

The Coupling Effect of Resource Allocation and Industrial Structure in Anhui Province under the Background of Digital Economy

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Abstract

As a new economic model after agricultural economy and industrial economy, digital economy is important for promoting economic development and industrial structure optimization and upgrading, etc. Since the 21st century, Anhui Province has gradually attached importance to science and technology innovation, implemented the strategy of science and education, and actively promoted the development of science and technology, which has laid a certain scientific and technological foundation and industrial foundation for the development of digital economy. However, due to the influence of economic development level and industrial structure, the digital economy of Anhui Province has problems such as small total volume, slow growth rate and low proportion of GDP. In this paper, the problems of digital economy in Anhui Province are addressed, and we actively explore the integration of digital economy and the three major industries to promote economic transformation and upgrading.

Keywords

Economy of Anhui Province; Industrial Structure; Digital Economy.

1. Introduction

Digital economy is a series of economic activities with data resources as the key element, modern information network as the main carrier, and the effective use of information and communication technology as an important driving force for efficiency improvement and economic structure optimization [1]. The Anhui provincial government has been deeply implementing the national digital economy development strategy, making the construction of information technology continue to advance and the development of digital economy become more and more active. Policies such as Regulations on Promoting Informatization in Anhui Province and Guiding Opinions on Accelerating the Construction of Digital Jianghuai have been issued one after another, which have an important guiding role in promoting the digital economy in Anhui Province and are conducive to building a guarantee system for the healthy development of the digital economy in Anhui Province. Under the promotion of the policies, the digital economy in Anhui Province has achieved a good development. Based on the current situation of the development of digital economy in Anhui Province, this paper explores the method of using digital economy as the driver to promote the industrial structure of Anhui Province to advanced, and studies the coupling effect of resource allocation and industrial

structure in Anhui Province in the context of digital economy, so as to provide some reference for the development of digital economy in Anhui Province.

2. Economic Development of Anhui Province

2.1. The Current Situation of Economic Development in Anhui Province

In the past five years, Anhui Province has been ahead of the national GDP growth rate. By the end of 2020, Anhui Province's regional GDP was 3,868.60 billion yuan, ranking 11th in the country, with a growth rate of 3.9%, ranking fifth in the country. During the same period, Anhui Province's per capita GDP was 63,426.00 yuan, ranking 13th in the country with a growth rate of 8%.

As a traditional agricultural province and a large population province, the industrial structure of Anhui has long been composed of "one, two, three" or "two, three, one". In recent years, influenced by the integration process of Yangtze River Delta, the rise of the central economy and the development of Yangtze River Economic Belt, Anhui Province has continuously adjusted its industrial structure and achieved certain results. As shown in Figure 1, the proportion of primary industry in GDP of Anhui Province decreases from 15.55% in 2006 to 8.23% in 2020. The proportion of the secondary industry, in an inverted U-shaped trend of rising and then falling, was rising until 2013, after which the proportion of this industry began to decline, falling to a minimum of 40.52% in 2020. And the tertiary industry trend of change is the opposite of the secondary industry, a U-shaped curve of first decline and then rise, the proportion of the industry in 2019 reached 51.46% for the highest ever [2].

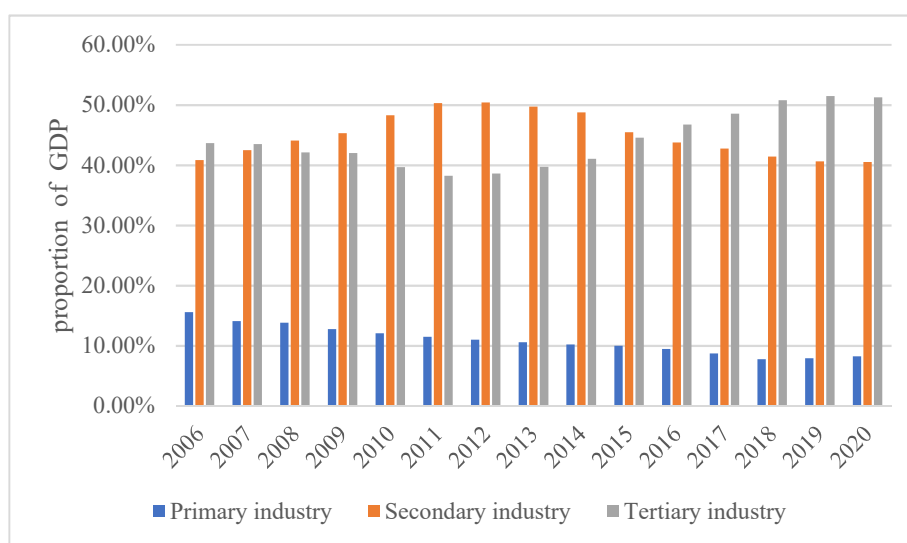


Figure 1. The proportion of the three major industries in the GDP of Anhui Province, 2006-2020

