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Article

# Practical path for developing "new quality productive forces" driven by the digital economy in China

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**Abstract:** Developing "New Quality Productive Forces" (NQPFs) has been accepted as a new theory to accelerate the high-quality development in China. In current, China's high-quality development mainly relies on the traction of the digital economy. In view of this, developing NQPFs in China's digital economy sector requires locate and remove some obstacles, such as the insufficient utilization of data, inadequate algorithm regulation, the mismatched supply and demand of regional computing power and the immature market environment. As a solution, it is necessary to allocating data property rights in a market-oriented way, establishing a user-centered algorithm governance system, accelerating the establishment of the national integrated computing network, and maintaining fair competition to optimize the market environment.

**Keywords:** data; algorithm; computing power; market environment; fair competition

## 1. Introduction

In September 2023, during his investigation in Heilongjiang Province, the General Secretary of the Communist Party of China (CPC), Xi Jinping, first proposed the term of NQPFs. During the collective study session of the Political Bureau of the CPC Central Committee in January 2024, the General Secretary provided a systematic and comprehensive explanation of the NQPFs. This original concept, which has become an important focus for high-quality development, is significant both in China and abroad.

The NQPFs are advanced productive forces that have the characteristics of high technology, high efficiency and high quality, which are in line with the new development concept. And the remarkable feature of NQPFs is innovation, including innovation at the level of technology and business mode, as well as innovation at the level of management and system (Xi, 2024). The NQPFs take the qualitative change of laborers, labor materials, labor objects and their optimal combination as the basic connotation, and the improvement of total factor productivity as the core indicator (Yang, 2024).

Accelerating the development of NQPFs is one of the most important tasks for the Chinese government in 2024. The report on the Work of the Chinese Government (2024) points out that optimizing and upgrading the industrial and supply chains, cultivating emerging industries and future industries, and innovatively developing the digital economy are some of the concrete ways to achieve the development of NQPFs.

The digital economy is a new economic form that takes digital knowledge and information as the key production factors, digital technology as the core driving force, and modern information networks as important carriers. Through the deep integration

of digital technology and the real economy, the digital economy constantly improves the digitalization, networking, and intelligence of the economy and society, accelerating the reconstruction of the economic development and governance model (CAICT, 2023b). According to the Digital China Development Report (2022), as early as 2022, the scale of China's digital economy reached CNY 50.2 trillion, ranking second in the world and accounting for 41.5% of the gross domestic product (GDP). As such, the digital economy has become an important engine for steady growth (CAC, 2022).

In the era of digital economy, data is a new element of digital development of NQPFs, algorithms reflect the new advantages of digital development of NQPFs, and computing power reflects the new momentum of digital development of NQPFs. The combination of data, algorithms and computing power reflects the level of NQPFs (Ren and Dou, 2024). However, at present, in the field of China's digital economy, there are some difficult problems in the effective use of data, algorithms and computing power. For example, data circulation is not smooth, algorithm regulation is insufficient, and the supply and demand of regional computing power are not matched.

In addition to the three inherent factors of the digital economy—data, algorithms and computing power—a fair competitive market environment is also essential for the development of NQPFs. Only in the market environment of fair competition, the innovative spirit of enterprises can be stimulated. However, the reality is that the market environment in China is not mature enough due to factors such as local protectionism and the existence of monopolies.

To sum up, in the field of digital economy, in order to develop NQPFs, it is necessary to deal with the blocking points of both internal and external aspects. From the inherent factors inside the digital economy, it is necessary to build a data base system (including data property rights provisions and liability identification), strengthen algorithm supervision, and improve the construction of a national integrated computing network, so as to stimulate the vitality of these elements (data, algorithms and computing power). From the perspective of the market environment required for the development of the digital economy, it is necessary to reasonably regulate the restrictive competition behaviors of government departments and enterprises, so as to ensure a fair competition order.

## 2. Blocking points in developing NQPFs

The digital economy is an important driving force behind modernization in China. The development of NQPFs is also inseparable from the traction of the digital economy. However, the sustainable and healthy development of China's digital economy has encountered some practical bottlenecks, such as the insufficient vitality of data, inadequate algorithmic regulation, the mismatched distribution of computing power resources and the immature market environment. To drive NQPFs through the development of the digital economy, it is necessary to locate and remove these obstacles.

