

# The Impact of Digital Economy on FDI Quality: Evidence from China

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## Abstract

During the economic transition period, China is in urgent need of high-quality FDI to drive high-quality economic development. Under the new circumstances, the development level of the digital economy has become a crucial driver for enhancing FDI quality. Based on China's provincial panel data from 2012 to 2021, the paper employs a two-way fixed effects model to deeply explore the impact of the digital economy on FDI quality and its underlying mechanism. The results indicate that the development of the digital economy significantly improves FDI quality, with the foundation of digital economy development and the dimension of digital industrialization playing a prominent role in this improvement. Moreover, this enhancing effect is more pronounced in the eastern region of China. Mechanism analysis reveals that the development of the digital economy can promote the improvement of FDI quality by optimizing the business environment and increasing the degree of industrial agglomeration. The paper uncovers the promoting effect of digital economy development on FDI quality, providing important insights for formulating policies to advance digital economy development and improve FDI quality.

## Keywords

Digital Economy, FDI Quality, Business Environment, Industrial Agglomeration

## 1. Introduction and Literature Review

### 1.1. Introduction

Since the implementation of the reform and opening-up policy, the inflow of FDI into China has maintained a continuous growth trend. The massive inflow of foreign capital has not only brought abundant capital but also introduced advanced technologies and management experience, greatly promoting the rapid development of China's economy. However, problems such as high energy consumption,

high pollution, and high costs associated with the traditional FDI model have become increasingly prominent, exerting enormous pressure on the environment and resources and threatening the goal of sustainable development. In recent years, against the backdrop of the rising trend of anti-globalization, trade frictions between countries have intensified. Coupled with the impact of the COVID-19 pandemic, the global flow of FDI has continued to decline, posing severe external challenges to China's attraction of foreign capital. Currently, China is in a critical period of industrial structure adjustment and economic transformation. How to optimize the structure of foreign capital introduction and promote the high-quality development of FDI has become an important issue.

With the iterative development of information technology and the in-depth advancement of social informatization, the digital economy has become a vital driving force for the vigorous development of the global economy. It provides a new round of development opportunities for China to introduce high-quality foreign capital, especially to attract high-quality foreign-funded enterprises supported by information technology. Emerging technologies represented by big data, cloud computing, and artificial intelligence are continuously expanding their application fields, giving birth to numerous new business formats and new business models. It has triggered significant changes in traditional industries and traditional business models, and the international investment model and path have also undergone profound evolution. On one hand, relying on information technology and Internet platforms, the digital economy has reshaped the global modern production network. This enables enterprises to achieve precise international connections, shorten the intermediate links of the global value chain, effectively reduce the communication and coordination costs between enterprises, overcome the information asymmetry problem in international investment of enterprises, and ultimately improve the efficiency of international investment. On the other hand, the digitalization of the global value chain has led to the emergence of a "light overseas asset" characteristic in the international investment model. It has gradually shifted from being dominated by equity investment to a combination of equity and non-equity investment. The motivation of traditional FDI (such as efficiency-seeking FDI) has gradually weakened, while knowledge-seeking FDI and FDI driven by finance and taxation have begun to occupy a dominant position. Under the new situation, exploring how the digital economy affects the utilization quality of FDI is of great significance for understanding and guiding the new trends of international investment.

## 1.2. Literature Review

### 1.2.1. Definition and Indicator Measurement of the Digital Economy

The concept of the digital economy was first proposed by Tapscott (1996), who defined it as an emerging economic model and emphasized the importance of the Internet and e-commerce in promoting economic development. Therefore, early foreign scholars often defined the digital economy in close connection with e-

commerce. Moulton (2000) believed that the digital economy includes information technology and e-commerce. Among them, information technology involves information processing, software, semiconductors, and telecommunications equipment, while e-commerce refers to the transaction of goods and services through the Internet. Mesenbourg (2001) divided the digital economy into e-commerce transactions, e-commerce processes, and e-commerce infrastructure around e-commerce. With the popularization of the Internet and the development of digital technology, the current interpretation of the connotation of the digital economy has gradually focused on the perspective of economic activities driven by digital technology. At the 2016 G20 Hangzhou Summit, a consensus was reached on the definition of the digital economy: the digital economy refers to a series of economic activities that take digitized information and knowledge as production factors, rely on information networks as carriers, and use information and communication technologies to improve efficiency and optimize the macroeconomic structure (Li, 2019). This definition of connotation has been widely adopted. Many domestic scholars define the digital economy as a new economic form driven by digital technology for production. The digital technology has a decisive impact on productivity and represents advanced productive forces (Li, 2017; Pei et al., 2018). On this basis, Chen et al. (2022) further divided the connotation of the digital economy into digitized information, Internet platforms, digitalized technology, and new economic models and formats. Compared with the rapid development of the digital economy, the research progress in the measurement of digital economy indicators has been relatively slow. The “2019 China Digital Economy Development Index White Paper”, based on the definition of the digital economy by the G20 Summit, decomposes the digital economy development index into basic indicators, environmental indicators, integration indicators, and industrial indicators to evaluate the digital economy development level of 31 provinces and cities across the country. Most scholars also start from the connotation of the digital economy, select representative indicators from multiple dimensions to construct an indicator system, and conduct a comprehensive evaluation of the digital economy development level. Some scholars summarize the digital economy development level from two dimensions: industrial digitalization and digital industrialization (Chen & Yang, 2021; Xie, 2022). On this basis, some scholars have also incorporated the digital economy development carrier, digital economy development environment (Wang et al., 2021), digital governance, and data valuation (Wei & Hou, 2022) into the indicator system. In addition to constructing an indicator system, some scholars have adopted direct accounting methods, such as the national economic accounting method and the value-added accounting method (Cai & Niu, 2021). Zhang et al. (2022) calculated the digital input in the manufacturing industry through the value-added of the digital economy as a proxy variable for the digital economy.