2.2. Problems of Economic Development in Anhui Province

Although the economic restructuring of Anhui Province has achieved certain results, the traditional labor-intensive industries and basic raw material industries, such as agriculture and by-product processing, production industries, electrical energy, motor and equipment manufacturing, account for a large proportion of the total industrial output value, while the proportion of the output value of technology-intensive industries is very small. The concentration of industrial industries is not high, and no large-scale, competitive leading enterprises have been formed. Due to the imbalance of regional economic development, with the deepening of the integration of Yangtze River Delta, some industries in Yangtze River Delta are gradually transferred to Anhui, where the prices of raw materials and labor are lower, to

assume the manufacturing link with lower technology level. In order to make better use of the geographical advantage of Anhui Province and seize the great opportunity of the integration development of Yangtze River Delta, Anhui Province should vigorously develop digital economy and promote the industrial structure to "three, two, one" mode, so as to improve the quality of economic growth and reduce the overall economic fluctuation from the structural level [3].

3. The Relationship between Digital Economy and Economic Development in Anhui Province

During the 14th Five-Year Plan period, Anhui Province will further accelerate the development of digital economy, and on February 20, 2021, the Anhui Provincial Government released the "Outline of Anhui 14th Five-Year Plan and Vision 2035", which comprehensively deploys the development of digital economy in Anhui Province: to welcome the digital era, promote the construction of a strong network province and digital Jianghuai. It will take full advantage of the large amount of data and rich application scenarios, drive the change of production and life style and governance mode by digital transformation as a whole, continue to improve digital technology and industrial innovation, promote the deep integration of digital economy and real economy, accelerate the construction of digital industrialization, promote the digital transformation of industry, and improve the overall digital development of economy and society.

3.1. The Current Situation of Digital Economy Development in Anhui Province

Since 2006, as Anhui Province has gradually attached importance to science and technology innovation and implemented the strategy of science and education, the digital economy is developing rapidly and its application in the fields of artificial intelligence, 5G, ultra-high-definition video industry, electronic information infrastructure industry, digital culture and creativity has added fresh vitality and power to Anhui's economy.

As shown in Table 1, the percentage of digital economy in Anhui Province has played a crucial role in ushering in a new height for the province's total GDP since 2016. the digital economy in Anhui Province accounted for 5.12% of GDP in 2016, and achieved a leapfrogging development to 26.64% in 2017, with a growth rate of 5 times, and continued to grow afterwards to reach 32.65%, the rising digital economy also greatly boosts economic development.

Table 1. Share of digital economy in Anhui Province

Year	Total GDP (billion)	Total digital economy (billion)	Digital economy as a share of GDP (%)
2016	24407	1249	5.12%
2017	27018	7198	26.64%
2018	30006	8400	27.99%
2019	37114	10000	26.94%
2020	38680.6	12630	32.65%

Anhui province has accelerated the construction of Digital Jianghuai and actively developed digital economy. First, focus on promoting digital industrialization and industrial digitalization. Vigorously promote intelligent manufacturing in machinery, steel and other fields to promote the application of industrial robots. At the same time, to promote enterprises to use the cloud, promote enterprises and cloud resources deep docking. Second, continue to promote the

construction of smart cities. The provincial-level special coordination group for accelerating the development of 5G was established to coordinate and promote the construction of 5G, to create a "Wanxian thing to do", to fully implement the 7×24-hour "anytime to do" service, and to promote the intelligent construction of education, medical care, pension and other areas of people's livelihood. Third, actively implement the Yangtze River Delta integrated development strategy. Closely around the "integration" and "high quality" two key words, the implementation of the Yangtze River Delta region integrated development to achieve comprehensive breakthrough results.

