

The Influence of Digital Economy on Urban-rural Income Gap and Countermeasures

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Abstract

This paper examines the dual impact of the digital economy on the urban-rural income gap in China and proposes corresponding countermeasures. With the rapid development of technologies such as big data, artificial intelligence, and 5G, the digital economy has become a key driver of economic growth and structural transformation. However, while it offers opportunities to narrow the urban-rural income gap through inclusive effects—such as expanding market access, fostering entrepreneurship, improving financial inclusion, and facilitating knowledge flow—it may also exacerbate inequality due to the "digital divide." This divide manifests in disparities in infrastructure, digital skills, value distribution in industrial chains, and capital-technology substitution. To address these challenges, the study proposes a series of policy recommendations aimed at maximizing the inclusive potential of the digital economy while mitigating its divisive effects. These include strengthening rural digital infrastructure, enhancing digital literacy among rural residents, promoting the deep integration of digital technologies with agriculture and rural industries, innovating digital financial services, and improving the policy and governance environment. By implementing these measures, the digital economy can better contribute to narrowing the urban-rural income gap and advancing common prosperity.

Keywords

Digital Economy; Urban-Rural Income Gap; Digital Divide; Inclusive Growth; Rural Revitalization.

1. Introduction

The digital economy represented by big data, artificial intelligence and 5G communication is booming and has become a key force in restructuring global factor resources and reshaping the global economic structure. It has profoundly changed the production, distribution and consumption patterns and consumption structure of the national economy. As one of the outstanding manifestations of China's unbalanced and insufficient development, the urban-rural income gap is still a major challenge on the road to common prosperity. Under this background, it has profound theoretical significance and practical value to explore the impact of digital economy on income gap between urban and rural areas. It reveals the contradictory unity of "inclusive effect" and "digital divide effect" contained in the digital economy, which greatly enriches and develops the connotation of development economics and welfare economics. From a realistic perspective, this study directly responds to the major strategic needs of the state to "develop the digital economy", "implement the rural revitalization strategy" and "promote common prosperity". Clarifying the impact mechanism of the digital economy will help the government to make precise policies: On the one hand, it can guide policies to better bridge the digital divide between urban and rural areas, give full play to the positive role of digital economy in breaking information barriers, promoting rural entrepreneurship and employment, and enabling financial inclusion; On the other hand, it also provides scientific basis for preventing the "Matthew effect" that technology may bring and

formulating more inclusive digital economic development rules, which is of great practical urgency for promoting the integrated development of urban and rural areas and sharing the fruits of digital development by all people.

2. Development Status of China's Digital Economy

2.1. The Overall Scale of Digital Economy Continues to Grow, Becoming the Core Engine of Economic Growth

China's digital economy has been the second largest in the world for many consecutive years, second only to the United States. According to the National Bureau of Statistics and data, its proportion in GDP has exceeded 40%, and its growth rate is much higher than the nominal GDP growth rate in the same period, becoming a key force driving economic growth[1]. From "new force" to "main force": digital economy is no longer just a supplementary part of the economy, but deeply integrated with the real economy, becoming a core force for restructuring factor resources, reshaping economic structure and changing competition pattern.

2.2. Coordinated Promotion of the "Four Modernizations" Framework Structure of the Digital Economy and Continuous Optimization of the Industrial Structure

The framework structure of "four modernizations" of digital economy refers to digital industrialization, industrial digitalization, digital governance and data valuation.

2.2.1. The Hard Power of Digital Industrialization

Digital economy is constantly strengthened, and it is in the leading position in the world in 5G, Beidou, supercomputing and other fields; the soft power of digital economy rises rapidly, and the ecological prosperity of emerging industries such as cloud computing, big data, artificial intelligence and industrial Internet; Platform economy dominates. Platform enterprises such as Alibaba, Tencent and ByteDance have global influence[2][3]. Although they have undergone strong supervision and rectification, they are still important subjects of technological innovation.

2.2.2. Industrial Digitalization

Industrial digitalization refers to the increase in output and efficiency brought about by the application of digital technology in traditional industries, which is the largest part of digital economy. Industrial Internet has been widely applied to manufacturing industry, and a large number of national and industry-level industrial Internet platforms have been built to promote the transformation from "Made in China" to "China Intelligent Manufacturing"; Agricultural digitalization refers to smart agriculture, rapid development of rural e-commerce, unmanned aerial vehicle plant protection, live broadcasting of agricultural products, etc. as new agricultural work; The digitalization of service industry has the deepest penetration and widest influence, and mobile payment, e-commerce and local life service have completely changed the national lifestyle[4].

2.2.3. Digital Governance

Governments at all levels vigorously promoted the online government affairs service, realized "more data running, less errands for the masses" through government App and Mini programs, greatly improving governance efficiency and convenience for the public; The supervision system has been gradually improved, and the state has issued a series of laws and regulations on data security, network security, platform economic anti-monopoly, etc., laying a legal foundation for the healthy development of digital economy.

