State guarantees the free flow of data in an orderly manner in accordance with the law and promotes the

development of the digital economy; Article 33 stipulates that records of audited transactions should be kept for engaging in data transactions; and Articles 37 to 43 stipulate the rules for the opening up of governmental affairs data. Articles 40 to 50 of the Cybersecurity Law stipulate that network operators shall maintain strict confidentiality of collected user information, shall not disclose, sell or illegally provide it to others, shall establish a sound system for the protection of user information, shall obtain the consent of users for the use of user information, and shall not use the network to publish undesirable information by any individual or organization. Article 4 of the Personal Information Protection Act stipulates that the use, processing, transmission, provision and storage of personal information belong to the form of expression of data circulation; Article 35 stipulates that if a state organ needs to provide personal information outside the country to fulfill its legal duties, it shall conduct a security assessment; and Article 39 stipulates that if an individual needs to provide personal information outside the country, he or she shall report to the relevant authorities and obtain consent. The E-Commerce Law stipulates that operators of electronic network platforms shall record and preserve information on transactions of goods and services, ensure the integrity of the information and safeguard the security of the transactions, and sets out obligations for platforms to disseminate network information to protect the intellectual property rights of enterprises and the privacy of individual consumers. The Criminal Code deals with data circulation in Articles 285 to 288 on computer information network crimes, such as knowing that others use network information to commit crimes, but still provide them with Internet access, network transmission, etc., which constitutes the crime of aiding information network criminal activities. The Civil Code stipulates that the personal information of natural persons is protected by law and that no one may illegally use, process or transmit it, which can also be considered as a form of data circulation.

The national level has initially constructed a data base system, and most of the norms on data circulation are reflected in network security, information security and personal information protection, providing basic legal compliance for data circulation and its derivative forms of expression. However, on the whole, there are no specialized legal norms to regulate the behavior of data circulation, and the contents of the provisions are not specific enough, and there are problems such as the granularity of the rules being too coarse and the absence of key rules.

### 3.2 Practical exploration of local government legislation on data circulation

In order to promote the development of digital economy, accelerate the integration process of digital economy and real economy, and promote industrial digitization and digital industrialization, many local governments nationwide, including special economic zones, are actively exploring how to better protect the development of digital economy through legislative work, and have successively formulated and issued data ordinances and governmental regulations in their own regions, as shown in Table 2.

Table 2: Local legislation on data flow in China

Local/special economic zone laws/regulations	concrete content
Beijing Regulations on the Promotion of the Digital Economy	Article 15 stipulates that "the city shall strengthen the security protection and development and utilization of data resources, promote the opening and sharing of public data, accelerate the cultivation of the data element market, promote the orderly flow of data elements, improve the efficiency of data element allocation, and explore the establishment of a mechanism for allocating the benefits of data elements". Article 17 stipulates that "the municipal people's government shall establish a citywide public data sharing mechanism, and promote the interconnection and interoperability of public data and related business systems."
Regulations on the Promotion of Digital Economy in Guangdong Province	Article 41 stipulates that "data collection, storage, use, processing, transmission, provision, disclosure and other handling activities shall comply with laws and regulations and fulfill the obligation to protect data security. The collection, storage, use, processing, transmission, provision and disclosure of personal information shall be handled in accordance with the principles of lawfulness, legitimacy and necessity, shall not be overly handled, and shall comply with the conditions stipulated by laws and regulations."
Regulations on the Promotion of Digital Economy in Zhejiang Province	Article 18 stipulates that "data resource management shall follow the principles of regulation in accordance with the law, promotion of circulation, rational use and security, and strengthen the management of the entire life cycle of data resources. Article 20 stipulates that "public data shall be shared or collaboratively applied among public management and service organizations in accordance with regulations."
Shanghai Data Regulations	Article 48 stipulates that "the municipal government office shall formulate policies to encourage and guide market players to carry out data sharing, opening, trading and cooperation in accordance with the law, and to promote cross-regional and cross-industry data circulation and utilization." Article 78 provides that "the city shall implement a data security responsibility system, and data processors shall be the main body responsible for data security."
Chongqing Municipal Data Regulations	Article 34 stipulates that "the use of data by market players shall comply with the provisions of anti-monopoly, anti-unfair competition, consumer rights and interests protection laws and regulations, and shall not be abused to engage in market manipulation, exclusive cooperation terms and other activities."
Shenzhen Special Economic Zone Data Regulations	Article 14 stipulates that "the processing of personal data shall be communicated to natural persons in a complete, truthful and accurate manner that is easy to understand, clear and specific, and easily accessible before processing." Article 79 stipulates that "where data processors share or open data, they shall establish a security management system for data sharing and opening, and establish and improve the security management mechanism for external data interfaces."

