

# **The Influence of Digital Inclusive Finance on Economic Development of Henan Province**

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## **Abstract**

Based on the panel data of 17 prefecture-level cities in Henan Province from 2012 to 2019, this paper explores the impact of digital inclusive finance on the economic development of Henan Province. The results show that the depth and coverage of digital inclusive finance can promote the growth of Henan Province's real per capita GDP. From the perspective of fixed effect model, the extent of coverage has the most obvious promoting effect on the economy of Henan Province, but the digitalization degree of Henan Province has no significant promoting effect on the economic development of Henan Province, which may be because the development of digital economy in Henan Province is in the stage of "Solow paradox". Therefore, some suggestions are put forward: improve the digital infrastructure of Henan Province, improve the overall digital level of Henan Province, especially strengthen the digital penetration rate in remote areas, and improve the level of opening-up of Henan Province.

## **Keywords**

Digital Inclusive Finance; Coverage Breadth; Depth of Use; The Economic Development.

## **1. INTRODUCTION**

The population of Henan province accounts for one fourteenth of the national total, but the level of economic development is not high. In 2020, the GDP of Henan Province will be 5499707 billion yuan, only accounting for 5.41% of the national economic total. Therefore, the rapid economic development of Henan province has become an important engine for the rise of central China and the development of national economic cycle. The Financial Operation Report of Henan Province 2020 points out that the main way to vigorously develop the economy of Henan Province is to promote the development of digital inclusive finance in Henan Province [1]. At the end of 2019, the total profit of financial institutions in Henan province was 65.23 billion yuan, an increase of 22.8 percentage points compared with 2018. Financial resources are gathering faster from developed areas to weak areas, and financial deepening and expansion has served 22 counties and cities in the province. The construction of the Inclusive Financial Reform Pilot zone in Lankao County, Henan Province is particularly outstanding, and has been included in the Case of Overcoming Difficulties in Implementing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era in Reform, Development and Stability compiled by the Organization Department [2]. Therefore, it is of great significance and value to study the economic promotion of digital inclusive finance in Henan Province.

## **2. REVIEW OF RELEVANT RESEARCH**

### **2.1. Research on Digital Inclusive Finance in Henan Province**

The research on digital inclusive finance in Henan province can mainly include two aspects. The first is the study on the impact of digital inclusive finance on the urban-rural income gap in

Henan Province; the second is the study on the impact of digital inclusive finance on the rural economy and poverty reduction in Henan Province. Qin Peizhen and ZhaiShiJun of 17 cities in Henan Province in 2011-2018 panel data, analyzes the pratt & whitney financial impact on the income gap between urban and rural areas in Henan Province, pratt & whitney financial can narrow the income gap between urban and rural areas in Henan Province, and the effect of this effect in the economic underdeveloped regions in high level area reduction effect is more obvious than economics [2]. Ran Hui believes that the rapid development of Lankao model has improved the level of digital inclusive finance in Henan Province. However, Henan Province is a large agricultural province with a large population and insufficient economic development level, so there are still certain obstacles to the development of inclusive finance [3]. Yang Jingkun studied the influence of digital inclusive finance on the consumption level of residents in Henan Province and believed that digital inclusive finance has a positive role in promoting the consumption level and economic development of residents in Henan Province [4].

## **2.2. Research on the Impact of Digital Inclusive Finance on Economic Development**

At present, there are abundant literatures on the impact of digital inclusive finance on economic development at the national level, which can be roughly divided into three dimensions. First, digital inclusive finance can effectively narrow the urban-rural wealth gap. Due to the economic development in rural areas is weak, farmers find it difficult to get money by formal financial institutions, loans, mortgages, guarantees difficult problem has been bothering the main problems of rural lending, pratt & whitney financial deepening reduced loan threshold [5], farmers and individual economy can more easily access to capital, can promote rural production and business operation activities, Thus promoting the development of rural economy. Second, the development of digital inclusive finance can effectively promote the upgrading of industrial structure [6]. Relatively backward production technology and low labor production efficiency are important factors affecting the development of small and medium-sized enterprises. By improving labor productivity and changing the mode of economic development, new technologies are generated and new industrial chains are formed, so as to promote the progress of industrial science and technology and the improvement of scientific and technological efficiency, so as to achieve the purpose of promoting industrial upgrading [7]. Third, digital financial inclusion has effectively promoted social employment. Digital inclusive finance reduces the degree of supervision of the financial industry through financial deepening, reduces the supervision cost of enterprises, and enterprises increase the expenditure on labor, thus increasing the demand for labor [8][14]. Digital inclusive finance can also reshape traditional enterprises by leading the transformation and upgrading of various industries, improve the production efficiency of new enterprises, promote the upgrading of industrial structure, improve productivity, and expand the demand for labor. Zhang He believes that digital inclusive finance has brought new vitality to the economic development of western China and promoted the economic development of western China by improving the level of financial services for urban and rural areas, income growth, expansion of private enterprises and transformation and upgrading of industrial structure [11]. Chu Cuicui et al. constructed a spatial econometric model based on China's provincial-level panel data from 2011 to 2018, and the regression results showed that digital inclusive finance and economic growth showed a strong correlation, promoting the economic development of the province, but showing a negative spatial spillover effect on neighboring provinces [12]. Qian Haizhang et al. studied the panel data of 31 provinces from 2011 to 2018, and the research results show that digital inclusive finance has a more significant promoting effect on the economy in provinces with low urbanization rate and high material capital. Xiao Wei believes that the use depth, coverage breadth and digitalization degree of secondary indicators of digital inclusive finance all play a role in promoting economic growth [13], among which coverage breadth plays the most