### **1.2.2. The Connotation of FDI Quality**

Existing research has extensively studied FDI, but most focus on the quantity ra-

ther than the quality dimension. The concept of FDI quality was first proposed by Kumar (2002), who believed that the connotation of FDI quality lies in the positive external benefits it brings to a country's economy, which is achieved through the spillover effect of technological knowledge, the capital effect of foreign capital itself, and the improvement of enterprise management capabilities. However, Kumar's FDI quality evaluation standard mainly focuses on the quality of foreign capital utilization and ignores the quality of the introduced FDI itself, which cannot help the host country identify FDI of different qualities. These indicators also fail to fully reflect the main impacts of FDI on the host country, especially lacking key elements such as environmental costs and human capital development. Alfaro and Charlton (2013) pointed out that FDI quality is affected by various national and project characteristics. Therefore, they adopted objective and subjective standards, based on the objective sectoral and industrial quality characteristics, and reflected FDI quality according to the subjective preferences expressed by the receiving country itself. Bai and Lü (2017) argued that FDI quality reflects the contribution of foreign capital to the economic development and competitiveness improvement of the host country. High-quality foreign capital can bring more profits, more advanced technologies, and richer management experience to the host country. He et al. (2020) evaluated FDI quality by integrating FDI efficiency and FDI performance from the perspectives of internal agglomeration and external spillover.

### 1.2.3. The Relationship between the Digital Economy and FDI Quality

There are still many gaps in the research on the relationship between digital economy development and FDI quality, mainly due to the late start of the digital economy and the relatively limited attention paid to FDI quality issues. Foreign literature tends to explore the connection between Information and Communication Technology (ICT) and FDI. However, Gholami et al., (2006) believed that there is no causal relationship between ICT and FDI. Later, Yazdan and Hossein (2013) found that both FDI and ICT have a positive impact on the technology of multinational corporations and the economy of the host country, but there is a lack of research on the interaction effect between the two. Veljanoska et al. (2013) showed through research that there is a positive correlation between ICT and a country's FDI inflow. Therefore, a country's ICT capability has also become an important factor for foreign investors in choosing the location of FDI. Domestic research mostly focuses on the relationship between FDI quantity and digital-related industries, and more on the micro-level of enterprises. Wen and You (2015) found that the development of the digital economy has a promoting effect on the overall growth of China's foreign trade imports and exports. Zhan and Ouyang (2018) believed that the development of the digital industry can prompt multinational investment enterprises to increase digital investment in the local area. The research by Zhang (2019) showed that the improvement of the Internet construction level significantly promotes the increase in FDI quantity. Sun and Zhu (2020) believed that the progress of digital communication technology plays a promoting

role in the relationship between China's FDI and import and export trade. Lu (2021) believed that the digital transformation of multinational enterprises will weaken their resource-seeking motivation and internal efficiency-seeking motivation, and increase their asset-seeking motivation and market-seeking motivation. Li and Huang (2021) constructed a comprehensive index of Internet development, studied the positive impact mechanism of digital infrastructure on China's FDI inflow, and pointed out that the transaction cost reduction and consumption expansion effects are the key pathways.

The above studies have provided valuable experiences for this research, but there are also some shortcomings. Firstly, most of the existing studies focus on FDI quantity, while relatively little attention is paid to FDI quality. Secondly, there is no unified standard for the connotation of FDI quality at present. Simply dividing FDI quality into FDI scale and FDI utilization efficiency cannot fully explain FDI quality. Moreover, the FDI quality evaluation systems constructed by most scholars mainly consider enterprise-level variables such as profitability, management capabilities, and technical level, lacking quality evaluations at the social level, which makes it difficult to align with the connotation of high-quality development in China. Thirdly, there is a lack of theoretical explanation and rigorous empirical testing on how the digital economy affects the level of FDI quality, which is not conducive to the development of theories and the targeted formulation of policies.

In view of this, compared with previous studies, the marginal contributions of this study are as follows: Firstly, it expands the research perspective of the impact of the digital economy on FDI from quantity to quality, which not only provides a new perspective but also is more in line with China's requirements for high-quality development. Secondly, it comprehensively evaluates FDI quality from six dimensions: profitability, technical level, actual scale, export capacity, management level, and pollution degree, enriching the connotation of FDI quality. Thirdly, it explores the mechanism of the impact of the digital economy on FDI quality from the perspectives of the business environment and industrial agglomeration. It not only enriches the relevant literature on the influencing factors of FDI quality but also provides a certain reference value for local governments to construct foreign capital quality improvement policies with the digital economy as the core competitiveness.

## **2. Theoretical Analysis and Research Hypotheses**

### **2.1. Digital Economy and FDI Quality**

The development of information technology has given birth to the digital economy, a brand-new economic form. It has brought data as a production factor, promoting high-quality economic development and the optimization and upgrading of the industrial structure (Wang et al., 2020). The global advancement of the digitalization process has brought new opportunities for China in optimizing the structure of foreign capital and improving the quality of foreign capital. On one hand, digital technology empowers foreign-funded enterprises to achieve accurate

collection, efficient dissemination, and collaborative processing of market information. This improves their efficiency in understanding the market environment of the host country and promotes the strategic collaboration between foreign capital and local enterprises. On the other hand, the application of digital tools effectively alleviates the information asymmetry problem caused by differences in language, culture, and systems that foreign-funded enterprises encounter in their business operations. It optimizes the selection of partners and the formulation of production decisions for foreign-funded enterprises, accelerates the cross-border flow of knowledge factors and data resources, and promotes the sharing of data resources and the improvement of enterprise performance. In addition, the digital economy breaks down geographical boundaries and information barriers, reduces the transaction costs and input costs of enterprises, and enhances the profitability of foreign-funded enterprises through the cost-saving effect (Huang et al., 2019; Yang, 2023). From the perspective of the market mechanism, the digital economy enhances market transparency, reduces the search costs of enterprises, and helps investors more accurately evaluate the industrial potential and risks of the host country, thereby guiding FDI to flow into high-value-added fields. At the same time, digital infrastructure reduces the operation and collaboration costs of foreign-funded enterprises, promoting the transformation and upgrading of the investment structure from cost-oriented to technology-intensive. Furthermore, the dynamic competition mechanism and digital regulatory environment force foreign-funded enterprises to improve their technological innovation capabilities. This not only inhibits short-term speculative investment but also eliminates inefficient capital by raising technical thresholds, realizing a virtuous cycle of attracting high-quality FDI and promoting long-term high-quality foreign investment.

Based on the above analysis, the paper proposes the following research hypothesis for the direct impact of digital economy on FDI quality.

