Digital Economy Helps Economic Development of High Quality

-- Based on the Perspective of Innovative Resource Flow

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Abstract

Based on digital financial development and high economic high-quality development, the article constructs panel regression and mediation effect models to empirically test the impact and mechanism of the digital economy on high economic high-quality development. The study shows that digital financial development significantly promotes economic high-quality development. The results of the mediation effect test show that the development of digital finance can drive the high-quality development of the economy by promoting the flow of innovative resources, and the flow of innovative resources is an important channel for the role of digital finance in the high-quality development of the economy. Grasping the opportunities of digital financial development, facilitating the flow of innovative resources, and promoting digital transformation can help China's economy achieve high-quality development.

Keywords

Digital Economy; Innovative Resource Flow; Economic Development of High Quality.

1. Introductory

In recent years, China's digital inclusive finance has been developing rapidly, and China's digital inclusive finance business has achieved leapfrog development from 2011 to 2020, with the median provincial digital inclusive finance index at 33.6 in 2011, and the median in 2020 having reached 334.8, with an average annual growth rate of 29.1 percent. In particular, in 2020, despite the severe impact of the new Crown Pneumonia epidemic on China's economy and society, the digital financial index still increased by 5.6 percent compared with 2019, showing great resilience and development potential. Digital inclusive finance, as a new form of the digital economy, takes the general public as its service object, improves the accessibility of financial services for the whole society by innovating information technology and improving the construction of financial infrastructure, and gradually becomes a new engine for high-quality economic development. Therefore, it is of great practical significance to study how digital inclusive finance can empower high-quality economic development.

From the viewpoint of existing literature, the impact of digital finance on economic development mainly includes the following three categories: the economic growth effect of digital finance, digital finance to improve the economic development dilemma, and digital finance to promote high-quality economic development. Taken together, most of the existing literature focuses only on the direct effect of digital finance on the high-quality development of the economy and rarely analyses it at the level of the mechanism of action, and part of the literature discussing the intermediary mechanism mostly focuses on the enterprise level and lacks analyses based on the individual level. This paper tries to clarify the possible paths of the digital economy, and at the same time provides some theoretical references for the strategic planning of high-quality economic development.

2. Theoretical Analyses and Research Hypotheses

2.1. Digital Financial Development and High-quality Economic Development

A large number of scholars have conducted in-depth studies on the economic effects of digital financial inclusion. Some scholars have pointed out that digital inclusive finance relies on new digital technology to change the traditional financial model, where buyers and sellers can transact online without leaving their homes, and studies have shown that digital inclusive finance significantly affects residents' consumption expenditure and further improves social and economic growth. With the development of digital inclusive finance, the financing problem of small and medium-sized enterprises (SMEs) has been improved to a certain extent, which can significantly accelerate the production of enterprises, save a large amount of capital costs, so that there is no capital restriction in the process of technological innovation and research of enterprises, thus promoting the accelerated development of society. Zhang Xun et al (2020) [1] and Tang Song et al (2020) [2] take the financial inclusion index as the research object to get, under a large amount of financial information known, the development of digital inclusion can break through the financing threshold of small and medium-sized enterprises, effectively solving the financing problem of enterprises, enriching the financing way of small and medium-sized enterprises, and providing a large number of funds for the development of enterprises. Based on the analysis above, this paper puts forward research hypothesis 1.

H1: Digital financial inclusion is positively contributing to high-quality economic development.

2.2. Intermediation of Innovation Factor Flows

Innovation factors are important strategic resources that guarantee the smooth implementation of China's innovation-driven development strategy and thus promote the high-quality development of the regional economy. Innovation development requires that the innovation subject must constantly improve the ability to absorb and integrate external innovation resources and maintain the sensitivity of external innovation resources, which are based on the flow of innovation factors (Han Zhaoan et al., 2022) [3]; the development of the digital economy breaks the traditional spatial and temporal constraints, which makes the flow and agglomeration of innovation factors at the spatial level more efficient (Wang Chongfeng, 2015) [4], spatially dispersed innovation activities can be combined into a unified whole through the inter-regional flow of innovation factors, thus driving the high-quality development of the regional economy to improve. On the one hand, with the continuous improvement of digital technology such as the Internet of Things, the demand anchoring and resource matching between innovation subjects and innovation resources are becoming more and more efficient, which greatly reduces the cost and risk of searching for resources for innovation subjects, helps to accurately locate the direction of innovation inputs, and the targeting of innovation inputs can significantly enhance the high-quality development of the economy. On the other hand, the development of the digital economy makes the transmission channel of innovation resources more open compared with before, which can save the cost of innovation factor flow, enhance the convenience of regional access to resources, and ultimately promote the diffusion efficiency of innovation resources to enhance the high-quality development of the regional economy. Based on the above analysis, this paper puts forward research hypothesis 2.