2.2.4. Valued Data

Valued data has been formally established as a new factor of production. The state is actively exploring the establishment of data property rights, circulation, transaction and income distribution mechanisms. Data exchanges have been established in various places to release the huge potential value of data.

3. The Impact of Digital Economy on China's Effective Income Gap

3.1. Inclusive Effect of Digital Economy on Narrowing Urban-rural Income Gap

The development of digital economy has provided unprecedented opportunities for rural residents. It is mainly reflected in the following aspects:

3.1.1. The Development of Digital Economy Has Broken Geographical Restrictions and Expanded Market Space.

E-commerce platforms such as Taobao, Jingdong and Pinduoduo have made agricultural products directly available to consumers nationwide and even globally, reducing intermediate circulation links and increasing farmers' sales income. At the same time, rural residents can also purchase industrial goods and services of the same quality as cities at a lower cost, indirectly increasing real income; digital platforms provide non-agricultural employment opportunities for rural labor, especially for the younger generation[5][6]. They can participate in the division of labor in the urban economy without physical migration to cities and obtain wage income.

3.1.2. The Development of Digital Economy Empowers Innovation and Entrepreneurship, Giving Birth to New Formats of Rural Digital Economy Entrepreneurship

The development of digital economy empowers innovation and entrepreneurship, giving birth to new formats of rural digital economy entrepreneurship, such as live broadcasting with goods, online promotion of rural tourism, booking of residential accommodation, and e-commerce of featured handicrafts. Farmers with the ability and resources can become "new farmers" with the help of digital platforms to achieve rapid growth of personal wealth; digital economy promotes the integration of rural industries and extends the industrial chain[7]. Through live broadcasting, consumers can not only buy fruits, but also visit orchards in the cloud, which drives the development of rural tourism and experiential agriculture and increases the diversification of income.

3.1.3. Improving the Availability of Financial Services Mobile Payments

Such as Alipay and Weixin Pay greatly reduce the cost of rural financial transactions, enabling rural residents to participate in modern economic life conveniently; Internet bank loan products based on large data risk control provide start-up funds and production funds for rural small and micro enterprises and self-employed households lacking collateral, alleviating financing difficulties and expensive financing problems[8][9].

3.1.4. Promote Knowledge and Information Flow Online Education and Skills Training

Rural residents can access urban high-quality educational resources and skills training courses through the Internet, improve their human capital, and lay a foundation for obtaining higher-income jobs. Information acquisition costs are reduced: Farmers can more easily obtain market prices, agricultural technology, weather forecasts and other information, make better production and marketing decisions, and reduce losses caused by asymmetric information.

3.2. Digital Divide Effect of Widening Urban and Rural Income Gap

While the growth of the digital economy brings notable improvements in efficiency and convenience, it also carries the potential to deepen social inequalities, a phenomenon

prominently reflected in the widening "digital divide." This divide manifests not only in the disparities in infrastructure-such as internet access and availability of digital devices across different regions and demographic groups-but also in structural imbalances in digital literacy, data accessibility, and the capacity to utilize technology. Due to the inherently skill-biased and capital-intensive nature of digital technologies, urban populations-typically better equipped with resources, education, and technological proficiency-are more likely to capture opportunities presented by the digital economy, leading to a cumulative "digital dividend." In contrast, rural residents, who often lack adequate digital competencies, may find it difficult to participate effectively in emerging economic activities such as digital marketplaces, remote work, and e-commerce[10][11].

3.2.1. Infrastructure Divide

Despite the remarkable achievements of the "village-to-village" project, rural areas, especially remote mountainous areas, still lag behind cities in terms of network coverage, bandwidth and stability. This constitutes the first threshold for participation in the digital economy.

3.2.2. The Skills and Human Capital Gap Rural Residents, Especially Older Generations, are Digitally Literate is Generally Lower than that of Urban Residents.

A significant skills and human capital gap exacerbates the digital divide between urban and rural populations. Specifically, digital literacy among rural residents, particularly the older generations, is systematically lower than that of their urban counterparts. Consequently, even when internet connectivity is available, the inability to proficiently use digital tools-a phenomenon known as the "second-level digital divide"-prevents them from effectively leveraging these resources. This critical skills shortage impedes their capacity to access online education, digital financial services, and e-commerce opportunities, thereby negating the potential benefits of digital inclusion[12].

3.2.3. Uneven Distribution of Industrial Value-added Benefits In the Value Chain of the Digital Economy, High Value-added Links are Usually Concentrated in Cities.

Rural areas may still be at the low end of providing original products or data, and the profits are limited. For example, farmers sell goods through live broadcasting, but most of the profits may be earned by platforms and MCN institutions.