**H1:** The digital economy can improve FDI quality.

## 2.2. Digital Economy, Business Environment, and FDI Quality

The business environment refers to various conditions and situations that enterprises face in conducting business activities or operating behaviors, involving economic, social, ecological, political, and other aspects (Zhang et al., 2020). Before the concept of the business environment was proposed, the investment environment was generally used to describe the development environment of a region, which mainly focused on the level of attracting foreign capital in the region, so it was also called the investment and business environment. As the external condition for enterprise development, the business environment includes both soft environments (culture, systems, etc.) and hard environments (market scale, infrastructure, etc.). However, in general, the business environment mostly refers to the soft environment, so the soft environment is the primary object for evaluating the business environment (Li & Zhang, 2021).

Currently, digital technologies such as artificial intelligence and big data have

driven the development of the digital economy, which is conducive to promoting the transparency of market information, optimizing the institutional environment, creating a good environment for government governance and market supervision, and advancing the modernization of government digital governance. Thus, it promotes the marketization, legalization, and internationalization of the business environment. In addition, as the core support of the digital economy, the development level of digital infrastructure directly affects the operational efficiency of the overall economy. With the continuous upgrading and optimization of digital infrastructure, such as digital platforms and information and communication networks, the mobility of professional labor and the resource-sharing capacity of the capital market have also been improved simultaneously, which has optimized the hard environment foundation of the business environment.

According to the location advantage theory in the eclectic theory of international production, enterprises will focus on whether the host country has more advantageous conditions than the home country in terms of market scale, institutional policies, and investment environment when making foreign direct investment. At the same time, the location advantages of the host country can determine the type and characteristics of the introduced FDI, thereby affecting the quality of the introduced FDI. The business environment, as the core manifestation of locational advantage, jointly influences the enhancement of FDI quality through its “hard environment” and “soft environment” dimensions. In terms of hard infrastructure, well-developed facilities and a mature financial system provide fundamental support for the efficient operations of foreign-invested enterprises. An advanced transportation network, stable energy supply, and high-speed information and communication infrastructure significantly reduce corporate logistics and operational costs. Meanwhile, robust financial markets and diversified financing channels effectively help businesses mitigate capital risks and optimize capital allocation. Improvements in these hard conditions directly enhance the productivity and profitability of foreign-invested enterprises, laying the physical foundation for the survival and development of high-quality FDI. In terms of soft infrastructure, the multifaceted dimensions encompassing policy frameworks, market mechanisms, and innovation ecosystems are crucial for attracting high-quality FDI. A free, open, fair, and transparent business environment establishes a comprehensive support system for foreign enterprises by providing a stable and predictable policy framework, streamlined and efficient administrative approval services, strict legal safeguards, and a sufficient pool of high-quality talent. This environment is particularly conducive to attracting high-quality foreign enterprises with advanced technologies, innovative capabilities, and management expertise, especially technology-intensive and knowledge-intensive firms that demand higher standards in institutional frameworks, intellectual property protection, and innovation ecosystems. By reducing institutional transaction costs across the establishment, operation, and expansion phases for foreign enterprises, a superior soft environment not only enhances the host country’s investment appeal but also

continuously elevates the quality of incoming FDI through screening and empowerment mechanisms.

Based on the above analysis, the paper proposes the following research hypothesis:

**H2:** The digital economy can optimize the business environment, thereby improving FDI quality.

### 2.3. Digital Economy, Industrial Agglomeration and FDI Quality

Traditional industrial agglomeration refers to the economic phenomenon where enterprises in the same or related industries are concentrated in a specific geographical area and form a highly interconnected relationship, emphasizing agglomeration in geographical space. Under the background of the digital economy, the in-depth integration of a new generation of digital technology and industrial organizations has enabled traditional clusters to break through the constraints of geographical space and shift to a virtual agglomeration model relying on virtual network space and with data elements as the core (Wang et al., 2018). The digital economy provides a novel driving mechanism for enhancing the quality of FDI by restructuring industrial agglomeration patterns. Traditional industrial agglomeration is constrained by rigid geographical limitations, resulting in clear boundaries on knowledge spillovers and resource allocation efficiency. In contrast, the digital economy, leveraging its unique network and platform effects, has spawned a new model of virtual agglomeration centered on data as a key factor. Enterprises establish task-oriented coupling relationships within the information network space through digital platforms like cloud computing and industrial internet, forming industrial ecosystem networks that transcend geographical boundaries. This transformation significantly reduces foreign enterprises' information search costs and collaboration barriers: supply chain segments achieve real-time data sharing and remote coordination through digital platforms, while innovation entities conduct transnational R&D collaborations in virtual spaces, effectively alleviating the "congestion effects" inherent in traditional agglomerations. More importantly, virtual clustering enables the dissemination of tacit knowledge without physical proximity. Skills, experience, and other implicit knowledge achieve global diffusion through digital twins, open-source communities, and other vehicles, building a more open and dynamic innovation ecosystem. This digital-network-based transformation of industrial organization not only enhances the resilience and innovative vitality of local industrial systems but also creates favorable conditions for attracting and retaining high-quality FDI by optimizing resource allocation efficiency and strengthening knowledge spillover effects.

Regarding the specific pathways for enhancing FDI quality, virtual agglomeration achieves its attraction effect through three key mechanisms. First, the transparent information environment created by digital platforms enables foreign enterprises to accurately assess investment opportunities and make more scientifically informed location decisions based on big data analysis. This is particularly

advantageous for the precise deployment of technology-intensive and R&D-oriented FDI. Second, the value chain integration driven by virtual agglomeration allows foreign enterprises to rapidly embed themselves within local innovation networks. By participating in digitalized industry-academia-research collaboration systems, they gain access to continuous technological spillovers and innovation replenishment. This deep embedding mechanism significantly enhances the technological sophistication and local embeddedness of FDI. Moreover, the “lightweight digitalization” operational model provided by virtual agglomeration allows foreign enterprises to leverage cloud platforms for flexible production and intelligent management. This approach reduces fixed-asset investment risks while enhancing value creation efficiency. Collectively, these mechanisms empower regions with high virtual agglomeration to effectively screen and attract high-quality foreign investment characterized by high technological density, strong innovation capabilities, and deep value chain integration potential. This propels FDI from a traditional cost-seeking model toward an innovation-driven, quality-oriented paradigm. In this sense, the digital economy reshapes industrial agglomeration patterns, not only altering the location logic of foreign investment but also profoundly reconstructing the quality essence and development trajectory of FDI.

