

# Analysis of the Dual Impact of Digital Economy on Urban-rural Income Gap

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**Abstract:** The rapid development and widespread application of modern information technology has moved human society into the “digital age”. If the agricultural and the industrial economy are stages already experienced by mankind, the digital economy is emerging as a new trend and new form in global economic and social development. The digital economy has reshaped and will continue to reshape various fields and relationships of economic activities, bringing extensive, profound and lasting impact on the economic system. In this context, this paper summarizes the connotation and characteristics of the digital economy, and attempts to demonstrate its dual effect on reducing or expanding urban-rural income gap.

**Keywords:** Digital economy, Urban-rural income Gap, Dual impact.

## 1. Introduction

The urban-rural dualistic economic structure is a typical feature of China's economic and social development. Constrained by the long-term dualistic economic structure and unreasonable resource allocation, China's economic development has also witnessed wealth gap and inequities in creation of huge wealth. According to the public data from the National Bureau of Statistics, the Gini coefficient in China first increased and then declined over the years since the reform and opening up. Although it is declining, the wealth gap still cannot be ignored. Meanwhile, with scientific and technological progress, digital technology is ever changing, bringing about full integration and penetration of digital economy into a variety of fields. People's work and life are undergoing profound changes. When the “old problem” of urban-rural income gap encounters the “new technology” of digital economy, a question is raised: What is the impact of digital economy on urban-rural income gap. Based on previous research literatures and public data on the Internet, this study summarizes the connotation and characteristics of digital economy, and attempts to propose the opinion that digital economy has dual effect on reducing or expanding the urban-rural income gap.

## 2. The Concept and Characteristics of Digital Economy

### 2.1. The concept of digital economy

“Digital economy” first appeared with the emergence of Internet. In 1996, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*, which was written by American economist Don Tapscot, known as the “Father of Digital Economy”, was published.[1] Thereafter, the economic term “digital economy” was officially proposed, and gradually became well-known.

Regarding the concept of digital economy, a frequently cited definition is from the G20 Digital Economy Development and Cooperation Initiative adopted by the G20 Hangzhou Summit in 2016[2], under which “digital economy refers to a broad range of economic activities that include using digitized information and knowledge as the key factor of production, modern information networks as an important

activity space, and the effective use of information and communication technology (ICT) as an important driver of productivity growth and economic structural optimization”. According to this definition, digital economy is understood as a series of “economic activities” with unique properties: knowledge and information are used as the key factor of production; information and communication technology will drive productivity growth and economic structural optimization; and the application of digital technology will lead to systematic changes in economic activities.

### 2.2. The characteristics of digital economy

#### 2.2.1. Wide penetration

As a general-purpose technology, digital technology has widely penetrated into various fields and industries of the economy and society, driving the output growth and efficiency improvement of conventional industries, promoting economic growth and improvement of total factor productivity, and creating new room for economic growth. The industrial digitization is generating new growth drivers and expanding new growth room, becoming an important support for national economic development. The penetration of digital industry is gradually changing traditional life styles of residents who can now use digital platforms such as Taobao, WeChat, Didi, and Alipay to assist shopping, socializing, traveling, and transactions. The online education has broken through the limitations of time and space and improved the flexibility of the education system; the online registration and telemedicine have alleviated the congestion of medical resources and the difficulty of seeing a doctor in remote areas, and have imperceptibly changed the people's daily life style.

#### 2.2.2. Internet and intelligence

The development of big data and other new generation of information technologies has changed the way of social interaction. The development of computer manufacturing, Internet retail, logistics services, e-commerce, and shared services, etc. is also inseparable from the scenario application of digital economy. Driven by digital economy, modern economic activities and social development are becoming more intelligent and internet-based. In the production and consumption, the application of digital technology reduces the market information asymmetry to achieve effective

docking between consumption and production; in the platform economy, platforms can help enterprises, and in particular small and micro enterprises, explore a broader market and effectively enhance their vitality; in the construction of a novel social credit system, the application of big data can promote the integration and monitoring of the entire social credit data.

### 2.2.3. The value of data is highlighted

Data is a novel strategic resource in the age of knowledge economy. The booming big data has provided people with a brand-new way of thinking in understanding the world, bringing profound changes to people's production, life and understanding of the world. As to application of digital economy to all aspects of social production, data is the most critical core production factor that cannot be ignored. Based on the needs, a large amount of data is collected in industries, and converted into digital information of economic value after processing and analysis. Characterized by zero marginal cost and no differences in replication, digital information is the most competitive strategic resource of an enterprise after transformation and upgrading. It will promote innovation and improvement of industrial technology, and help enterprises obtain the maximum traffic value, thereby generating profits.

## 3. The Impact of Development of Digital Economy On Narrowing the Urban-rural Income Gap

With the construction and upgrading of urban-rural

integrated information infrastructure and the popularization of smart phones, the penetration of urban and rural networks has been fast improved, with decreasing ratio between urban and rural network penetration rates. The urban and rural Internet penetration rates have rapidly increased to 81.3% and 57.6% in 2021, respectively (Figure 1). In particular, the development of smart phones has greatly improved Internet penetration. According to the Statistical Report on the Internet Development in China of relevant years, mobile Internet users has grown rapidly from 303 million at the end of 2010 to 1.029 billion at the end of 2021, an increase of 2.40 times, and the Internet penetration rate has increased rapidly from 34.3% to 73.0% for the same period; at the end of 2021, mobile phone users accounted for 99.7% of the 1.032 billion Internet users.

The development of digital economy can increase farmers' production income by reducing the cost of information acquisition. Digital economy is essentially about informatization. Information has become one of the main input elements in the economic process, and information and information communication technologies (ICT) are increasingly important for the ability of companies, communities, and individuals to successfully participate in global economy.