Xiamen Special Economic Zone Data Regulations	Article 14 stipulates that "a sound public data resource system shall be established and public data shall be aggregated to the fullest extent possible, and no unit or individual shall impede or affect the aggregation, sharing and opening of public data in accordance with the law. Encourage and support natural persons, legal persons and unincorporated organizations to converge data into the public data resource system in accordance with the law. "
SU Data Ordinance	Article 13 stipulates that "the sharing of public data among public management and service organizations shall be based on the principle of sharing, with non-sharing as an exception. According to the attributes of sharing, public data shall be divided into three types: unconditional sharing, conditional sharing and no sharing. "Article 14 stipulates that "public data shall be divided into three types, namely unconditional opening, conditional opening and non-opening, in accordance with the attributes of opening. Public management and service organizations shall determine the types of public data openness when compiling the public data resource catalog. "
Guangzhou Digital Economy Promotion Regulations	Article 65 stipulates that "public management and service organizations shall establish a public data openness list and a dynamic adjustment mechanism, relying on the city's unified public data openness platform to open data. Public data involving national security, commercial secrets and personal information that are not allowed to be opened under laws, regulations and rules shall be included in the negative list of public data opening."
Measures for Public Data Management in Jiangsu Province	Article 38 stipulates that "public data operation and management organizations, and public management and service organizations providing public data shall make full records of public data sharing and opening and other processing activities." Article 42 stipulates that "Public data shall be categorized and protected according to law. The competent authorities in charge of public data, in conjunction with the relevant competent authorities, shall promote the formulation of specific rules for the classification and grading of public data in this province in accordance with the requirements of the national classification and grading protection system, taking into account factors such as data security, personal information protection and data application needs."
Measures for Economic Promotion in Hubei Province	Article 34 stipulates that "the provincial people's government and its relevant departments shall, in accordance with the requirements for the construction of a national unified big market, and under the premise of protecting individual privacy and ensuring data security, explore the establishment of a property right operation mechanism that separates the right to hold data resources, the right to use data processing and the right to operate data products, cultivate the data element market in accordance with the law, promote the construction of data trading platforms, and promote the development and utilization of data elements. elements development and utilization, explore data elements application scenarios, and improve the allocation and circulation capacity of data elements."

To date, local legislation covering the rules on data flow has been introduced nationwide, with a total of 16 provincial-level administrative regions (Beijing, Zhejiang, Henan, Hebei, Shanxi, Guangdong, Jiangsu, Shanghai, Chongqing, Shaanxi, Sichuan, Jiangxi, Guizhou, Anhui, Liaoning and Heilongjiang) introducing data regulations. The Beijing Municipal Regulations on the Promotion of the Digital Economy provides for the strengthening of the development and utilization of data resources and the promotion of the effective flow of data elements, and proposes that the Beijing Municipal People's Government establish a citywide public data sharing mechanism, and that each district government may build its own district data center, thereby promoting the open sharing and common use of public data. The Regulations on the Promotion of Digital Economy in Guangdong Province state that the people's governments at or above the county level shall promote the in-depth integration of various types of data resources, explore data trading models, standardize trading behavior, and cultivate factor markets to promote efficient circulation. Regulations on the Promotion of Digital Economy in Zhejiang Province stipulate that governments at or above the county level should promote the development of the Internet of Things, build application sensing systems, and realize interconnection and data sharing. Jiangsu Province Digital Economy Promotion Regulations stipulate that conditional areas can set up data trading venues, support the construction of socialized data service institutions, enhance data processing capacity, and safeguard the safe circulation of data. The Shanghai Municipal Data Regulations provide detailed specifications for the opening, sharing and circulation of personal information and public data, stipulate that data shall not be traded, and provide for data reform in Pudong New Area and data cooperation in the Yangtze River Delta region in a separate chapter. The Chongqing Municipal Data Regulations clarify the main responsibilities of data processors, provide detailed regulations on the openness of government data and the sharing of public data, and emphasize the synergistic cooperation of inter-regional data circulation to ensure the safe and orderly flow of data elements.