Based on the above analysis, the paper proposes the following research hypothesis:

**H3:** The digital economy can increase the degree of industrial agglomeration, thereby improving FDI quality.

### 3. Model Specification, Indicator Measurement, and Data Sources

#### 3.1. Model Specification

To test the impact of the digital economy development level on FDI quality, this study constructs the following benchmark model:

$$QFDI_{it} = \beta_0 + \beta_1 DE_{it} + \sum \beta X_{\text{control}} + u_i + \mu_t + \varepsilon_{it} \quad (1)$$

where, the subscript  $i$  represents each province, and  $t$  represents the year.  $QFDI_{it}$  denotes the quality characteristics of FDI, and  $DE_{it}$  represents the level of the digital economy.  $X_{\text{control}}$  is a series of control variables.  $u_i$  is the individual fixed effect,  $\mu_t$  is the time fixed effect, and  $\varepsilon_{it}$  is the random error term. Provincial-level clustered robust standard errors are used.

#### 3.2. Variable Selection

##### 3.2.1. Dependent Variable

The dependent variable is FDI quality (QFDI). This study draws on the methods of Bai and Lü (2017) and Lei et al. (2021) to construct an FDI quality indicator system from six aspects: FDI profitability, technical level, actual scale, export capacity, management level, and pollution degree.

FDI Profitability. It reflects the ability of enterprises to make profits after cost-

benefit analysis. Strong FDI profitability means that foreign-funded enterprises have sufficient funds for R&D and technological innovation. In this study, FDI profitability is expressed as the ratio of the cost-profit margin of the FDI industrial sector to that of the above-scale industrial sector.

$$\text{FDI Profitability} = \frac{\text{Cost-Profit Margin of FDI Industrial Sector}}{\text{Cost-Profit Margin of Above-Scale Industrial Sector}} \quad (2)$$

FDI Technical Level. It is an important source for enterprises to obtain sustainable competitiveness. The improvement of the technical level is conducive to improving the production efficiency of enterprises, enabling enterprises to obtain greater output with smaller input, thereby contributing to resource conservation and pollution emission reduction. Bai and Lü (2017) measured the technical level by the ratio of the labor productivity of the FDI industrial sector to that of the above-scale industrial sector. However, considering that most provinces and cities in China no longer count the total industrial output value data after 2017, this study uses the ratio of the per capita output value of finished products in the FDI industrial sector to that in the above-scale industrial sector to measure the technical level:

$$\begin{aligned} &\text{FDI Technical Level} \\ &= \frac{\text{Output Value of Finished Products in FDI Industrial Sector}}{\text{Output Value of Finished Products in Above-Scale Industrial Sector}} \end{aligned} \quad (3)$$

FDI Actual Scale. It reflects the capital adequacy of foreign-funded enterprises. A larger actual scale usually indicates stronger enterprise strength. This study measures the actual scale by the ratio of the actually utilized foreign capital to the number of foreign-funded enterprises:

$$\text{FDI Actual Scale} = \frac{\text{Actually Utilized Foreign Capital}}{\text{Number of Foreign-Funded Enterprises}} \quad (4)$$

FDI Export Capacity. It reflects the international market competitiveness of foreign-funded enterprises. Enterprises with stronger competitiveness are more likely to gain a foothold in the international market and increase export volume. This study measures the export capacity by the ratio of the export volume of the FDI industrial sector to the total regional export volume:

$$\text{FDI Export Capacity} = \frac{\text{Export Volume of FDI Industrial Sector}}{\text{Total Region Export Volume}} \quad (5)$$

FDI Management Level. It reflects the ability of foreign-funded enterprises to attract, use, and supervise foreign capital, including resource allocation, policy implementation, risk management, and the impact of these factors on the contribution of foreign capital to the economy. Foreign-funded enterprises with a higher management level can improve operational efficiency and promote the competitiveness and market development of local enterprises. This study measures the management level by the ratio of the asset contribution rate of the FDI industrial sector to that of the above-scale industrial sector:

$$\begin{aligned} & \text{FDI Management Level} \\ & = \frac{\text{Asset Contribution Rate of FDI Industrial Sector}}{\text{Asset Contribution Rate of Above-Scale Industrial Sector}} \end{aligned} \quad (6)$$

FDI Pollution Degree. It reflects the environmental awareness and social responsibility of foreign-funded enterprises. This study measures the pollution degree by the product of the pollutant emission per unit of GDP and the main business income of the FDI industrial sector, and selects the total emissions of industrial SO<sub>2</sub> and industrial smoke and dust as the pollutant emissions:

$$\begin{aligned} \text{FDI Pollution Degree} & = \text{Pollutant Emission per Unit of GDP} \\ & \times \text{Main Business Income of FDI Industrial Sector} \end{aligned} \quad (7)$$

FDI quality refers to a set of capability attributes that reflect factors such as the technological level of foreign capital, managerial competence, and the willingness to engage in technology transfer to the host country—all of which are closely associated with the effects of technology spillovers from foreign investment (Kumar, 2002). Through reviewing relevant literature and analyzing the current status of FDI, this study argues that the combination of the selected indicators not only reflects the key characteristics of FDI in terms of scale, management capability, and technology spillover, but also comprehensively captures its intrinsic attributes and impacts on the host region. Consequently, these indicators are capable of fully characterizing the quality of FDI.

To comprehensively evaluate the level of FDI quality, this study applies the entropy method to combine the above six indicators into a comprehensive indicator and calculates the FDI quality index.

### 3.2.2. Independent Variable

The core independent variable is the digital economy development level (DE). Drawing on the measurement methods of Wang et al. (2021) and Liu and Chen (2021), this study selects 18 specific indicators from four dimensions: digital economy development foundation, digital industrialization, industrial digitalization, and digital economy development environment to construct a provincial-level digital economy development level indicator system. The specific indicator evaluation system is shown in Table 1. First, we standardize the indicator data, then assign weights using the entropy method, and finally calculate the digital economy development index of 30 provinces and cities.