### 2.1. The insufficient vitality of data

For the first time, the Fourth Plenary Session of the 19th Central Committee of

the Communist Party of China (2019) regarded data as a factor of production alongside labor, capital, land, knowledge, technology, management. The committee proposed improving the mechanism whereby the seven major factors of production, including data, are evaluated by the market and paid according to their contributions (Central Committee of the CPC, 2019). From the perspective of the factors of production, NQPFs mean new form of productive forces evolved by a new round of science, technology, and industrial reform. At its core, NQPFs relies on the integration of data, and digital technologies such as artificial intelligence (AI).

To develop NQPFs, it is necessary to dispense with the traditional economic growth mode and productive force development path, breaking away from dependence on economic growth driven by the massive input of traditional factors such as capital, labor force, and land. Data play a role through their function and integration with other production factors, penetrating production, circulation, consumption, distribution, and other social production processes, giving birth to new quality labor means, objects, and forces, and thus promoting the development of NQPFs. It can be said that data constitute one of the key factors in promoting the development of NQPFs. In order to use the data multiplier effect to empower economic and social development, 17 departments, led by the National Bureau of Data of China, jointly launched the Three-year Action Plan for "Data X" (2024–2026) in December 2023 (CAC, 2024). This plan clearly emphasized the significance of data in the development of NQPFs and the promotion of high-quality development.

Reliable data can be used as a basis for decision making, ensure the accuracy and credibility of analysis results and improve the efficiency of business processes (Shao et al., 2024). If the authenticity of data is flawed, according to the degree of importance of the data, there will be different scope and degree of impact on national security and public interests. For this reason, in order to standardize data processing activities and ensure data security and quality, China has adopted a kind of classification governance rule, dividing data into three levels: core data, key data and general data (GB/T 43697-2024).

According to Measures for the Management of Data Security in the Field of Industry and Information Technology (Provisional) (MIIT, 2022), in the process of data collection, the data processor shall take corresponding security measures according to the data security level, strengthen the management of key data and core data collection personnel and equipment, and record the collection source, time, type, quantity, frequency, flow direction, etc. If key data and core data are obtained through indirect means, the data processor shall clarify the legal liabilities of both parties with the data provided by signing relevant agreements and letters of commitment.

However, there are still many obstacles preventing the full use of data. Firstly, data ownership is unclear, and, secondly, there are obstacles in data circulation and use. Thirdly, data development and openness are insufficient.

#### 2.1.1. unclear data ownership

Market transactions need clear property rights and a perfect ownership registration system as their basis. Different from traditional physical goods, data are a kind of virtual good, with multiple data subjects, uncertain data derivation flow, changeable ownership generation processes, and a multi-dimensional perspective on

confirming rights. In order to clearly define data ownership, the traditional civil rights system theory needs to be expanded and improved (Li, 2024). The actual configuration of data property rights is not clear, making it difficult to define the core rights, such as data use and income, affecting the market-oriented allocation efficiency of data resources, and leading to data resource waste.

### 2.1.2. Obstructed data flow

At present, the development of the national data trading market is unbalanced and inadequate. In terms of the distribution of data trading institutions, most of them are concentrated in the economically developed eastern region, the central region is also actively distributed with the economic development, and the western region with a weak economic development foundation is less distributed. In addition, the development of exchange trading is not sufficient, the construction of data factor market has not reached the ideal goal, and it is still in the early embryonic stage. Over-the-counter trading is active and is the main form of data trading (Li, 2024).

With the rapid development of the data element trading market, various types of data trading platforms have been established in various regions. By the end of 2023, more than 50 data trading institutions can be found through public channels (Wang et al., 2024). The local data trading platforms established by different regions and departments adopt different data standards and trading rules in the trading process, and there are obstacles in the circulation and trading of data in different regions or platforms. At the same time, many data resources are scattered in different industries, and the difference in digitization level between industries leads to the generation of data barriers, hindering the defining of data values.

