How Digital Inclusive Finance influence Income Gap in Shaanxi Province——Based on Regression Analysis

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Abstract. Digital inclusive finance has a significant effect on reducing urban-rural income inequality. According to the relevant data of Shaanxi Province from 2011 to 2018, this article constructs a regression model for empirical analysis. The results show that increasing digital inclusive finance in Shaanxi can significantly reduce the income gap, which will guide the direction for reducing the income gap between urban and rural in Shaanxi Province in the future. In addition, the fiscal expenditure of Shaanxi Province will increase the income gap. Therefore, Shaanxi Province should increase the inclination of fiscal payment to rural areas, promote rural construction, and drive the income of residents to increase, thereby reducing the income gap between urban and rural area.

Keywords: Digital Inclusive Finance; Regression Analysis; Income Gap; Urban-rural

1. Introduction

The income gap has always been a problem of widespread concern. In recent years, China’s the income gap has generally shown a growing trend [1]. The income gap between urban and rural directly indicates the living standards of residents between urban and rural areas. Excessive income gap will lead to social and economic problems. Unbalanced economic development will affect the realization of China's general goal of common prosperity. In recent years, income gap has been a problem that cannot be completely solved. In this scenario, Inclusive financing has taken on a new connotation. Inclusive finance is a system that can provide financial services effectively and comprehensively to all social strata and groups.[2], and provides convenience for all social classes to use financial tools. In order to achieve the purpose of enabling financial services to be used by all classes and groups, traditional inclusive finance often adopts offline physical outlets. Due to the huge number of cities and villages, it is difficult and costly to fully benefit. Therefore, The introduction of digital inclusive finance offers an easy way to solve complex problems and costs. Digital inclusive finance is the digitization of inclusive finance. By combining with technical tools such as the Internet, it has the advantages of large coverage, variety, and low cost [3].

2. Literature Review

The research on how finance influence the income gap has started a long time ago, but many scholars disagree on it. Some believe that finance can reduce the income gap by directly bringing funds to rural residents or stimulating investment to create employment; The threshold will be more inclined to bring more opportunities for the rich, and it will be more difficult for the poor to obtain opportunities, thus widening the income gap between them. With the introduction of the concept of inclusive finance, many scholars have an optimistic attitude towards inclusive finance due to its inclusive nature. Germana Corrado and others believe that inclusive finance can lower the threshold of finance, so as to benefit more people and reduce the gap between them [4]. Yingjie Sun have proved through testing that inclusive finance has reduced the income gap in China [5]. Therefore, inclusive finance has a regulating effect on the urban-rural income gap, but the popularization of inclusive finance relies on the establishment of physical outlets, it consumes lots of material resources, manpower and time, and it is difficult to spread all over the country in a short time. The digital inclusive finance provides a new direction for reducing the income gap between urban areas and rural areas.
Jiajin Lv discovered that information technology has expanded the coverage of finance and brought convenience to the use of finance [6]. Qinyi Gong examined the effect of digital inclusive finance in narrowing the income gap under different economic conditions, and the results show that digital inclusive finance has a more significant effect on narrowing the income gap in economically underdeveloped regions [7]. Based on this, the role of digital inclusive finance in narrowing the income gap can be initially clarified.

However, the current research mainly focused on how digital inclusive finance affects China's overall income gap and lacks research on digital inclusive finance from a provincial perspective. Therefore, this paper aims to analyze the relationship between digital inclusive finance and income gap in Shaanxi Province.

3. Model construction and index selection

3.1 Variable selection and data description

1. Explained variable: Based on previous research, this article chooses the Theil index to measure the income gap in Shaanxi Province between urban areas and rural areas [8]. The explained variable is Theil (urban-rural income gap):

\[ Theil = \frac{I_r}{I} \ln \frac{I_r/I}{P_r/P} + \frac{I_u}{I} \ln \frac{I_u/I}{P_u/P} \]  

where \( I_r \) represents the income of rural areas, \( I_u \) represents the income of urban areas; While \( P_r \) represents the population of rural areas, \( P_u \) represents the income of urban areas; I and P represent total income and total population, respectively.