### 3.2.3. Control Variables

To explore the impact of digital economy development on FDI quality more comprehensively, it is necessary to control other variables that may affect FDI quality, as detailed below. Degree of opening-up (trad): expressed as the proportion of the total import and export volume of the region to the regional GDP. Urbanization level (urb): Expressed as the proportion of the urban population. Industrial structure (stru): expressed as the ratio of the added value of the tertiary industry to that of the secondary industry. Social consumption level (soc): expressed as the proportion of the total retail sales of social consumer goods to the

**Table 1.** Indicator evaluation system for digital economy development level.

Dimension	Indicator	Calculation Formula	Attribute
Digital Economy Development Foundation	Cable Coverage (Cable Density)	Length of optical fiber per square kilometer (length of optical fiber network/provincial area)	+
	Broadband Coverage	Number of internet broadband access ports per square kilometer	+
	Domain Name Density	Number of domain names/Permanent population	+
	Mobile Phone Base Station Density	Number of mobile phone base stations/Provincial area	+
	Mobile Phone Penetration Rate	Number of mobile internet users/Total population	+
Digital Industrialization	Telecom Business Rate	Telecom business volume/GDP	+
	Software Product Revenue Rate	Software product revenue/GDP	+
	Software Business Revenue Rate	Software business revenue/GDP	+
	Proportion of Info Transmission, Software, and IT Services	Employment share in this sector among urban units	+
Industrial Digitalization	Number of Computers per 100 Enterprises		+
	Number of Websites per 100 Enterprises		+
	E-commerce Level	E-commerce transaction volume/GDP	+
	Digital Inclusive Finance Index		+
	Proportion of Enterprises with E-commerce Transactions		+
Digital Economy Development Environment	R&D Expenditure as a Proportion of GDP	R&D expenditure of industrial enterprises above designated size/Regional GDP	+
	Full-time Equivalent of Enterprise R&D Personnel		+
	Digital Government Service Capability Index		+
	Number of Digital Economy Patent Applications		+

regional GDP. Environmental regulation ( $er$ ): expressed as the ratio of the total investment in industrial pollution control to the industrial added value.

### 3.2.4. Mechanism Variables

**Business Environment.** The academic community generally uses the Business Environment Index (BEI) to measure the business environment (Yang & Wei, 2021). According to the research conclusion of Yu et al. (2010), the marketization index also reflects the business environment to a certain extent. Therefore, this paper

refers to the existing method of compiling the marketization index to calculate the marketization index (MI) from 2012 to 2021 as a proxy variable for the business environment.

Industrial Agglomeration Degree. Many scholars use location entropy to measure the level of industrial agglomeration. Location entropy can eliminate the differences in regional scale and truly reflect the spatial distribution of geographical elements. Therefore, the paper refers to [Tang and Guo \(2021\)](#), uses location entropy to measure the level of industrial agglomeration (IA). The specific formula is as follows:

$$IA_{it} = \frac{\frac{IDV_i}{\sum_{i=1}^n IDV_i}}{\frac{GDP_i}{\sum_{i=1}^n GDP_i}} \quad (8)$$

where  $IDV_i / \sum_{i=1}^n IDV_i$  represents the proportion of province,  $GDP_i / \sum_{i=1}^n GDP_i$  represents the proportion of province  $i$ 's GDP to the total GDP.

Furthermore, considering industrial agglomeration in the context of the digital economy, referring to [Zhang and Zhao \(2021\)](#), the location entropy index constructed from the number of employees in the information transmission, software, and information technology industries is selected as a proxy variable for digital economy industrial agglomeration (DIA). The calculation is as follows:

$$DIA_{it} = \frac{e_{id} / \sum_{i=1}^n e_{id}}{e_i / \sum_{i=1}^n e_i} \quad (9)$$

where  $e_{id}$  represents the number of employees in the information transmission, software, and information technology industries in province  $i$ , and  $e_i$  represents the total number of employees in province  $i$ .

### 3.3. Data Sources and Descriptive Statistics

The study takes 30 provinces in China from 2012 to 2021 as the research object (Tibet is not included due to serious data missing). The data used are obtained from the "China Statistical Yearbook", "China Industrial Statistical Yearbook", "China Science and Technology Statistical Yearbook", "China Environmental Statistical Yearbook", and the statistical yearbooks of various provinces and cities over the years.

**Table 2** reports the definitions and descriptive statistics of the main variables. In the sample of 30 provinces from 2012 to 2021, the maximum value of FDI quality (QFDI) is 0.797, the minimum value is 0.063, the average value is 0.349, and the standard deviation is 0.157, indicating significant differences among provinces in attracting high-quality foreign investment. The maximum value of the digital economy development level is 0.583, the minimum value is 0.024, the average value is 0.135, and the standard deviation is 0.098. The development level of the digital economy is uneven among provinces, showing a clear "digital divide" phenomenon.

**Table 2.** Descriptive statistics of variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
QFDI	300	0.349	0.157	0.063	0.797
DE	300	0.135	0.098	0.024	0.583
trad	300	0.265	0.271	0.008	1.354
urb	300	0.602	0.118	0.363	0.896
stru	300	1.283	0.711	0.549	5.297
soc	300	0.384	0.069	0.222	0.538
er	300	0.003	0.004	0.000	0.031
BEI	300	0.293	0.084	0.153	0.564
MI	300	7.053	2.084	2.530	12.63
IA	300	0.943	0.201	0.314	1.388
DIA	300	0.900	0.725	0.370	5.021

## 4. Analysis of Regression Results

### 4.1. Benchmark Regression Results

**Table 3** reports the benchmark estimation results of the impact of digital economy development on FDI quality. Column (1) shows that when no control variables are added, the regression coefficient of the digital economy is positive but not significant. After adding other control variables in sequence, the positive relationship between the two remains unchanged, but it is significant at the 1% level. This may be because when no control variables are added, there is a problem of omitted variables, and the obtained estimation results may more reflect the correlation between the two. After adding other variables, the omitted variables are controlled to a certain extent, thus correctly reflecting the impact of the digital economy on FDI quality.

Columns (2)-(6) of **Table 3** show that after gradually adding control variables, the regression coefficient of the digital economy is finally significantly positive at the 1% level, and the value remains around 0.8, showing a certain degree of stability. Column (6) shows that the regression coefficient of the digital economy on FDI quality is 0.860, indicating that the digital economy has a significant positive impact on FDI quality.