However, the development of digital economy in Anhui Province still has a big difference compared with other provinces. From the "White Paper on China's Digital Economy Development" released by ICT Academy in 2021, it is known that Anhui Province's digital economy will exceed 100 million yuan in 2020, with a growth rate of more than 10%. However, in terms of percentage, the digital economy in Anhui Province accounts for less than the national average of GDP. In terms of digital industrialization, its scale exceeds 100 billion yuan, but accounts for less than 5% of GDP [4]. By 2020, Anhui Province will make a breakthrough in the number of national pilot demonstration projects for big data industry development, covering the application category, technology pioneer category and management capability category respectively. In recent years, Hefei City has made a series of fruitful achievements in building the highland of intelligent voice industry, accelerating the construction of "China Sound Valley" and striving to build a world-class artificial intelligence industry landmark. Through the measures of "digital industrialization, industrial digitization and digital governance", Baohe District of Hefei City has increased its investment in the development of digital economy and has successfully become one of the regions with obvious achievements in digital economy development. The digital economy in Anhui Province is blossoming, and the government has introduced some digital economy policies to support digital technology innovation, help build a digital economy industrial ecology, and strengthen the intellectual protection of talents. Of course, from a national perspective, Anhui Province's digital economy still has a lot of room for development.

3.2. Anhui Digital Economy Development Advantages

3.2.1. Vast Market Space

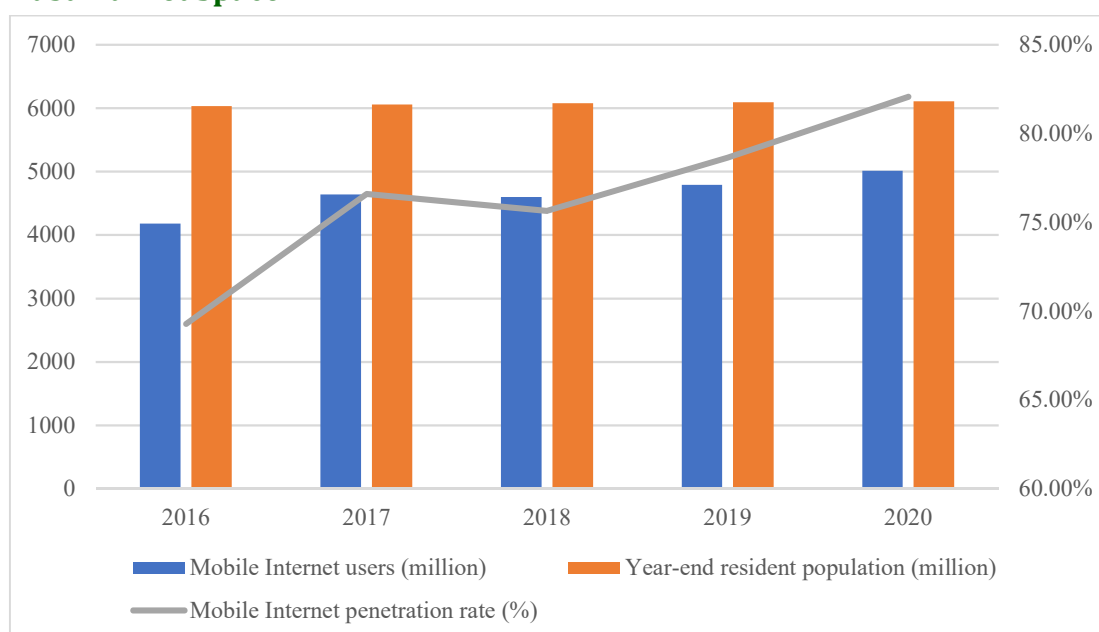


Figure 2. Mobile Internet penetration rate in Anhui Province, 2016-2020

The typical feature of the digital economy is network externality. The larger the market size, the more favorable the generation of massive data, and the more favorable the development of the digital economy. Anhui province has a large population, with the resident population exceeding 61 million by the end of 2020, and the domestic demand market is vast. Meanwhile, the scale of Internet users in Anhui Province is huge, as shown in Figure 2, with mobile Internet users exceeding 50 million and mobile Internet penetration rate reaching 82.07% as of December 2020. A strong market is conducive to giving full play to the capabilities of the digital economy, reducing market transaction and coordination costs, and improving market efficiency [5].