significant role in narrowing regional economic gap, and the use depth plays a more significant role in promoting economic development [5].

Although there are many researches on digital inclusive finance for economic development in China, it can be found that there are few researches on the development of digital inclusive finance in Henan Province. This paper takes Henan Province as the research object, explores the impact of digital inclusive finance on economic development, and puts forward relevant countermeasures and suggestions accordingly.

### 3. RESEARCH DESIGN

#### 3.1. Data Sources and Variable Selection

This paper mainly uses panel data of 17 prefecture-level cities in Henan province from 2012 to 2019 to analyze the impact of digital inclusive finance on the economic development of Henan Province. The data are mainly from Statistical Yearbook of Henan Province. This paper selects the digital financial inclusion index compiled by the Research Center of Digital Financial Inclusion of Peking University as the core explanatory variable. The level of science and education, total factor productivity, consumption level and degree of opening to the outside world were taken as control variables.

(1) Explained variables. This paper uses the real per capita GDP converted to 2011 as the explained variable.

(2) Core explanatory variables. The digital financial inclusion index compiled by The Research Center for Digital Finance of Peking University and Ant Financial was selected as the core explanatory variable. The index can be used to comprehensively measure the development status of digital inclusive finance in 17 prefecture-level cities of Henan Province (except Jiyuan) from 2012 to 2019.

(3) Control variables. Considering that there are many factors that affect economic development, this paper selects foreign investment level, retail level of social consumer goods, local financial expenditure level and science and education expenditure level as control variables by referring to existing studies. Among them, the level of foreign investment is replaced by the proportion of the total amount of foreign investment actually used in the real GDP. The level of retail sales of consumer goods is replaced by the proportion of total retail sales of consumer goods in real GDP. The level of local fiscal expenditure is replaced by the proportion of total local fiscal expenditure in real GDP. The level of science and education is replaced by the proportion of science and technology expenditure and education expenditure in real GDP.

#### 3.2. Descriptive Analysis of Variables and Correlation Test

**Table 1.** Descriptive statistics of variables

Variable	MV	S.d	MIN	MAX
MAL	1.004	0.203	0.667	1.74
PRGDP	43888.21	17653.61	15043.34	97582.66
DF	174.567	55.812	63.75	288.587
EDU	0.338	0.009	0.18	0.056
MARKET	0.004	0.003	0.001	0.029
FE	0.16	0.332	0.104	0.231

The descriptive statistics of variables in Table 1 show that the mean value of total factor productivity of Henan Province from 2012 to 2019 is 1.004, the minimum value is 0.667, and the maximum value is 1.74. Total factor productivity can be further divided into efficiency progress and technical progress. From the perspective of efficiency progress, the mean value of

efficiency progress is 1.004, the standard deviation is 0.989, the minimum is 0.806, the maximum is 1.316, and the range is 0.51. From the perspective of technological progress, the mean value of technological progress is 1.000, the standard deviation is 0.178, the minimum value is 0.667, the maximum value is 1.74, and the range is 1.073. From the perspective of mean value, the mean of efficiency progress is large, and the average level of total factor productivity can be improved by improving technological progress. The average development level of digital inclusive finance is 174.567. Taking 2019 as an example, Zhengzhou has the highest development level of digital inclusive finance (288.586), and Zhoukou has the lowest development level (225.379). But it is 2.5 times higher than 63.75 in 2012.

**Table 2. Correlation test**

Variable	PRGDP	MAL	DF	FE	EDU	MARKET	OPEN
PRGDP	1.000						
MAL	0.056 (0.231)	1.000					
DF	0.441*** (0.003)	0.067* (0.076)	1.000				
FE	-0.100 (0.272)	0.435*** (0.004)	0.066* (0.080)	1.000			
EDU	-3.347** (0.012)	0.388* (0.089)	0.366** (0.006)	0.063* (0.066)	1.000		
MARKET	-0.228 (0.195)	-3.199** (0.018)	0.439* (0.072)	0.388*** (0.003)	0.063* (0.077)	1.000	
OPEN	-0.156 (0.538)	-0.229 (0.186)	-3.205** (0.017)	0.441* (0.071)	0.388*** (0.003)	0.446** (0.077)	1.000

Note: Square brackets are standard errors of estimation, \*, \*\* and \*\*\* mean significant at the level of 10%, 5% and 1% respectively, the same below

The results of variable correlation in Table 2 show that there is a significant positive correlation between digital financial inclusion and real PER capita GDP. The higher the total factor productivity, the higher the digital financial inclusion index, the more government assets investment, and the more significant the degree of openness, the higher the economic development level of Henan province. The significant negative correlation of science and education level may be due to the time lag effect of educational investment return. In the subsequent research, pulse model can be used to test the lag period, and model regression analysis can be conducted during the lag period.