### 4.2. Impact of All Dimensions of the Digital Economy on FDI Quality

The digital economy development level index is composed of four dimensions: digital economy development foundation (DE1), digital industrialization (DE2), industrial digitalization (DE3), and digital economy development environment (DE4). This study further analyzes which dimensions of the digital economy promote the improvement of FDI quality. The fixed effects model is used for estimation, respectively, and the regression results are shown in Columns (1)-(4)

**Table 3.** Benchmark regression results.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
DE	0.0689 (0.192)	0.680** (0.311)	0.788** (0.330)	0.853*** (0.306)	0.865*** (0.302)	0.860*** (0.291)
trad		0.338** (0.155)	0.177 (0.120)	0.200* (0.114)	0.201* (0.115)	0.199* (0.114)
urb			1.234** (0.529)	1.639*** (0.532)	1.676*** (0.542)	1.681*** (0.557)
stru				0.0838** (0.0379)	0.0833** (0.0361)	0.0834** (0.0363)
soc					-0.0384 (0.146)	-0.0371 (0.147)
er						0.255 (2.092)
Constant	0.340*** (0.0260)	0.168** (0.0769)	-0.547 (0.345)	-0.914** (0.362)	-0.923** (0.364)	-0.926** (0.376)
<i>N</i>	300	300	300	300	300	300
<i>R</i> <sup>2</sup>	0.894	0.902	0.908	0.913	0.913	0.913

Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

of **Table 4**. The results indicate that both the improvement of the digital economy development foundation and digital industrialization are conducive to the improvement of FDI quality.

1) Digital Economy Development Foundation. The regression results in Column (1) show that the digital economy development foundation significantly promotes the improvement of FDI quality. A sound digital infrastructure and a high level of digitalization can improve the production efficiency and innovation capabilities of foreign-funded enterprises, promote technology spillover and optimal resource allocation, and thereby enhance the overall quality of FDI.

2) Digital Industrialization. The regression results in Column (2) show that digital industrialization significantly promotes the improvement of FDI quality. Digital industrialization usually involves emerging digital economy fields, such as digital services, technological innovation, and network platforms. These fields often have high technical content and market potential. The investment of foreign-funded enterprises in these fields may pay more attention to obtaining advanced technologies and entering emerging markets, thereby promoting the improvement of FDI quality.

3) Industrial Digitalization. The regression results in Column (3) show that industrial digitalization does not significantly promote the improvement of FDI quality. Industrial digitalization mainly refers to the transformation and upgrad-

ing of traditional industries through the introduction of digital technology. Although the digital transformation of traditional industries has become increasingly common worldwide, this process is usually gradual. Compared with the significant effect of digital industrialization, the digital transformation of traditional industries often takes a longer time to show its significant improvement in business efficiency and investment quality.

4) Digital Economy Development Environment. The regression results in Column (4) show that the digital economy development environment does not significantly promote the improvement of FDI quality. Due to the complexity and indirectness of the digital economy development environment, its impact may take time to manifest. When foreign investors choose investment destinations, they often pay more attention to the actual construction and availability of infrastructure, which will directly affect their operational efficiency and market opportunities. Therefore, the role of the digital economy development environment in improving FDI quality is not significant.

**Table 4.** Sub-dimension test: digital economy development and FDI quality.

Variable	(1)	(2)	(3)	(4)
DE1	0.496*** (0.167)			
DE2		0.378* (0.209)		
DE3			0.102 (0.0952)	
DE4				0.0921 (0.120)
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Province FE	YES	YES	YES	YES
<i>N</i>	300	300	300	300
<i>R</i> <sup>2</sup>	0.911	0.909	0.906	0.906

Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

### 4.3. Heterogeneity Test

#### 4.3.1. Regional Heterogeneity

The paper divides the sample into eastern, central, and western regions according to their geographical locations and conducts group regression. As can be seen from **Table 5**, the regression coefficient of the digital economy development level on FDI quality in the eastern region is significantly positive at the 1% level, while it is not significant in the central and western regions. This indicates that the pro-

moting effect of the digital economy development level on FDI quality is more obvious in the eastern region. The regional differences may be related to the development stage of each region. Compared with the central and western regions, the digital economy in the eastern region is more mature, with more complete digital infrastructure and services. Foreign-funded enterprises can better utilize digital technology, thereby improving FDI quality. In the central and western regions, the development level of the digital economy is relatively low, and digital infrastructure and services have not yet been popularized. The application of digital technology is restricted, so even if there is development in the digital economy, it is difficult to have a significant promoting effect on FDI quality.

#### **4.3.2. FDI Quality Heterogeneity**

Due to the significant differences in FDI quality levels among different provinces, to further explore the relationship between the digital economy development level and different FDI quality levels, this study uses the median of the FDI quality index as the division standard. Specifically, regions with FDI quality higher than the median of the corresponding year are classified as high-quality FDI regions, and those lower than the median are classified as low-quality FDI regions, and group regression is conducted. The regression results in **Table 5** show that the promoting effect of the digital economy in high-quality FDI regions is significantly positive, but not significant in low-quality FDI regions, and the promoting effect in high-quality FDI regions is significantly greater than that in low-quality FDI regions. This heterogeneity may be attributed to several underlying reasons. Firstly, regions attracting high-quality FDI likely possess more advanced complementary assets, such as a skilled workforce, robust innovation ecosystems, and sophisticated industrial chains. The digital economy can synergize with these assets, creating a feedback loop that further enhances the region's attractiveness to and the performance of high-quality, often technology-intensive, foreign firms. Secondly, the nature of industries prevalent in high-quality FDI regions, such high-tech manufacturing and advanced services, may be more amenable to digital transformation and benefit more significantly from digital infrastructure and services. In contrast, regions with lower FDI quality might host industries where digital adoption yields slower returns or face structural barriers that limit their ability to leverage digital advancements for qualitative FDI improvement.

#### **4.4. Robustness Test**

Based on the benchmark regression, this study conducts a series of robustness tests:

- 1) Lagged Dependent Variable. To avoid the potential delay in the effect of FDI quality and the endogeneity problem, this study lags the dependent variable (digital economy level) by one period. The regression results of the lagged period are still significant, indicating that the results are reliable.