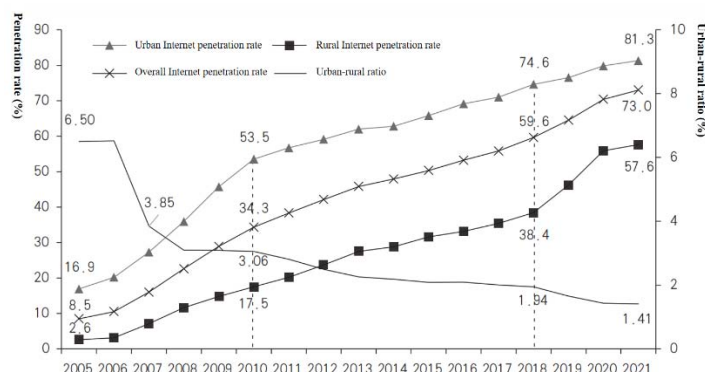


Figure 1. Evolution of urban and rural Internet penetration in China (2005-2021) (Data source: Based on "Statistical Report on the Internet Development in China")

### 3.1. Improvement of the efficiency of agricultural operations

In developing countries, information is rarely symmetrical or priceless. The visits to different places for acquisition of information not only cause transportation costs, but also the opportunity cost due to loss of personal time. Therefore, information asymmetry may be an important obstacle to the adoption of agricultural technology in developing countries. Since the emergence of digital economy, low Internet penetration rate and insufficient access to information have led to a new form of poverty called "information poverty". The Internet can efficiently disseminate information and reduce farmers' information acquisition cost, thus reducing the relative cost of agricultural technologies or related technologies and improving market efficiency.[3]

Informatization can improve the efficiency of agricultural production. The Internet helps farmers to gain understanding

of improved agricultural practices and technologies. Information and communication technologies can enable them to obtain effective information and knowledge and enhance their human capital, thereby improving production patterns and productivity and increasing income; farmers can better understand improved agricultural practices and technologies, and information communication technologies may be a more effective way to improve rural productivity.

### 3.2. Reduction of agricultural business risks

With the help of ICT, farmers in rural areas can keep abreast of market prices and choose the optimal production and marketing methods, which reduces improper resource allocation and inefficient agricultural supply chains. For example, due to digital economy, the rural E-commerce has made it easier for smallholder farmers to obtain the information about market supply and demand and carry out online marketing, whereby breaking the geographical and

time constraints of market.[4] The development of Internet and digital construction in rural areas can not only enhance rural residents' entrepreneurial awareness, but also enables them to improve professional literacy by learning requisite skills and knowledge through Internet. In this way, they can fast master industry information and market trends and make timely respond to reduce production and operation risks.

### 3.3. Promotion of diverse rural employment

The dissemination of information has changed farmers' ideological awareness and conceptual thinking, whereby they can give play to their subjective initiative, change their conventional life style, employment choices, and production activities. They can accept new things with a more open mind, learn new knowledge, and seek more diverse employment and career development such as non-farming employment to increase income.

According to the data from China Taobao Village Report (2009-2019), China's Taobao villages increased rapidly from 3 to 4,310 from 2009 to 2019. The main products sold in Taobao villages are consumer goods suitable for express delivery. Since rural E-commerce has greatly eliminated the influence of spatial distance and information asymmetry, traditional handicrafts highly satisfy the growing demand for personalized and quality-oriented cultural consumption, and provide a strong drive for the docking of supply and demand and for production growth of rural traditional handicrafts.

## 4. Formation of “Digital Divide” and Expansion of Urban-rural Income Gap due to Digital Economy

The digital divide usually refers the gap between people who have access to novel information technology and those that don't. According to the research by Furuholt B (2007) , there are four categories of digital divide: infrastructure digital divide, socio-economic digital divide, demographic digital divide and cultural digital divide. Among them, the infrastructure digital divide is the basic divide which refers to the differences in access to the Internet and ICT between urban and rural areas. Although ICT infrastructure in Chinese rural areas has been gradually improving with narrowed differences as mentioned above, the socio-economic, demographic and cultural divide still exist. At present, the main urban-rural digital divide is no longer reflected in the gap in information infrastructure, but in digital literacy of residents. In other words, the “hard divide” (access divide) is basically bridged, but the “soft divide” (the divide in use and ability) is obvious.

The low digital literacy of rural residents is not only not due to the relatively low education of rural residents as a whole, but also due to the demographic structure of rural villages dominated by left-behind elderly and children in the

process of urbanization. As of December 2021, the Internet penetration rate in rural areas was still about 23.7 percentage points lower than that in urban areas, and non-Internet users in rural areas accounted for 54.9% of the total non-Internet users.[5]

In reality, the rate of online shopping, online travel booking, online payment, and digital finance is significantly higher among urban residents compared with rural netizens, indicating significant gap in literacy of digital economy between urban and rural residents. The low digital literacy of rural residents not only cause lower use efficiency of various smart applications, but also affect farmers' participation in construction of digital villages, restricting the development of digital urban and rural areas. For example, rural residents lack both skills and willingness to use digital financial products. Therefore, some groups with low digital literacy may be forsaken by new technologies, resulting in new inequalities caused by widened income gap.

## 5. Conclusion

The digital economy is a new economic and social form after the agricultural and the industrial economy. It is believed herein that the development of digital economy has dual impact on reducing or expanding the urban-rural income gap in China. The reason is that with continuous improvement of digitization, the digital economy infrastructure has been popularized, which improves the efficiency of agricultural production and operation and promotes diverse rural employment. However, due to varied education background and use capabilities between urban and rural residents, there are still differences in the acquisition, processing and creation of digital resources between urban and rural households, which results in new inequalities caused by widened income gap.

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