Data circulation and use are the key to activating their value. However, at present, due to the problems of inconsistent technical standards, incompatible data formats, insufficient data sharing, and openness in on-exchange trading, the data security protection mechanism of off-exchange trading is imperfect, and the risk of personal information collection and leakage has greatly hindered the efficiency of data circulation. This limits the sharing and use of data, reducing the application efficiency of data in the production process.

### 2.1.3. Insufficient data development and openness

Much of the personal data is actually held by the public sector and companies. At present, the method of responsibility identification under the open scenario of public data is not clear, the incentive mechanism to promote the opening and utilization of data is not perfect, and the administrative departments engaged in non-information business often do not have enough open and sharing capabilities. The above reasons lead to problems in the supply quality and utilization degree of public data in China. The distribution of public data is relatively scattered, and it is not convenient to gather and organize public data with the same topic. The open scope of public data is still insufficient, and the frequency of data update on open platforms is generally low (CAICT, 2023a).

In the case of unclear data property rights systems, if one wishes to promote the open sharing of data, there will inevitably be an uneven distribution of costs, benefits, rights, and responsibilities. For enterprises that make substantial technological and capital investments for data collection and processing, the lack of a property rights

system to provide incentives based on data value creation and realization would lead to enterprises with large amounts of high-quality data being reluctant to grant access. To sum up, whether from the perspective of government departments or enterprises, because of the lack of data-related laws and regulations, the enthusiasm of data sharing and utilization has been suppressed.

## 2.2. Inadequate algorithm regulation

Data, algorithms, artificial intelligence, and innovation are an organic whole that together promote the development of NQPFs. Algorithm is a series of clear instructions to solve problems, and the object of algorithm processing is data. The rise of AI industry is the common result of "algorithm + big data" (Zhang, 2021). As the innovation of AI technology can realize autonomous learning, identification and decision, it provide a new way to promote energy saving and consumption reduction. Therefore, AI is undoubtedly the core force and important support to realize green technology innovation (Zhou et al., 2023).

In recent years, the continuous iteration of AI algorithms has led to increasingly complex hidden layers of technology. The cognitive results generated have exceeded the scope of the general public's understanding. As a result, the phenomenon of an "algorithm black box" becomes increasingly prominent. The information asymmetry deepens the opacity and incomprehensibility of algorithms, causing a series of uncertain challenges, such as privacy disclosure, algorithm discrimination, and ethical risks (Jia and Xue, 2021).

However, regulations and policies regarding AI algorithms are scattered across multiple fields and industries. The existing institutional rules, which are relatively fragmented and have low levels of legality, are not conducive to effective law enforcement by regulatory authorities, nor are they conducive to corporate self-compliance. At the same time, the problem of the systematic and insufficient coordination of relevant laws and regulations on AI algorithm governance has also risen to prominence.

From the perspective of industrial form, the development of NQPFs has profoundly shaped the modern industries, especially in the field of AI. The core feature of NQPFs is that they rely on scientific and technological innovation. Especially the application of digital and intelligent technology, is promoting industry transformation from the traditional mode of low efficiency and high consumption to the efficient, new, green industrial form. AI is a strategic technology leading future advancements. As the core driving force for the latest round of industrial change, AI will further release the huge energy accumulated by previous scientific and technological revolutions and industrial changes, creating a powerful new engine to help restructure production, distribution, exchange, consumption, and other economic activities. AI has certainly become an important factor for the development of the digital economy and NQPFs. However, the imperfect legal regulatory system of AI algorithms may lead to uncertainty in—and the stalling of—its development.

## 2.3. The mismatched distribution of computing power resources

There is no doubt regarding the strategic position of computing power in the digital economic field. As the core productivity of the digital era, computing power is accelerating the deep integration of the digital economy within the real economy. The rapid growth of computing power has promoted new applications and demands, such as the AI model represented by AIGC (Artificial Intelligence Generated Content). According to the White Paper on China's Computing Power Development Index (2023), the scale of the country's computing power has been steadily expanding, with intelligent computing power maintaining strong growth. From the perspective of infrastructure (such as general data and intelligent computing centers), in 2022 the infrastructure computing power scale reached 180ExaFLOPS, ranking second in the world (CAICT, 2023c).