In terms of rules on data circulation formulated by local and municipal governments, four cities (Suzhou, Guangzhou, Nanchang and Wuxi) have introduced data regulations, with Wuxi and Guangzhou also formulating their own Regulations on Optimizing the Business Environment. The Suzhou Data Regulations provide for hierarchical and classified management of public data sharing and opening, emphasize the regulation of intellectual property transaction norms in the process of regulating data circulation, and focus on the security and protection of inter-enterprise data circulation. The Nanchang Data Regulations stipulate that data government service departments should strengthen the life-cycle management of data resources, promote the convergence and fusion of data resources and the sharing and opening of data resources, and guarantee the safe and effective flow of data elements.

Two special economic zones, Shenzhen and Xiamen, have introduced data regulations applicable within the scope of the special economic zones. The Shenzhen Special Economic Zone Data Regulations

state that data processors should notify and obtain consent before processing personal data, and have very detailed provisions on the circulation of public data, emphasizing that data collection transactions by market participants should be fair and competitive. The Xiamen Special Economic Zone Data Regulations emphasize increasing the rate of public data sharing, expanding the sharing and opening up of public data and providing detailed provisions on the circulation of public data.

Five provinces, Jiangsu, Guangdong, Hubei, Jiangxi and Zhejiang, have introduced government regulations. The Measures for the Management of Public Data in Jiangsu Province systematically provide for the supply, sharing, opening, utilization and security protection of public data, emphasizing that the competent units should actively construct operational procedures for the circulation, trading, application and development rules of public data, and strengthen the safeguard and supervision of public data. The Measures for the Promotion of the Economy of Hubei Province provide for the cultivation of the data element market, the construction of a data trading platform, the improvement of the allocation and circulation of data elements, and the stimulation of the value of data elements.

Whether it is the local regulations of provincial and municipal governments, the regulations of special economic zones, or local government regulations, all three have more detailed provisions on personal information protection, public data opening, sharing, trading and government data disclosure, while other manifestations of data circulation, such as data aggregation and cooperation, are less specific and clear. In particular, the circulation of data among enterprises is only slightly stipulated in the regulations of a few provinces, but it is also a principle guidance. Of course, the continuous exploration of local legislation on data circulation rules has laid a solid foundation for future legislation at the national level.

### ***3.3 Practical exploration of inter-industry data circulation rules***

Provinces and municipalities related to data regulations before the introduction of the provisions of China's data circulation field lack of relevant laws and regulations, data elements of the market in the data circulation norms mainly rely on the formation of inter-industry conventions for constraints, inter-industry formation of the data circulation rules to effectively make up for the lack of national law, to promote the development of China's digital economy. So far, the inter-industry exploration of data circulation rules is still continuing, which has a positive role in promoting the legislation on data circulation afterward.

On April 28, 2016, under the guidance of the Ministry of Industry and Information Technology of China, the China Academy of Information and Communications Technology (CAICT), together with the government and 54 units, combined with the current situation of the industry and the trend of future development, jointly released the "Self-discipline Convention on Data Circulation Industry" version 1.0 (beta) at the "2016 Big Data Industry Summit". The release of the Convention puts an end to the lack of industry norms in the field of data circulation, and is the first exploration of rules in the field of data circulation, which is of milestone significance.

On July 1 of the same year, under the joint guidance of the Ministry of Industry and Information Technology (MIIT), the Central Internet Information Office (CIIO) and the National Development and Reform Commission (NDRC), the China Institute of Information and Communications Research (CIICR), together with representative enterprises that are closely linked to each link of data circulation (China Unicom, China Telecom, Alibaba, Jingdong, and DDT), jointly released version 2.0 of the Self-Discipline Convention on Data Circulation Industry. Compared to version 1.0, version 2.0 defines the definition of data circulation and conducts risk assessment of the links experienced in the process of data circulation. It stipulates that data circulation should strictly abide by national laws and regulations, respect business ethics and social morality, practice relevant standards and norms, and should not jeopardize national interests, social public interests and the legitimate rights and interests of citizens. The publication of versions 1.0 and 2.0 of the Data Circulation Industry Self-Regulation Convention improves the ecological environment of the data circulation field and makes substantive exploration for future data circulation legislation.