3.2.2. Technology Advantage

Anhui Province attaches importance to science and technology innovation, and implements the strategy of science and education to support the development of science and technology. The development of digitalization and digital industrialization of industry is remarkable, and the innovation ability of intelligent voice and brain-like intelligence is increasing, the quantity and quality of competitive enterprises such as KDDI, Huamei Technology, QuantumCtek and SciDaocuang have improved, and enterprises also use big data to create new models and new business models. The successful launch of "Mozi", quantum confidential communication technology at the forefront of the world's development, opened the era of quantum communication. 5G, artificial intelligence, Internet of things, blockchain, big data and other information technology advantages continue to make breakthroughs, accelerate the industrialization of applications, to provide strong support for the dynamic development of the digital economy.

3.2.3. Talent Advantage

Anhui Province has implemented talent training programs and increased investment in education to optimize the quality of talents and create a number of scientific and technological talent teams, which provide intellectual support for the development of digital economy. In addition, the overall quality of talents in Anhui Province has been improving, the scale of talents has been expanding, the flow of talents has been accelerating, and the composition of talents has become more diversified. The government also further strengthens the service, support and management of various talents, which provides a strong guarantee for the development of digital economy. At the same time, Anhui Province also actively creates an external environment conducive to the growth of talents, implements policies for the introduction of talents, and provides preferential and convenient conditions such as placement fees, scientific research support, household registration, and children's education. It has attracted many scientific and technological talents and laid the foundation for improving the competitiveness of Anhui Province's digital economy [5].

3.3. Digital Economy Development in Anhui Province

3.3.1. Insufficient Coordination of Top-level Design of Digital Economy

From the viewpoint of digital economy planning in various regions of Anhui Province, all regions have taken digital economy as a strategic must for development in the 14th Five-Year Plan period, competing to put forward digital economy development scale targets and supporting relevant systematic policies to promote digital industrialization, industrial digitization, digital government, smart city and other aspects of system layout. However, due to the overall lack of coordination and division of labor, most regions have obvious homogenization of digital economy development paths and initiatives, with insufficient specialization and personalization, and relatively few areas with outstanding highlights.

3.3.2. The Digital Economy Business Environment to be Optimized

The digital economy is different from the traditional economy, it is more sensitive to the business environment, so the requirements are correspondingly higher. Optimizing the business environment of digital economy is a complex and systematic project. The national reform of "management and service" has improved the business environment of digital economy in Anhui Province, and the implementation of tax reduction policy has also reduced the tax burden of related enterprises, which is beneficial to the development of digital economy in Anhui Province. However, there are still some problems in the development of the business environment of digital economy in Anhui Province, such as: lack of corresponding evaluation system, market access, information protection and other systems are not perfect; the operation of relevant digital platforms is not standardized, there is vicious competition, monopoly and other problems, infringing on the legitimate rights and interests of users; it is necessary to further promote the construction of digital government, improve the government's ability to use new technology for supervision, and enhance the effectiveness of supervision.

Although Anhui Province has made many useful attempts and achieved certain results in optimizing business environment, with the rapid development of digital economy in Anhui Province and globally, how to further optimize the business environment conducive to the development of digital economy and promote the integration of digital economy and real economy is a practical problem that needs to be solved.

3.3.3. The Digital Economy Industry Chain is Not Perfect

According to the National Bureau of Statistics in 2020, Hefei's GDP reaches 100.46 billion yuan in 2020, and the added value of the three major industries is 33.200 billion yuan, 358.00 billion yuan and 613.40 billion yuan respectively. The added value of primary and secondary industries in Hefei accounts for 38.94% of the regional GDP, while Shanghai accounts for 26.85%, Nanjing 37.19% and Hangzhou 31.96% of the Yangtze River Delta cities. It shows that Anhui Province has sufficient supply in the upstream of digital economy industry chain compared with Shanghai, Jiangsu Province and Zhejiang Province. However, Anhui Province has insufficient power in the midstream of the whole digital economy industry chain. E-commerce is the tractor of digital economy development, but according to the "Top 100 China E-commerce List" published by Net Economics, there is no e-commerce enterprise in Anhui province among the 100 enterprises in this list. The strength of the enterprises largely indicates the development status of the province in the related industry, and it is inferred that the midstream of the digital economy industry chain in Anhui Province cannot give enough platform to the upstream. Compared with other provinces in Yangtze River Delta, the midstream platform of digital economy industry chain in Anhui Province is weak and cannot form a perfect digital economy industry chain.