However, in China, the distribution of computing power presents a mismatch between regional supply and demand. According to CCID Consulting (2024)，from the perspective of regional proportion, in 2023, the demand for computing power in the eastern region accounted for 83.5% of the total demand in the country, but the supply of computing power in these regions only accounted for 68.2% of the supply of computing power in the country, and the supply and demand of computing power in the eastern and western regions is unbalanced. In terms of scale, the demand for computing power in the eastern region in 2023 reached 250.5EFLOPS, while the supply was only 147.4EFLOPS. As the policies in the eastern region have more stringent requirements on land and carbon emissions, the center of gravity of computing power center construction is shifting to the west, and the computing power gap in the eastern region still exists in the short term (CCID, 2024).

As the above data reveals, the distribution of computing power resources in the east and west of China presents an unbalanced situation. But this imbalance does not refer to fewer data centers in the East and more in the West. The reality is quite the opposite. Most of China's data centers are located in the eastern region, where large-scale development of data centers is difficult to sustain due to the increasing shortage of land, energy and other resources. China's western region is rich in resources, especially renewable energy, and has the potential to develop data centers and meet the computing needs of the east. Therefore, the distribution of computing resources in China presents an unbalanced situation of "insufficient in the east and excess in the west". Thus, the "east data, west computing" came into being (Pan, 2022).

## 2.4. The immature market environment

The development of NQPFs requires a fair and free market environment. However, in order to protect local economic interests, some local governments will restrict the circulation of goods or services between regions and prevent non-local enterprises from participating in local market competition. Some outstanding problems have been summarized in the "Notice on Collecting Clues on Problems Hindering the Construction of a Unified National Market" (State Council of the PRC, 2023a). For example, some administrative agencies prohibit non-local enterprises from bidding, implement preferential policies such as subsidies for local enterprises,

and let state-owned enterprises monopolize market resources to prevent other business entities from participating in fair competition.

Local protectionism will cause market segmentation and affect the effective allocation of resources. Reductions in resource allocation efficiency will inhibit innovation, hindering the effective combination of advanced technology, talent, and capital and thus limiting the formation and release of NQPFs. Local protectionism can also hinder the formation of a unified national market, resulting in different regulatory environments for companies operating across regions, and thus a lack of clear market expectations for cross-regional investment and technology transfer. Particularly for enterprises that rely on NQPFs (such as enterprises in high-tech industries and digital economy), different regulatory requirements and legal environments will inhibit the optimal combination of production factors on a larger scale, which is not conducive to the formation of a good ecology for the development of NQPFs.

In addition to government behavior, platform enterprises' monopolistic behavior and unfair competition behavior will also have a negative impact on market order. In the digital economy, winner-takes-all has emerged in many markets for goods and services. In this context, particular attention needs to be paid to data monopoly and algorithm abuse by large platform enterprises. Even in markets where there is no monopoly, it is not uncommon for platform companies to collect and use data in improper ways. Therefore, competition enforcement is essential, but attention should be paid to protecting innovation enthusiasm while regulating illegal activities.

## 3. Targeted solutions for developing NQPFs

Focusing on the blocking points that restrict the development of the digital economy and NQPFs, the following four aspects can be considered. First, there is a need to establish basic rules regarding data property rights, circulation transactions, and security governance. Second, there is an additional need to strengthen algorithm supervision. Third, there is a need to promote the construction of the national integrated computing power network and, finally, to optimize the market environment.

### 3.1. Establishing basic data rules

The market-oriented allocation of data is an effective way to promote the high-quality development of the digital economy. Reasonable division of data property rights can activate data potential, promote the deep integration of data resources within technologies and scenarios, empower the transformation and upgrading of traditional industries, and give birth to new industries. From a technical point of view, when relying on the emerging federated learning, secure multi-party computation, smart contract, homomorphic encryption, and differential privacy technologies, data ownership and use rights can be separated. Data elements can be classified and registered to confirm rights, such as data resource ownership registration, transfer registration, data product management right transfer registration, data circulation registration, etc. (Ouyang, 2024).

Released in December 2022, the Opinions of the CPC Central Committee and the State Council on Establishing a Data Base System to Maximize a Better Role of Data Elements ("Twenty Data Measures") heralded a new stage of market-based data

elements allocation in China. “Twenty Data Measures” creatively proposed the “separation of three rights” of data, encompassing data resource holding right, data processing and utilization right, and data product management right (Shen, 2023).