- 2) Excluding the Impact of Special Samples. Considering that large cities are quite different from other cities in many aspects, this study excludes the four

**Table 5.** Heterogeneity analysis results.

Variable	Regional Grouping			FDI Quality Grouping	
	Eastern Region (1)	Central Region (2)	Western Region (3)	High FDI Quality (4)	Low FDI Quality (5)
DE	0.897** (0.346)	0.129 (1.049)	0.942 (0.751)	1.469*** (0.327)	-0.0886 (0.211)
trad	0.0877 (0.126)	-1.651 (0.937)	0.577 (0.439)	0.317** (0.144)	-0.0429 (0.0769)
urb	1.536** (0.639)	5.029*** (1.310)	2.394 (1.705)	2.084*** (0.581)	0.389 (0.531)
stru	0.0833** (0.0291)	0.0816 (0.0471)	-0.0285 (0.0715)	0.0797 (0.0533)	0.0265 (0.0494)
soc	0.188 (0.216)	0.0349 (0.176)	-0.0768 (0.198)	0.203 (0.153)	-0.242** (0.0935)
er	-0.980 (3.622)	-5.489 (4.275)	-1.566 (1.587)	-0.435 (2.591)	-2.083** (0.952)
Constant	-1.149** (0.502)	-2.276** (0.704)	-1.104 (0.994)	-1.326*** (0.397)	0.0987 (0.337)
<i>N</i>	110	80	110	158	138
<i>R</i> <sup>2</sup>	0.865	0.908	0.947	0.881	0.929

Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

major municipalities directly under the Central Government (Beijing, Shanghai, Tianjin, and Chongqing) in the robustness test, repeats the standard regression, and the obtained results are consistent with the basic conclusions.

3) Replacing the Core Independent Variable. Since scholars have not yet established a unified comprehensive index of the digital economy, this study, on the one hand, tries to construct a comprehensive digital economy indicator system based on existing studies by scholars as much as possible. On the other hand, it uses other digital economy indicator systems constructed by scholars for replacement and conducts regression analysis again. The above empirical conclusions are consistent, indicating that the empirical conclusions are robust.

4) Excluding the Impact of Outliers. To avoid the interference of outliers on the regression results, this study further trims and truncates the top and bottom 1% of the samples of the dependent variable and independent variable respectively. As can be seen from Columns (4) and (5) of **Table 6**, the promoting effect of the digital economy on FDI quality is still significantly positive at the 5% level, indicating that the research conclusion has a certain degree of robustness.

**Table 6.** Robustness test results.

Variable	(1) Lagged Dependent Variable	(2) Excluding Municipalities	(3) Replacing Digital Economy Index	(4) Winsorization	(5) Truncation
DE	0.758** (0.312)	0.484* (0.270)	0.521** (0.206)	0.712** (0.283)	0.701** (0.286)
trad	0.168 (0.112)	0.175 (0.185)	0.108 (0.107)	0.153 (0.117)	0.162 (0.121)
urb	1.607*** (0.579)	1.832** (0.698)	1.814*** (0.600)	1.601*** (0.578)	1.767*** (0.591)
stru	0.0641* (0.0355)	0.0706 (0.0493)	0.0841** (0.0372)	0.0856** (0.0358)	0.0876* (0.0436)
soc	-0.0630 (0.143)	-0.0470 (0.166)	0.0148 (0.155)	-0.0400 (0.149)	-0.0128 (0.155)
er	0.544 (2.238)	0.114 (2.228)	0.402 (2.075)	0.327 (2.100)	0.0619 (1.944)
Constant	-0.834** (0.397)	-0.862* (0.437)	-0.943** (0.396)	-0.847** (0.391)	-0.957** (0.387)
<i>N</i>	270	260	300	300	288
<i>R</i> <sup>2</sup>	0.925	0.915	0.911	0.911	0.910

Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

#### 4.5. Endogeneity Test

The benchmark regression results of this study may also face certain endogeneity problems. On one hand, although the regression results indicate that the rapid development of the digital economy promotes the improvement of FDI quality, the introduction of high-quality FDI is often accompanied by the transfer of advanced technologies and investment in infrastructure, especially the investment of high-tech enterprises. These enterprises usually require advanced digital infrastructure to support their operations, thereby promoting the development of the regional digital economy. Thus, there may be a potential reverse causal relationship between the digital economy development level and the FDI quality level. On the other hand, the benchmark regression also faces the problem of sample selection, that is, regions with a developed digital economy can attract higher-quality FDI, leading to a positive correlation between the two. In addition, the coefficient of the digital economy is not significant when no control variables are added in **Table 3**, indicating that there may also be a problem of omitted variables in the model.

To alleviate the above endogeneity problems, this study draws on the method

of Huang et al. (2019), uses the per capita postal and telecommunications business volume of each province in 1984 as an instrumental variable for the digital economy development level to conduct an endogeneity test. On one hand, the postal and telecommunications business volume of a region can reflect the level of regional communication infrastructure and information technology development. The foundation of digital economy development is usually built on early communication networks and services, so it conforms to the relevance assumption of instrumental variables. On the other hand, with the passage of time, especially after the popularization of the Internet and modern communication technologies, the frequency of use of traditional postal and telecommunications services has decreased significantly. The historical postal and telecommunications business volume has almost no impact on the current FDI quality, which satisfies the exclusivity assumption of instrumental variables. In addition, since the per capita postal and telecommunications business volume of each province in 1984 is cross-sectional data, while the sample studied in this study is panel data, it is necessary to construct a panel instrumental variable. This study refers to the method of Nunn and Qian (2014) and constructs the interaction term (Post) between the per capita postal and telecommunications business volume in 1984 and the number of Internet ports in the previous year as an instrumental variable for the digital economy development level. In addition, this study also uses the lagged one-period digital economy (LDE) as its instrumental variable and adopts the two-stage least squares method for estimation.

The regression results are shown in Table 7. The first-stage results show that the coefficients of the instrumental variables selected in this study are all significantly positive at the 1% level, indicating that the instrumental variables selected in this study meet the relevance condition. The second-stage results show that for the test of the original hypothesis “insufficient identification of instrumental variables”, the Kleibergen-Paap rk LM statistic rejects the original hypothesis at the 1% significance level, indicating that the instrumental variable setting is reasonable. In the test of weak identification of instrumental variables, the Kleibergen-Paap rk Wald F statistic is greater than the critical value of the Stock-Yogo weak identification test at the 10% level, indicating that the selected instrumental variables do not have the problem of weak identification. After considering the potential endogeneity problem, the estimated coefficient of the digital economy is still significantly positive, indicating that the conclusion that the development of the digital economy promotes FDI quality is still valid.