H2: The digital economy drives high-quality economic development by facilitating the flow of innovative resources.

3. Research Design

3.1. Variable Measurement and Data Sources

3.1.1. Explanatory Variable

Domestic scholars have done a lot of research on the construction of the evaluation index system for high-quality economic development, some of which are constructed from the three dimensions of quality change, efficiency change, and power change, others from the four dimensions of economic efficiency, economic structure, resources and environment, and people's well-being, and some from the five aspects of economic development, reform and opening up, urban and rural construction, ecological environment, and people's life. From the relevant research results, mostly the new development concept is taken as the theoretical basis for the construction of the indicator system. Based on this, combined with the availability and completeness of data, this paper draws on the evaluation index system constructed by Dong Xiaojun and Shi Tao (2020)[5] around the five development concepts of "innovation, coordination, green, openness, and sharing", and further optimizes the relevant indexes to measure the level of high-quality economic development (Dev).

3.1.2. Explanatory Variable

The level of development of digital finance (Dfi) refers to the Digital Financial Inclusion Index compiled by the Digital Finance Research Centre of Peking University, which adopts a hierarchical analysis method to construct three first-level indicators of the breadth of coverage, depth of use, and degree of digitization of digital finance, with 11 second-level indicators and 33 third-level indicators under the first-level indicators.

3.1.3. Intermediary Variable

Innovation factor flows (tfl, rfl). Innovation factor flows mainly include innovation talent flows and innovation capital flows. As far as the flow of innovative talents is concerned, this paper draws on the research of Bai Junhong et al. (2017) [6] and adopts the gravity model to measure it. Differences in high and low house prices, wage levels, and overall financial investment in science and technology between regions all have a large impact on the flow of talent (Bian Yuanchao et al., 2020) [7]. Based on this, the study constructs the following calculation formula:

$$tfl_{it} = \ln N_i * \ln(wage_j - wage_i) * \ln(price_j - price_i) * \ln(fse_j - fse_i) * R - 2_{ij}$$

In the above equation, the N_i is the number of innovative talents in region i, expressed as the number of scientific research and technical service employees; $wage$ represents the average wage of urban employed persons in different regions; $price$ represents the level of house prices in different regions; fse represents the level of financial expenditure on science and technology in different regions; $R - 2_{ij}$ is used to measure the geographical distance between two regions.

rfl_{it} It is the amount of innovation capital flow in each region, and the characteristic of capital seeking profit makes it inevitable to flow to the region with more abundant profit and a better-marketised environment. Therefore, the measurement of innovation capital flow is based on the practice of Wang Xinliang et al. (2021)[8], and the specific measurement is as follows.

$$rfl_{it} = \ln C_i * \ln(r_j - r_i) * \ln(pro_j - pro_i) * R - 2_{ij}$$

In the above equation, the C_i is the amount of capital in region i, expressed in terms of total S&T expenditure; r represents the average profitability of enterprises in different regions; pro represents the level of marketization in different regions, measured by the marketization index compiled by Fan and Wang Xiaolu.

3.1.4. Control Variable

The following control variables are selected for their impact on high-quality development: (1) Consumption level (SUM): total retail sales of consumer goods per capita in the region is used as the indicator; (2) Economic development level (GDPP): expressed as per capita GDP (2) Economic development level (GDPP): expressed as per capita; (3) Urbanisation level (Urban): expressed as the logarithm of regional population density; (4) Financial development level (Finance): expressed as the ratio of institutional deposit and loan balances to regional GDP.

In this paper, panel data from 30 provinces in China (excluding Tibet, Hong Kong, Macao, and Taiwan) from 2013-2019 are selected for the study. The Digital Inclusive Finance Index is jointly compiled by the Digital Finance Research Centre of Peking University and Ant Gold Service Group, and other sample data are mainly obtained from the China Science and Technology Statistical Yearbook, the China Statistical Yearbook, the China Industrial Statistical Yearbook, the China Information Yearbook, and the Wind database of the past years; and the interpolation method combined with the linear trend method is used to supplement and improve the missing data.

3.2. Modelling

$$Dev_{it} = \alpha_1 + \alpha_2 Dfi_{it} + X_{it}\eta + \mu_{it} + \varepsilon_{it}$$
$$tfl_{it} = \beta_1 + \beta_2 Dfi_{it} + X_{it}\eta + \mu_{it} + \varepsilon_{it}$$
$$Dev_{it} = \beta_3 + \beta_4 Dfi_{it} + \beta_5 tfl_{it} + X_{it}\eta + \mu_{it} + \varepsilon_{it}$$
$$rfl_{it} = \gamma_1 + \gamma_2 Dfi_{it} + X_{it}\eta + \mu_{it} + \varepsilon_{it}$$
$$Dev_{it} = \gamma_3 + \gamma_4 Dfi_{it} + \gamma_5 rfl_{it} + X_{it}\eta + \mu_{it} + \varepsilon_{it}$$

where Dev_{it} is the level of high-quality development of city i in period t, and Dfi_{it} is the level of digital financial development of city i in period t, and the vector X_{it} denotes the control variables; μ_{it} denotes city i's fixed effects that do not vary over time; ε_{it} denotes the random perturbation term.