In March 2023, the CPC Central Committee and The State Council issued the Reform Plan for Party and State Institutions and decided to establish a National Data Bureau to coordinate and promote the construction of data infrastructure systems, and coordinate the integration, sharing, development, and utilization of data resources. From the overall perspective of China’s digital development, the establishment of a National Data Bureau is significant and is a key move in accelerating market-oriented data allocation reform.

From the perspective of circulation transactions, it is necessary to establish and improve the national unified data circulation and trading norms to provide a legal basis for the construction and development of national data-trading platforms. In formulating relevant regulations, there is a need to focus on the current practical needs of data trading, to clarify data classification and grading standards, and to stipulate transaction rules such as data trading platform access, data evaluation and pricing, rights confirmation, rights distribution, transaction delivery methods, and transaction rights protection relief. There is also a need to establish a multi-level national data trading market system in order to improve the data trading ecology under the national unified big market, provide unified data interfaces and secure transmission channels, and promote the orderly circulation and sharing of transaction data.

In order to promote the opening of government data in an orderly manner, it is necessary to start from two aspects: the opening and sharing of government data. On the one hand, in order to promote the opening of government data, an open platform can be built in coordination with national and local governments and based on the principle of data classification and hierarchical management. Working out the government data classification and hierarchical authorization protocol applicable to China has the purpose of clearly exempting the types， modes, and rights of subjects of data opening and utilization (Wanyan and Tao, 2021). In this way, on the basis of ensuring the standard and safe use of government data, the difficulty of obtaining the relevant data can be appropriately reduced and the efficiency of authorized use can be improved. On the other hand, at the level of government data sharing, it is necessary to build an interconnected data-sharing mechanism, clarify the rights and responsibilities of all relevant parties in the provision, use, and management of government data, promote data sharing and business collaboration, and form an efficient working mechanism.

## 3.2. Strengthening algorithm supervision

In recent years, while the application of algorithms has injected new momentum into economic development, the problems caused by the irrational application of algorithms have also profoundly affected social order. Such as algorithm discrimination and inducing addiction bring new challenges to the maintenance of social fairness and justice, as well as the legitimate rights and interests of netizens. The establishment of a user-centered algorithm governance system is the fundamental meaning behind the sustainable and healthy development of the digital economy.

At the legislative level, the introduction of targeted algorithm recommendation rules is not only useful in preventing and resolving security risks but is also useful in promoting the healthy development of algorithm recommendation services. In view of this, in China, the Cyberspace Administration, the Ministry of Industry and Information Technology, the Ministry of Public Security, and the State Administration for Market Regulation jointly issued the "Regulations on the Management of Algorithm Recommendation for Internet Information Services" (hereafter referred to as "Regulations on the Algorithm Recommendation"), which came into effect on 1 March 2022.

The "Regulations on the Algorithm Recommendation" clearly specify the requirements for the protection of users' rights and interests, including protecting the right to know; the requirement to inform users of the situation when providing algorithm recommendation services; and the publicity of the basic principle, purpose, and main operation mechanism of the service. To ensure the correct algorithmic choice, users should be provided with options that are not specific to their personal characteristics or with the option to conveniently turn off algorithmic recommendation services. In addition, for the provision of algorithm recommendation services to minors and the elderly, the "Regulations on the Algorithm Recommendation" has clarified specific requirements, such as not using algorithm recommendation services to encourage minors to indulge in the internet and facilitating the safe use of algorithm recommendation services for the elderly. For the provision of algorithm recommendation services to laborers, relevant algorithms will be established and improved for order allocation, remuneration composition and payment, working hours, rewards, and punishments on the platform. For the provision of algorithm recommendation services to consumers, algorithms to implement unreasonable differential treatment on trading conditions will not be used, such as trading prices according to consumer preferences, trading habits, and other characteristics.

At the law enforcement level, it is necessary to explore diversified regulatory tools, such as regulatory sandboxes, and to further implement ex ante and ex post supervision measures, such as algorithm filing and certification systems, to ensure that innovations in AI algorithm technology can develop in an orderly manner. In addition, there is a need to further clarify the liability of algorithm developers and users.