#### 4. EMPIRICAL ANALYSIS

**Table 3. Distinguish the dimensions of digital inclusive finance**

	(1)	(2)	(3)	(4)	(5)	(6)
Wide coverage	0.318** (0.024)	0.287** (0.028)				
Use depth			0.029 (0.366)	0.046** (0.101)		
Degree of digitization					-0.068* (0.072)	-0.080** (0.032)
control variable	N	Y	N	Y	N	Y
Fixed effect	Y	Y	Y	Y	Y	Y
R2	0.971	0.972	0.965	0.968	0.965	0.968
Obs	136	136	136	136	136	136

According to the research system of Peking University Digital Financial Inclusion Index, digital financial inclusion can be divided into three dimensions for analysis. Respectively, the

depth of digital financial use, the breadth of digital financial services and the digitalization degree of digital inclusive finance. Analysis from these three directions can more profoundly and concretely analyze the influence of digital inclusive finance on the development of explained variables. In order to further study the impact mechanism of digital inclusive finance on the economy of Henan Province, this paper conducts a regression analysis on the impact of digital inclusive finance on the economy from the following three dimensions.

Table 3 of the estimation results show that cover the breadth and depth of use whether or not considering the control variables are to promote the economic development of Henan province, compared with the traditional financial institutions, the banking system, pratt & whitney financial broke the limit of time and space, can more easily integrated into the various regions, lowered the threshold of the financial services, It provides more capital sources for small and medium-sized enterprises in Henan province and promotes the overall economic development of Henan Province. The degree of digitalization inhibits the economic development of Henan Province. It may be that the degree of digitalization in Henan Province is not high enough, and the infrastructure is not perfect enough, so the degree of digitalization in each region cannot promote the economy.

The coverage breadth of digital inclusive finance has the greatest impact on the economic development of Henan Province. Every unit increase in the coverage breadth of digital inclusive finance will increase the economic development of Henan Province by 0.287 units on average, and it is significant in the 95% confidence interval. Digital inclusive finance enables more financial systems to enter into the urban and rural service system through financial deepening, and enables more urban enterprises, farmers and township individual businesses to raise funds more easily through digital inclusive finance, thus promoting the overall economic development of Henan Province. As can be seen from the above table, the economic development of Henan province will increase by 0.046 units on average when the use depth of digital inclusive finance increases by one unit.

## 5. CONCLUSIONS AND SUGGESTIONS

In recent years, with the development of digital inclusive finance, the economic promotion of digital inclusive finance is still very obvious. (1) Digital inclusive finance, by improving the accessibility of financial services and expanding the depth and breadth of digital inclusive finance, passes through the time and space constraints and fully releases the long tail effect of finance. (2) The extent of digital financial inclusion has the most obvious effect on economic growth, followed by the depth of its use on economic development. (3) There is some heterogeneity in the influence of other control variables on economic development, which may be because the financial level, science and education level of Henan province is not particularly perfect, resulting in the investment capital has not been timely transformed into economic growth. (4) The opening level of Henan Province is relatively low, with an average of only 0.0156, which may not play an obvious role in the economic growth of Henan Province, and may even show an inhibitory effect under certain circumstances, which may be caused by the time lag of investment. Based on the empirical conclusions, this paper puts forward the following three policy suggestions:

First, continue to deepen pratt & whitney financial breadth, let people in the poor areas more access to the pratt & whitney financial, primary task is to increase investment in Henan digital infrastructure construction, weak in economic development of villages and towns construction pratt & whitney financial base station, at the same time strengthen poverty areas in Henan province Internet penetration, pratt & whitney financial more based on the Internet, Using the Internet to develop digital inclusive finance in Henan Province, "the last kilometer".



Secondly, to improve the treatment of talent introduction in poor areas, it is necessary to increase investment in education capital. In addition to inadequate infrastructure, poor areas also lack financial talents. The main reason why most talents do not want to stay in villages and towns is that their development level is limited and their welfare benefits are not generous enough. Therefore, it is necessary to improve the treatment of talent introduction, and at the same time increase the investment of township education capital, to cultivate more local talents and drive the development of township economy.

Again, in henan province should expand the degree of opening to the outside world, foreign capital investment in infrastructure in henan province have a vital role, foreign capital increase to promote the development of henan industrial level, in turn, promote the government fiscal revenue, fiscal expenditure will also expand, can increase infrastructure projects and the direction of the education investment of henan province.

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