2. Explanatory variable: Digital Financial Inclusion (DFI). This article uses the Peking University Digital Financial Inclusion Index [9], which covers credit, insurance, investment, payment, monetary funds and other data, and is reliable.

3. Control variables: According to the relevant literature, the selected control variables are as follows: (1) Local economic development level (PGDP): Differences in economic development in different regions have a certain impact on the results, so the GDP per capita is used to measure the development level of local economy. At the same time, for the accuracy of the results, the logarithm is taken during the calculation. (2) Fiscal Expenditure (GOV): The government will adopt policy measures to adjust the income gap, so it is expressed as the proportion of fiscal expenditure in GDP, and the logarithm is also taken in the calculation.

3.2 The Establishment of model

In view of the development status of digital inclusive finance and the income gap in Shaanxi Province between urban and rural, the regress analyse model of panel data is constructed as follows:

\[ Theil_{it} = \alpha + \beta_1 DFI + \beta_2 \ln GOV_{it} + \beta_3 \ln PGDP_{it} + \varepsilon_{it} \]  

where i represents different prefecture-level cities in Shaanxi Province, and t represents the year. This paper selects 2011-2018 digital financial inclusion and per capita GDP, government expenditure, residents' income and population indicators in Shaanxi Province for quantitative measurement. The data comes from the "Shaanxi Statistical Yearbook" and the "China Digital Financial Inclusion Development Index (Phase II)"
4. Results

The results of statistics of the data are shown in the following table:

**Figure 1. statistics result graph**

| Variable | Mean   | Std. Dev. | Min   | Max   |
|----------|--------|-----------|-------|-------|
| DIF      | 184.3225 | 85.85466 | 40.96 | 295.9475 |
| LnPGDP   | 10.73786 | .1912658 | 10.41823 | 11.02051 |
| LnGOV    | 8.301644 | .196472 | 7.983034 | 8.575915 |
| Theil    | .113808 | .0532144 | .0508038 | .2034488 |

The regression results are as follows:

**Figure 2. regression results graph**

| Theil    | Coef.   | Std. Err. | t    | P>t  | [95% Conf. Interval] |
|----------|---------|-----------|------|------|----------------------|
| DIF      | -.0015118 | .0002617 | -5.78 | 0.004 | -.0022384 | -.0007851 |
| PGDP     | .0477565 | .0450805 | 1.06 | 0.349 | -.0077469 | .17292 |
| GOV      | .3460553 | .1125304 | 3.08 | 0.037 | .0336209 | .6584897 |
| _cons    | -2.995598 | .9378322 | -3.19 | 0.033 | -5.599437 | -.391758 |

From the above regression analysis results, it can be concluded that DIF exhibits a negative effect at the 5% significance level, and its regression coefficient is -0.0015118. This shows that the development of digital inclusive finance in Shaanxi Province can effectively bridge the income gap between urban and rural areas. Therefore, digital inclusive finance in Shaanxi Province will enable the balanced development of urban and rural economy in Shaanxi Province. Moreover, according to the control variables, the fiscal expenditure (GOV) shows a positive effect at the 5% significance level, which indicates that fiscal expenditure in Shaanxi Province will widen the income gap for the fact that fiscal expenditure in Shaanxi Province is mainly used for urban development, which has a significant impact on the development of rural. Therefore, the Shaanxi provincial government should change its development strategy, shift its finances to rural areas, increase the financial allocation to rural region and improve the construction of infrastructure in rural region, so as to drive the growth in income of rural residents. According to the result, other control variables did not have much impact on the income gap in Shaanxi Province between urban and rural.

5. Conclusions

According to the result of the empirical analysis of the relationship between digital inclusive finance and the income gap in Shaanxi Province above, it can conclude that digital inclusive finance in Shaanxi Province is an effective way to reduce the income gap. Meanwhile, it can also be concluded from the results that the fiscal expenditure of Shaanxi Province may not have significant impact on promoting the development of rural. In the future, the fiscal expenditure of Shaanxi Province should be appropriately tilted towards rural areas, in order to enhance the construction in rural region and increase the income of residents in rural region, thereby further reducing the income gap between urban and rural.

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