#### 4.6. Impact Mechanism Test

The results of the benchmark regression and robustness tests in this paper suggest that the development of the digital economy helps to promote the quality of FDI. The focus here is on the channels through which this promoting effect is realized. Existing literature widely employs “mediation effect models” to identify causal mechanisms, with methodological foundations rooted in Baron and Kenny’s

**Table 7.** Instrumental variable test regression results.

Variable	(1)	(2)
DE	1.493*** (0.303)	1.250*** (0.304)
Controls	YES	YES
Year FE	YES	YES
Province FE	YES	YES
First-Stage Regression Results		
Post	0.105*** (0.024)	
LDE		0.640*** (0.124)
Controls	YES	YES
Kleibergen-Paap rk LM	9.732***	31.765***
Kleibergen-Paap rk Wald F	19.411 [16.38]	26.758 [16.38]
N	300	270
R <sup>2</sup>	0.162	0.163

Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

(1986) three-step approach and subsequent developments like Sobel tests and Bootstrap tests. It should be noted, however, that mediation effect models were originally applied to natural experiment settings—highly controlled experimental environments where randomized treatments and repeated observations enable effective identification of causal relationships between psychological or behavioral variables. Conversely, the vast majority of empirical studies in economics lack the stringent conditions of natural experiments. Endogeneity issues in observational data prevent direct inference of causality from correlation, and employing the conventional “three-step” testing procedure may introduce endogeneity problems in the mediating variables (Jiang, 2022). Therefore, this paper adopts a two-step approach to test the influence mechanism, building upon the research framework proposed by Jiang (2022). The first step examines the causal relationship between explanatory variables and mediating variables through a fixed-effects model, with specific results presented in Table 8. The second step, concerning the impact of business environment and industrial agglomeration on FDI quality, is elaborated in the research hypotheses section of this paper.

In columns (1) and (2) of Table 8, the coefficients for DE are 5.432 and 0.421, respectively, significant at the 5% and 1% levels. These estimates indicate that a one-unit increase in digital economic development significantly raises the business environment level by 5.432 and 0.421, respectively. This demonstrates that

digital economic development can enhance FDI quality by improving the business environment, validating Hypothesis 2. In columns (3) and (4), the coefficients for DE are 0.329 and 2.069, respectively, significant at the 10% and 5% levels. This indicates that for each unit increase in the level of digital economic development, the degree of industrial agglomeration and the degree of digital economic industrial agglomeration significantly increase by 0.329 and 2.069, respectively. Thus, digital economic development can enhance FDI quality by increasing the degree of industrial agglomeration. The hypothesis 3 is verified.

**Table 8.** Impact mechanism test results.

Variable	(1)	(2)	(3)	(4)
	Business Environment		Industrial Agglomeration	
	MI	BEI	IA	DIA
DE	5.432** (2.560)	0.421*** (0.0957)	0.329* (0.167)	2.069** (0.890)
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Province FE	YES	YES	YES	YES
N	300	300	300	300
R2	0.974	0.988	0.946	0.975

Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

## 5. Research Conclusions and Policy Recommendations

### 5.1. Research Conclusions

Under the background of the digital economy, the introduction mode of FDI is significantly different from that of traditional FDI, with profound changes in investment fields, investment methods, and investment motivations. In recent decades, China has continuously increased its efforts to attract foreign capital, and the scale of attracting foreign capital ranks among the top in the world. However, the drawbacks of the traditional FDI model have gradually emerged, restricting the contribution of foreign capital to China's high-quality economic development. During China's economic transition period, high-quality FDI is urgently needed to drive high-quality economic development. Therefore, studying how the digital economy affects FDI quality is of practical significance. This study takes 30 provinces and cities in China from 2012 to 2021 as samples to explore the impact of the digital economy on FDI quality. The study finds that the development of the digital economy can significantly improve FDI quality. Further distinguishing the impact of the four dimensions of the digital economy on FDI quality, the results show that the improvement of the digital economy development foundation and digital industrialization can effectively improve FDI quality, but the impact of industrial digitalization and the digital economy development environment on FDI

quality is not significant. At the same time, from the regional dimension, it is found that the promoting effect of the digital economy on FDI quality is more obvious in the eastern region. The research mechanism shows that the development of the digital economy improves FDI quality by optimizing the business environment and increasing the degree of industrial agglomeration.

## 5.2. Policy Recommendations

Based on the above conclusions, this study puts forward the following suggestions.

Firstly, in accordance with the strategic arrangements for building a “Digital China” and a “Digital Power” as specified in China’s 14<sup>th</sup> Five-Year Plan, accelerating the advancement of digital information infrastructure has become a critical task. To attract more high-quality FDI, the Chinese government should continue to strengthen the research, development, and innovation of independent digital information technologies, as well as enhance the protection of intellectual property rights for high-tech knowledge. This will drive the continuous improvement of the digital economy infrastructure, including next-generation network communications, the Internet of Things, cloud computing, cloud storage, artificial intelligence, and blockchain. At the same time, further support should be given to the development of 5G information and communication technology, comprehensively enhancing the data computing and processing capabilities of digital infrastructure, thereby laying a solid foundation for the growth of the digital economy. This will significantly increase the “technological content” and “innovative content” of foreign investment attraction. An efficient, secure, and reliable digital environment will directly empower foreign-funded enterprises in their operations and innovation in China. It will not only help attract them to increase investments in high-quality projects such as advanced manufacturing, R&D centers, and regional headquarters, but also deeply integrate them into China’s modern industrial system through technology spillovers and industrial chain collaboration. Ultimately, this will achieve the goal of improving the quality and efficiency of foreign investment, ensuring it is “attracted, retained, and developed well.”

Secondly, strengthen the technological foundation for digital industrialization by establishing dedicated R&D funds targeting critical areas such as foundational software and high-end chips, while implementing rigorous and efficient intellectual property protection mechanisms. This will incentivize enterprises to achieve breakthroughs in core technologies and fundamental theories, thereby generating powerful “technological gravity” that directly attracts high-quality FDI in cutting-edge technology ecosystems. China should solidify the industrial chain foundation for digital industrialization by encouraging the formation of innovation alliances centered around leading enterprises and developing advanced industrial clusters. This will strengthen full-chain coordination capabilities, from basic materials and core components to final products, and build a stable, efficient, and resilient industrial ecosystem. This will provide an ideal “habitat” for high-valued FDI seeking optimal locations and supply chain improvements. Simultane-

ously, safeguarding the security and optimizing the layout of digital industrialization are imperative. By establishing supply chain security assessment mechanisms, China can precisely support and protect core enterprises and critical technologies, prevent the outflow of key industrial segments, and facilitate the orderly transfer of mature digital production capacity from coastal regions to central, western areas. This approach not only optimizes domestic industrial distribution but also provides tailored reception spaces for FDI at different levels, enabling a leap from “attracting investment” to “selecting investment.”

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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