To determine algorithm developer liability, it is necessary to find out whether there are subjective faults in the design process, namely, whether the algorithm developers knew or should have known that their technical design risked harming the rights and interests of users and nevertheless allowed this situation to occur. For example, in the process of designing video recommendation algorithms, the necessary considerations include whether the algorithm developers improperly add technical factors that lead consumers to be addicted to videos and whether they excessively chase economic benefits at the cost of damaging the physical and mental health of consumers. The existence of these facts can be taken into consideration when deciding whether developers should take responsibility for the algorithms (Wang, 2022).

When determining algorithm user liability, it is necessary to find out whether there is fault in the process of using algorithm technology. The algorithm user can control the algorithm's operation and directly benefit from it. If the algorithm user knows that the design risks infringing on the rights and interests of consumers or other

operators, but still does not take measures to avoid damage and insists on using the algorithm, then the user may also become the subject of responsibility (Zhang, 2019). Therefore, the distribution of liability between algorithm developers and users should be divided proportionally according to the degree of fault.

### 3.3. Assuring smooth, efficient, stable, and reliable national integrated computing power network

In December 2023, the National Development and Reform Commission and other four departments jointly issued the "Implementation Opinions on In-depth Implementation of the 'East Number and West computing' Project and Accelerating the Construction of a National Integrated Computing Network" (NDRC, 2023), aiming to energize high-standard economic development with high-quality computing power. The report on the Work of the Chinese Government (2024) also clearly states the following: "Appropriately advance the construction of digital infrastructure, accelerate the formation of a national integrated computing power system, and cultivate a computing power industry ecology".

In order to improve the overall efficiency of national computing power, promote green sustainable development and regional coordinated development, give full play to the computing resource and data "multiplier effect", and improve the level of national data sharing, it is necessary to fully acknowledge the boost provided by the "east data, west computing" project (Jin and Liang, 2023). Through the cooperation of eastern and western computing power, on the one hand, it can not only meet the strong demand of computing power in the east, but also relieve its tight energy and supply pressure, and reduce the operating costs of enterprises in eastern computing power demand. On the other hand, it can also promote the optimization, transformation and upgrading of the industrial structure in the western region, so that the western region can have more opportunities to participate in the industrial chain of the eastern region, realize complementary resource advantages, and promote the coordinated development of regional economy (Huang et al., 2024).

Regarding improving the collaborative mechanism of AI computing power, it is necessary to provide institutional and policy support for further improving and optimizing the distribution layout of computing power and the operation of the nationwide data and computing resource system. China has the institutional advantage of deploying an integrated computing system and is thus able to integrate computing power, network transportation, data storage, and other resources nationwide to form an efficient, intelligent, and secure computing service system. And the national integrated computing power network will support the country's scientific and technological innovation, industrial upgrading, thus promote the development of NQPFs.

### 3.4. Optimizing the market environment

The development of a digital economy and NQPFs requires the efficient and fair allocation of factors and resources. The efficient distribution of production factors depends on fair and free competitive market environment. Therefore, the continuous promotion of market-oriented business environment upgrading, in accordance with

laws, is particularly important for the development of NQPFs. In China, improving the business environment at the domestic level requires giving full play to the decisive role of the market in allocating resources. Improving the business environment at the international level requires improving the foreign-related legal system, promoting mutual benefit and win–win results. On a technical level, improving the business environment requires increasing the level of digitization of administrative services.

#### 3.4.1. Formulating "unified national market construction standard guidelines"

On 25 March 2022, the "Opinions of the Central Committee of the Communist Party of China and The State Council on Accelerating the Construction of a Unified National Market" in the "incentive mechanism" proposed "exploring ways to formulate standards and guidelines for building a unified national market, and reward regions that actively promote the implementation of the construction of a unified national market and achieve outstanding results in accordance with relevant state regulations" (Central Committee of the CPC and State Council of the PRC, 2022). This shows that the country urgently needs to formulate "unified national market construction standard guidelines" (Liu, 2024).