## **4. Review and Reflection on Existing Legislation on Data Circulation**

Since data as a new type of production factor has been identified, data factor related normative documents have been issued intensively, and issues related to the utilization of data circulation have been regarded as research hotspots by domestic academia, and domestic provincial and municipal governments have also attached great importance to the role of data circulation in the construction of the

digital economy, and have been actively exploring the rules of data circulation. In the face of China's current data circulation legislation and operation of the basic status quo, its all-round introspection, objective evaluation of the current data circulation rules, clear shortcomings and deficiencies, is the way to improve the data circulation legislation in the future.

The data circulation rules covered in China's existing Data Security Law, Network Security Law, Personal Information Protection Law and other laws and regulations are still intended to emphasize the regulation of data utilization and the protection of personal information privacy from the point of view of ensuring data security, and do not provide a clear definition of specific aspects such as the form of data circulation practices and circulation access standards. The data ordinances and regulations formulated by provinces and municipalities deal with the rules of data circulation, emphasizing data security and protection while also focusing on strengthening the construction of a government based on the rule of law through the circulation of data elements. In particular, detailed provisions on local government information disclosure and public data opening and sharing have standardized government administrative behavior and improved government administrative efficiency. The shortcomings lie in the lack of detailed provisions on transaction rules, aggregation levels, open standards and other issues that exist in data circulation in the data factor market, resulting in a lack of standardized guidelines for enterprise and personal data transactions, which is prone to disputes and disputes. The inter-industry regulations on data circulation have positive significance in regulating data transactions, sharing and opening in the data factor market, but they still have problems such as small scope of application, weak standardization and insufficient enforcement power.

Although China's current introduction of data circulation rules in promoting the flow of data elements legal safeguards, security supervision, standardize the use of positive progress, but it is undeniable that China's data circulation legislation has not formed a sound normative system, is still in its infancy. At this stage, the main problems faced by China's data circulation legislation are:

**Lack of a basic law on data circulation.** There are no unified rules on data circulation at the national level, and the formulation of rules on data circulation has been fragmented, with governments at all levels working separately on the regulation and supervision of data circulation norms, and there are differences in the understanding and handling of different issues, which impede the rapid development of the country's overall data economy and data circulation.

**Higher data circulation costs.** Data circulation as a key link in the construction of data element marketization, reduce data circulation cost is to promote the marketization of digital elements of the real demand, can stimulate the market main body data trading, open and sharing vitality, release the potential value of data elements. At this stage, the cost of data circulation in China is higher than that in developed countries such as Europe and the United States, and the starting point of data circulation legislation in China is still mostly from the perspective of national network security and personal information protection, which restricts the proper connotation of data circulation legislation that should serve the development of the digital economy.

**Difficulty in defining data ownership.** It is difficult to define the ownership of data rights and interests, and the lack of trust between subjects restricts the efficient and standardized circulation of data, making it more difficult to carry out legislative work on data circulation. At the same time, the unclear definition of data ownership also results in a large room for interpretation of data in the process of circulation, trade and use, leading to the deterioration of market standardization. [12]The process of data circulation involves data generators, data transmitters, data holders, data collectors, data users and other subjects, how to determine the data rights and interests of the subjects belonging to the interests of all parties, to protect the interests of all parties, to promote mutual trust and mutual assistance, to form a consensus on the protection of rights and interests, and to solve these problems through the rules of data circulation is the core of the legislation on the circulation of data.

**Increased risks to data flows.** Higher data security risks impede the creation of value in data circulation and make it daunting for all parties involved in data circulation. Entering the era of data elements, data security emphasizes the endogenous security of the entire life cycle of data, highlighting the continuous security of the data flow process, and the expansion of this concept has increased the complexity of data security protection and the difficulty of realization. Traditional data security is mainly for the protection of static storage data, data circulation itself is the flow of data elements between the subjects, which improves the difficulty of data security protection, how to respond to the data circulation of all parties involved in data security and privacy protection, the formation of a closed-loop chain, the data circulation of legislation and technology is undoubtedly a huge challenge.

**High uncertainty in data circulation.** In the process of data circulation, there are unclear rights and

interests in the use of data, data monopoly, data silos, unfair competition and data leakage and other prominent phenomena, which greatly increase the uncertainty of data circulation, seriously impede the construction of the market-oriented development of data elements, and exacerbate the crisis of confidence in the security and protection of data circulation, and how to solve these problems and eliminate the crisis of confidence in the formulation of rules for the circulation of data puts forward stringent requirements.