4. Analysis of Empirical Results

Table 1. Regression results

	(1)	(2)	(3)	(4)	(5)
	dev	tfl	dev	rfl	dev
Dfi	0.054**	1.635**	0.020**	3.688***	0.040***
	(2.53)	(5.35)	(0.96)	(4.27)	(1.61)
tfl			0.021***		
			(10.07)		
rfl					0.006***
					(7.02)
_Cons	-0.207**	-3.164***	-0.141***	-2.832***	-0.192
	(-5.81)	(-6.21)	(-4.06)	(-1.97)	(-5.50)
control variable	Y	Y	Y	Y	Y
fixed effect	Y	Y	Y	Y	Y

From the results of the first column of the above table, it can be seen that digital financial development has a facilitating effect on the high-quality development of the economy, and it holds at the 1 percent significance level, and hypothesis H1 holds. The results of the last four columns show that the transmission path of "digital financial development - innovative resource flows - high-quality economic development" is valid, and digital financial development

promotes high-quality economic development by facilitating the flow of innovative resources, and hypothesis H2 is valid.

5. Conclusion and Implications

This paper empirically examines the impact of the level of digital financial development on the high-quality development of the economy, studies the channels through which digital finance affects the high-quality development of the economy from the perspective of the flow of innovative resources, and draws the following conclusions: (1) The improvement of the level of digital financial development can significantly contribute to the improvement of the quality of economic development. (2) Digital finance can promote high-quality economic development by facilitating the flow of innovative resources. The digitalization of finance eases liquidity constraints, enables better cross-regional flows of innovative resources, maximizes the benefits of innovative resources, and ultimately contributes to high-quality economic development.

Improving the popularity of digital finance and promoting financial digitization is an important way for the economy to move from "sloppy" development to high-quality development. Based on the results of empirical analyses, this paper draws the following insights: (1) pay attention to the role of the digital economy in economic development, comply with the trend of the development of the digital economy, grasp the opportunities for the development of the digital economy, increase the research and development of digital economy technology, cultivate digital talents, improve the ability to innovate and stimulate the potential for the development of the digital economy through the empowerment of the digital economy in the domestic cycle. (2) Accelerate the construction of digital infrastructure, especially in regions with a relatively low degree of digitization, to narrow the "digital divide" between regions and create a good foundation and environment for the development of the digital economy. Combine blockchain, cloud computing, artificial intelligence, and other technologies to improve the basic conditions for the development of the digital economy.

Acknowledgments

References

[1] Xun Zhang,Guanghua Wan,Jiajia Zhang et al. Digital economy, inclusive finance, and inclusive growth[J]. Economic Research,2019,54(08):71-86.

[2] TANG Song, WU Xuchuan, ZHU Jia. Digital finance and corporate technological innovation - structural characteristics, mechanism identification and effect differences under financial regulation[J]. Management World,2020,36(05):52-66+9.

[3] HAN Zhao'an, WU Haizhen, ZHAO Jingfeng. Digital economy drives innovative development - the mediating role of knowledge flow[J]. Research in Science,2022,40(11):2055-2064+2101.

[4] Wang Chongfeng. Regulatory mechanism of knowledge spillover on regional innovation efficiency[J]. China Population-Resources and Environment,2015,25(07):77-83.

[5] DONG Xiaojun,SHI Tao. Spatial and temporal differences in science and technology innovation factors driving high-quality economic development - A spatial econometric analysis of provincial panel data from 2009-2017[J]. Science and Technology Progress and Countermeasures,2020, 37(04):52-61.

[6] BAI Junhong, WANG Yue, JIANG Fuxin et al. R&D factor mobility, spatial knowledge spillovers and economic growth[J]. Economic Research,2017,52(07):109-123.

[7] Bian Yuanchao,Wu Lihua,Bai Junhong. Does fiscal science and technology expenditure competition promote regional innovation performance improvement? --Based on the perspective of R&D factor flow[J]. Fiscal Research,2020(01):45-58.

[8] Xinliang Wang, Xiaoyan Wang, Fei Liu. Is tax competition conducive to enhancing regional innovation performance? --A spatial mechanism analysis based on the flow of innovation factors[J]. Research on Finance and Trade,2021,32(06):98-110.