The construction of a unified national market is simply "5 unified" and "1 break"; that is, through unified basic system rules, unified connected market facilities, unified factor resource market, unified commodity and service market, unified market supervision, and breaking local protection, an efficient, standardized, fair, and fully open super-large-scale market can be built (State Council of the PRC, 2023b). Among them, the first task is to establish various rules conducive to the construction of a unified national market. For example, by establishing a standard system in the fields of big data, AI, blockchain, 5G, Internet of Things, energy storage, etc., the unification of goods or service standards can be achieved, thus facilitating the circulation of goods and services. By developing a unified negative list system for market access and improving the dynamic adjustment mechanism of the negative list, it will help promote free competition in the market and break down market barriers (Shi, 2024).

A unified system of rules is the basis for a unified national market and a guide for other "unified" and "break". So, the "unified national market construction standard guidelines" should include the unification of institutions and rules regarding product quality standard, property rights protection, market access, fair competition, and social credit.

#### 3.4.2. Improving the "fair competition review system"

In view of the need to clean up the existing policy documents of various local government departments contrary to fair competition, it is necessary to further establish and improve the "fair competition review system". China's "fair competition review system" was introduced and implemented in 2016. The Opinions of The State Council of China on Establishing a Fair Competition Review System in the Construction of a Market System (2016) clearly point out that, in order to regulate relevant government actions, prevent the introduction of policies and measures that exclude or restrict competition, and gradually clean up and abolish regulations and practices that impede the national unified market and fair competition, a fair competition review system should be established.

The fair competition review system is an anti-monopoly compliance mechanism within the government. It adopts the review mechanism of self-review by policy-making organizations. Although the special chapter on China's anti-monopoly law clearly prohibits the "abuse of administrative power to exclude and restrict competition", after completing the investigation and forming a conclusion, the anti-monopoly law enforcement agency can only make recommendations to the superiors in the department that committed the act, and the specific treatment can only be completed by these parties. Based on this, the fair competition review system can supplement the shortcomings of the anti-monopoly law in correcting administrative monopolies. In order to ensure system implementation, the Chinese government equipped it with a joint meeting system, detailed rules, and a third-party evaluation mechanism.

Promoting the fair competition review system is conducive to providing a law-based business environment for NQPFs (Gao, 2023). The further optimization of the fair competition review mechanism could join forces with the "unified national market construction standard guidelines", effectively reducing unnecessary administrative interventions and breaking local protectionism. Promoting the free flow of market resources and fair competition is helpful in improving factor allocation efficiency, reducing transaction costs, and promoting technological innovation. Through the implementation of the fair competition review system and the formulation of "unified national market construction standard guidelines", it is possible to improve the investment confidence of enterprises and thus encourage investments of social capital into the development of NQPFs.

### 3.4.3. Regulating monopolizing and unfair competition

In addition to supervising and reviewing administrative actions, it is also necessary to regulate the monopolizing, and unfair competition of enterprises in order to build a fair competition market. The reasonable regulation of restrictive competition behavior and unfair competition behavior is related to the quality of digital economy.

When large platforms accumulate massive data, they often consciously or unconsciously form a data monopoly. Data monopoly has a negative impact on the fair and orderly competition of the whole data factor market. If large platforms block the free flow of data, this may seriously damage innovation and competition in the digital market, thus hindering the function of data as a basic factor of production (Wang, 2023). China's Anti-Monopoly Law, amended in 2022, also focused on the monopolization risks in the digital economy, adding a special provision stipulating that "enterprises shall not use data and algorithms, technology, capital advantages and platform rules to engage in monopolistic activities prohibited by this law".

To maintain a fair competition order, not only should monopolistic behavior be prohibited, but so should unfair competition behavior. Especially in the digital economy, Anti-unfair competition behaviors are equally as important as anti-monopoly behaviors. With the rapid development of China's digital economy and the iteration of information technology innovation, traditional acts of unfair competition, such as counterfeiting and confusion, false propaganda, and business slander, are being renewed by means of internet technology. New acts of unfair competition on the internet, such as fabricating bad reviews and illegal data acquisition, are more hidden.

In this regard, there is an urgent need to strengthen unfair competition governance and constantly improve the efficient and predictable normal supervision mechanism.