In the face of the many problems existing in the current data circulation field, in the context of the era of the rule of law, it is necessary to accelerate the legislative work on data circulation, establish and improve the various systems of data circulation, promote the construction of the data factor market, and promote the development of the digital economy on the fast track.

## **5. Principles to be followed and recommendations for improving data flow legislation**

The realization process of standardized and efficient circulation of data is essentially to define and configure the rights and interests of data and related legal obligations reasonably through scientific legislation, so that the protection of rights and interests of all parties involved in the process of data circulation reaches a dynamic balance. At present, China's data elements market construction is in full swing, data circulation as data elements market construction pivotal link, it is necessary to emphasize the data circulation legislation to data security protection and data elements circulation for the rule-making guidance, clear data circulation should follow the principle, for data circulation rules lack of basic value guidelines, while actively exploring the data circulation process of the problem of legal solutions, so as to provide the data circulation process a dynamic balance. At the same time, it actively explores legal solutions to the problems in the process of data circulation, so as to provide constructive opinions for the improvement of the system of data circulation rules.

### ***5.1 Data flow legislation should be guided by principles***

1) Principle of fairness. The principle of fairness is one of the basic principles of civil law, data circulation belongs to civil behavior, data circulation legislation should follow the basic requirements of this principle.

2) Principle of security and control. The manifestation of data circulation is mainly the opening, sharing and trading of data, and it is of great significance to ensure the openness and transparency of the manifestation of circulation in order to safeguard the fairness and equity of the construction of the data factor market and promote the healthy development of the digital economy. The principle of security and control requires that enterprises and individuals involved in the circulation of data be informed and consent, and requires that government data and public data be open and transparent to ensure the legitimacy of the source of data generation and the legitimacy of data collection and use, and that information asymmetry problems formed in the process of the participation of all parties in the circulation of data be discovered and solved in a timely manner, so as to promote fairness and impartiality of data trading and sharing. At the same time, the data circulation legislation should strengthen the construction of the data circulation supervision and responsibility traceability system, strengthen the responsibility and obligations of data intermediary service organizations, data transaction service platforms and other main bodies, ensure that the data processing records of all parties involved in the data circulation process can be traced, and safeguard the security and controllability of the whole process of data circulation.

3) The principle of equal emphasis on efficiency and protection. Data protection guarantees the efficient realization of data circulation, and data circulation promotes the improvement of the data protection system, both of which are intrinsically and inextricably linked. The value of data lies in circulation, and the value of circulation is the pursuit of efficiency. At the same time, data circulation involves multiple parties involved in the main body, to protect the data security rights and interests of all parties, and strengthen mutual assistance and mutual trust, in order to promote the data to quickly standardize the efficient circulation. Therefore, the legislative work on data circulation should follow the principle of giving equal importance to the efficiency of data circulation and the protection of data security, so that the two are complementary and mutually reinforcing.

### ***5.2 Proposals for improving the legislative system for data flow***

1) Formulate the basic law on national data circulation and improve the legislative system. At present, domestic governments at the provincial and municipal levels are actively carrying out legislative work on data circulation, while legislation at the central level is still lacking. The national legislature should

formulate a basic law on data circulation, strengthen the design of top-level rules, set up a framework of legal rules on data circulation, provide reference guidelines for governments at all levels to formulate laws and regulations, ensure the organic unity of vertical and horizontal rules, and form a multilevel rule system of laws, administrative regulations, local laws and regulations, governmental regulations, and industry regulations, so as to completely solve the current uncertainty and fragmentation of the rules on data circulation, and the fragmentation of the rules at all levels of government. Serious fragmentation of data rules, governments at all levels are doing things in their own way, and there are different rulings for the same situation, so as to effectively guarantee the fairness and orderliness of data circulation, high quality and high efficiency, release the potential value of data elements, and promote the rapid development of the marketization of data elements.