3.2.4. The Trend of Capital and Technology Replacing Labor the Development of the Digital Economy Tends to Reward Capital and High-end Technical Talents.

Cities have more venture capital, technical experts and mature market environment, which can embrace and create digital dividends faster. If rural labor can only engage in simple labor that can be replaced by automation, its position in income distribution may decline relatively.

3.2.5. "Matthew Effect" Highlights Within Rural Areas, Digital Economy May Also Widen Income Gap.

Those new farmers with higher education level, stronger learning ability and certain initial capital can rise rapidly, while ordinary small farmers may be difficult to integrate into the digital wave because of their small scale and weak ability to resist risks, resulting in a situation of "the poor getting poorer and the rich getting richer"[13]. With the popularization of digital infrastructure, the guidance of government policies (such as digital rural strategy) and the gradual improvement of rural residents' digital literacy, the inclusive effect will become stronger and stronger, and it is expected to surpass the gap effect and become the dominant force, thus gradually narrowing the income gap between urban and rural areas.

4. Countermeasures and Suggestions for Narrowing the Income Gap between Urban and Rural Areas in Digital Economy

Therefore, based on the "double impact" of the digital economy on the income gap between urban and rural areas, the key to effectively narrowing this gap lies in maximizing its "inclusive effect" and making every effort to curb and bridge the "digital gap". Specific policy directions should include:

4.1. Consolidating the Digital Foundation, Opening up the "Information Sky Road" and Accelerating the Construction of New Rural Digital Infrastructure.

On the basis of realizing "village-to-village broadband", we will promote the extension of gigabit optical network and 5G network to rural areas with conditions and needs, and reduce network usage charges. Improve logistics: Build and improve the logistics distribution system at county, township and village levels, encourage e-commerce and logistics enterprises to build county-level distribution centers and township and village-level distribution stations, and solve the "last kilometer" problem. Layout calculation: In combination with the "East Digital West Computing" project, small data centers and edge computing nodes are arranged in qualified rural areas to provide computing support for smart agriculture and rural cultural tourism.

4.2. Improve Digital Literacy, Cultivate "New Farmers", Implement Digital Skills Inclusive Training for Rural Residents, and Carry Out Differentiated Training for Different Groups.

For ordinary farmers, focus on training smart phone applications, mobile payments, e-commerce shopping, etc.; For agricultural business entities and entrepreneurial youth, focus on training skills such as live broadcasting and goods delivery, online store operation, Short Video marketing, social media management, etc. Encourage the government, universities, e-commerce platforms, vocational colleges and other forces to participate together to establish an online and offline training system; Strengthen rural digital education, incorporate information technology-related knowledge into rural primary and secondary education, build "smart classrooms," lay a foundation for digital literacy for the next generation in rural areas, and block the inter-generational transmission of digital divide [14].

4.3. Deepen Industrial Integration

Enable "agricultural upgrading" to promote digital transformation of agricultural production, promote the application of sensors, Internet of Things, unmanned aerial vehicles and AI in agricultural production, develop smart farms, smart pastures and smart fishing grounds, and improve agricultural production efficiency and anti-risk ability; Promote the integrated development of rural industries, continue to support the upward movement of agricultural products, build regional public brands, and broaden sales by means of live broadcasting, community marketing and other forms; Promote rural tourism resources through online platforms, develop "cloud tourism", smart residential accommodation and online booking, and convert passenger flow into income; encourage the development of new Internet-based formats such as shared agriculture, creative agriculture and customized agriculture.

4.4. Innovate Financial Services

Inject "capital living water" to deepen digital inclusive finance, encourage financial institutions to make accurate portraits of farmers and new agricultural business entities by using big data, satellite remote sensing, blockchain and other technologies, and develop online credit loan products without mortgage; Develop digital agricultural insurance based on meteorological and remote sensing data, realize rapid loss assessment and claim settlement, and enhance

farmers' ability to resist risks; Further promote the popularization of mobile payment in rural areas, covering daily consumption, public transportation, medical payment and other scenarios.

4.5. Optimize the Policy Environment

Strengthen governance and security, strengthen top-level design and policy guidance, closely integrate the "digital village" strategy with the goal of "common prosperity", and formulate targeted regional differentiation policies. For the central and western regions, "complementary board" is the main one, and for the eastern regions, it is encouraged to explore the advanced mode of deep integration of digital technology and rural industry; Explore the establishment of rural collective and individual farmers' data property rights confirmation and income distribution mechanism, so that farmers can share the value brought by data while providing data; Strengthen the publicity of network security and personal information protection in rural areas to prevent network fraud and data abuse; Improve platform economic governance and protection of workers' rights and interests, standardize platform algorithm rules while encouraging platform economic development, and protect the legitimate rights and interests of rural labor force engaged in odd jobs economy.

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