In view of the characteristics of unfair competition in the Internet field, on 6 May 2024, the State Administration for Market Regulation announced the Interim Provisions on Internet Anti-Unfair Competition. According to the complex and changeable characteristics of online competition behaviors, the Interim Provisions on Internet Anti-Unfair Competition classified and refined unfair competition behaviors and clarified their identification criteria. First, it clarified the new manifestations of traditional unfair competition behaviors. For example, false propaganda may be may be carried out by fabricating user reviews. Second, it clarified the unfair competition behaviors unique to the internet, such as traffic hijacking and malicious incompatibility.

To sum up, it can be seen that the competitive behavior regulation system in the field of digital economy is gradually established and improved. The next step is to implement laws and regulations in the enforcement process, focusing on ensuring both a fair competition order and the vitality of innovation. This requires extensive listening to the opinions of experts in technology, economics, law and other fields, and measurement of diverse interests, so as to improve the scientific and rational law enforcement.

### 3.4.4. Attracting foreign investment

In China, state-owned, private, and foreign-funded enterprises are all important forces in the drive towards modernization. To ensure the sustainable and healthy development of the digital economy and develop NQPFs, it is necessary to stimulate the vitality of various business entities. The report on the Work of the Chinese Government (2024) calls for greater efforts to attract and utilize foreign investment. To this end, efforts are needed in the following aspects: (1) expanding market access and strengthening the opening up of the modern service industry; (2) ensuring national treatment for foreign-funded enterprises; (3) actively promoting access to high-standard economic and trade agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), actively comparing relevant rules, regulations, management, and standards, and steadily expanding institutional openness; (4) optimizing the regional opening layout, implementing the strategy of upgrading pilot free trade zones, and giving full play to the pioneering role of open platforms such as Hainan Free Trade Port and various development zones; and (5) succeeding in providing services to foreign-funded enterprises and promoting the implementation of foreign-funded landmark projects.

Foreign-related legal construction is crucial to China's opening up. The construction and improvement of the foreign-related legal system will help attract foreign investment, introduce advanced technical talents, and create a more open, transparent, and fair international business environment. In particular, the scientific application of laws and regulations in data security and circulation is crucial for the development of NQPFs. At an international level, it is necessary to attach importance to international cooperation, actively participate in the formulation of international economic and trade rules, promote the building of an open-world economy, and let win–win cooperation benefit people across all countries. At a domestic level, it is

necessary to use the rule of law approach to safeguard domestic development and promote opening up, ensuring that domestic laws are interconnected, coordinated, and systematically integrated.

#### 3.4.5. Increasing the level of digitization of administrative services

In order to accelerate the promotion of smart supervision, as well as improve the cross-provincial cooperation in market supervision and administrative services, the "Opinions of the Central Committee of the CPC and The State Council on Accelerating the Construction of a Unified National Market" stated that it is necessary to make full use of big data and other technical means. On the one hand, improving the digital level of administrative services can promote the interconnectedness of government services and improve their efficiency. To this end, there is an urgent need to speed up the construction of digital and intelligent administrative service models, formulate and improve policies to promote the digitalization of administrative services, improve online government service capabilities, and expand the scope of big data application.

On the other hand, improving the digitization level of administrative services is helpful in improving the connectivity of the national property rights trading market, promoting the interoperability and sharing of market public information in various fields. For this purpose, it is necessary to unify the information release mechanism of property rights transactions through the application of digital technology; to optimize important information release channels, such as industry announcements and the ways in which market entities disclose information; to promote the unified interface construction of information authentication platforms of the same type and purpose; and to improve interface standards.

## 4. Conclusions

Data, algorithms, and computing power are the main driving forces behind the vigorous development of the digital economy. Therefore, in order to develop NQPFs driven by the Chinese digital economy, it is necessary to take scientific and technological innovation as the core, empower means of production through data, and lead both society and the economy into a new stage of development. This requires solving bottlenecks such as data opening up and circulation, accelerating the transformation and upgrading of industrial structures, and providing a suitable legal environment for new technology industries such as AI. This also requires efforts in optimizing a market-oriented, law-based, and international business environment, building a unified national market, and ensuring the orderly circulation and efficient allocation of high-quality production factors across the country.

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