2) Clarify the concept of giving equal importance to data protection and circulation, and promote scientific legislation. Data protection is the control of the boundary of data circulation.[13-14] At the present stage, the starting point of the legislation on data circulation rules is still mostly from the perspective of data security protection and personal information privacy protection, but the degree of importance attached to regulating the circulation of data as the starting point is far from enough. Circulation is a necessary way to release the value of data, and as a key link in the construction of the marketization of data elements, data circulation can stimulate data protection and promote the continuous optimization of data utilization. [15]In the legislation, we insist on the equal importance of data security protection and data element circulation, highlight the important role of data element circulation in the development of the digital economy, and build good laws and good laws that meet the needs of the social era. Of course, governments at all levels should formulate data circulation rules that strictly follow the objective laws of data element market construction, do not violate the characteristics of the industry, maintain the flexibility and uniformity of rule-making, and truly form a data element circulation system that can guarantee the balance of data rights and interests of all parties involved in data circulation, and realize scientific legislation on data circulation.

3) Strengthening the articulation and coordination of data circulation rules at all levels to ensure standardized law enforcement. At present, China has not formulated a basic law on data circulation at the central level, and the Network Security Law, the Data Security Law, the Personal Information Protection Law, and the E-commerce Law serve as the basic laws regulating and guiding the data circulation process. Governments at all levels should pay attention to the fact that there should be no conflict with the previous laws when formulating the data regulations or digital economy regulations of the region, and pay more attention to the convergence and coordination of the previous laws, so as to maintain the integration and coherence of the vertical laws and norms. In addition, they should pay more attention to the integration and convergence with the superior laws, and maintain the consistency of vertical laws and norms, so as to provide specific rules and guidelines for the circulation of data elements and stimulate the vitality of the data element market. At the same time, the formulation of data circulation rules should focus on the construction of procedural norms to ensure that law enforcers have a legal basis for law enforcement and strictly enforce the law, so as to guarantee the standardization and fairness of law enforcement procedures.

4) Define the rules of data circulation rights and reduce the cost of circulation. The rules for determining rights address which data can be managed and identified, which is the process of specifying data information. Defining the rules for determining rights in data circulation can clarify the specific standards for attributing data rights and interests in the process of data circulation, correctly distinguish whether the subject is qualified to use the data and whether the purpose of use is justified, strengthen the symmetry of information and the degree of trust of the subjects involved in data circulation, maintain the openness and transparency of data circulation, avoid the abuse of data rights and interests of the subjects involved in the phenomenon of data monopolization, data silos and unfair competition, and reduce the cost of data circulation and create a healthy environment for data circulation. It also reduces the cost of data circulation and creates a healthy environment for data circulation.

5) Improve the rules for tracing the responsibility for data circulation to ensure that risks are controllable. Compared with the static protection of data storage in the past, the dynamic circulation of data has increased the difficulty of protecting data rights and interests. The construction and improvement of data circulation responsibility in data circulation legislation is an important part of effectively strengthening data security protection guarantee. The data circulation process involves data producers, transmitters, collectors, users and other subjects, according to their risk control obligations to deal with the use of data configuration allocation of security responsibilities, the establishment of a practical, fair and reasonable accountability mechanism, to ensure that the whole process of the circulation of data to realize the responsibility for the emergence of the consequences of the hazards of the traceability of the responsibility, so as to make clear the boundaries of responsibility of all parties, to ensure that the

circulation of risk can be controlled, to reduce the security risks, to ensure the sustainability of digital economy, and to ensure the security and safety of the data.

## 6. Conclusions

The digital economy is the main economic form following the agricultural and industrial economies, and data resources are the key elements of the digital economy, the most epochal production factors, and the core engine for the deepening development of the digital economy. The value of data lies in circulation, and it is important to ensure the efficient, fair, orderly and healthy circulation of data elements, maximize the release of the huge potential value of data elements, and let the digital economy become a power source to promote overall economic growth.

At present, China's data factor market construction is further promoted, data circulation as a key link in the construction of data factor market, actively carry out the exploration of data circulation legislation, clear data circulation principles, complete data circulation rules, form an all-round, multi-level data circulation rules system, safeguard the rights and interests of all parties involved in the process of data circulation, and create a healthy and fair data factor market environment, which is the inevitable requirement for the construction of the digital economy and society in the new era. It is an inevitable requirement for the construction of digital economy and society in the new era. Provincial and municipal governments and industry regulations have actively explored the legislation on data circulation and accumulated valuable experience, and the formation of data circulation rules at the national level also has a feasible basis. However, the formation of the data circulation rules system cannot be accomplished overnight, and this task will still be a major topic for the basic theoretical research on data security protection and data elements circulation in China in the long term.

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