3.3.4. Lower Level of Regional Economic Development in Anhui Province

According to the National Bureau of Statistics 2020, the GDP of Anhui Province is 386,060 million yuan, Shanghai is 3,870,060 million yuan, Zhejiang Province is 6,461,330 million yuan, and Jiangsu Province is 102,719,900 million yuan. Compared to the Yangtze River Delta provinces, Anhui Province's GDP occupies the fourth place. Anhui Province has a small gross regional product and insufficient support for the digital economy industry. The ratio of primary and secondary industries to GDP in Anhui Province is higher than the other three provinces, but the development of digital economy in Anhui Province is relatively slow compared with the other three provinces, and the fiscal revenue of Anhui Province is not as high as the other three provinces, so the support and support for digital economy industry is slightly insufficient compared with the other three provinces.

4. Countermeasures for the Development of Digital Economy in Anhui Province

4.1. From the Top Design Level for the Overall Layout

First, a master plan for the development of the digital economy will be introduced at the macro-provincial level, and the regional distribution and development priorities for the development of the digital economy will be coordinated and deployed. Second, the implementation of a relatively centralized and coordinated layout of the digital industry, which is related to the province's economic security and development lifeline, to avoid waste of resources and duplication of investment. Again, according to the development status of digital economy and digital resources and digital economy infrastructure in each region of the province, the formation of the relevant regional digital economy integrated development zone, the regional digital economy development to promote the overall, to create the province's digital economy regional development highland. Finally, the experience of the digital economy innovation and development pilot zone will be fully summarized and systematically promoted, and the scope of the pilot zone will be further expanded to the whole province to create a replicable benchmark of digital economy development.

4.2. Further Optimize the Province's Digital Economy Business Environment

To optimize the business environment of digital economy, we can focus on the following two aspects: First, we should accelerate the construction of long-term mechanism for the development of digital economy in line with the provincial conditions of Anhui Province. At present, although the digital economy in Anhui Province has been in the forefront of the country, the system construction is still lagging behind. Therefore, we should take the problem as the guide to build a long-term mechanism and promote the implementation of continuous deepening reform. Secondly, improving the business environment of the digital economy should be incorporated into the reform system of decentralization, improving supervision and providing services. Further streamline institutions, decentralize authority and improve access conditions. In terms of digital literacy, clarify target programs to improve digital literacy [6].

4.3. Continuous Innovation to Promote the Development of the Digital Economy Means

First, insist on the organic combination of universality and specificity, and adopt different policies for different projects. For non-competitive and non-exclusive "digital infrastructure" should be led by the government, the overall layout, for the "digital infrastructure" involving high-tech and specialized areas should fully stimulate the enthusiasm of market players and improve the participation of market players. Secondly, we should implement differentiated regulatory policies for different aspects of digital economy development, including following the law of digital economy development, clarifying the responsibility and rights of government, enterprises, industry associations and other relevant bodies; classifying and regulating different aspects of digital economy development with precision. Finally, it is necessary to combine technology trends, strengthen the innovative application of relevant digital technologies in different areas of the digital economy, enhance the effectiveness of the application, promote the application results and facilitate efficient development [7].

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References

- [1] Xueling Zhang,Yuexia Jiao. A preliminary investigation on China's digital economy development index and its application [J]. Zhejiang Social Science, 2017(04):32-40+157.
- [2] Tongyu Wang. Research on the current situation and problems of digital economy development in Anhui Province [J]. National Circulation Economy, 2020(20):116-117.
- [3] Qianqian Xie, Ziqiang Li. Research on the path of industrial structure adjustment and upgrading in Anhui Province [J]. Marketing World, 2019(34):185-186.
- [4] China Academy of Information and Communication Technology: "White Paper on China's Digital Economy Development (2021)", April 2021.
- [5] Sanxi Li. The main features and outstanding advantages of China's digital economy development [J]. National Governance, 2021(18):3-7.
- [6] Yueying Du. Optimizing the business environment and adding wings to the digital economy [J]. China Development Monitor, 2020(Z6):49-51.
- [7] Jianfeng He, Wu Hui. Promoting the deep integration of digital industry to facilitate high-quality economic development [J]. National Governance, 2021(18):5-10.