Research on the Influence of Rural Human Capital on Rural Economic Growth

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Abstract: Human capital is an important driving force for economic growth. On the one hand, it plays a direct role in promoting economic growth as a factor of production; on the other hand, it also has the effect of increasing the productivity of other factors and indirectly promoting economic growth. As a large agricultural province in southwest China, Yunnan Province has a large rural population, but the development of rural human resources is relatively backward, which has largely restricted the development of rural economy. In the context of rural revitalization strategy, the study of the relationship between rural human capital and rural economic growth in Yunnan Province has great practical significance. The purpose of this article is to examine the impact of rural human capital on rural economic development, and empirically estimate the specific state of the impact, with a view to providing effective policy inspiration for optimizing rural human capital structure and narrowing the urban-rural gap in Yunnan Province.

1. Introduction

On October 18, 2017, the report of the 19th National Congress of the Communist Party of China proposed rural revitalization strategy. The report of the Nineteenth National Congress pointed out that the issue of agriculture and rural peasants is a fundamental issue related to the national economy and people's livelihood. We must always take the issue of "three issues of agriculture, the countryside and farmers" as the top priority of the party's work and implement the rural revitalization strategy. Human capital is an indispensable production input factor for increasing output. It can innovate and generate more driving factors for economic growth, and is an inexhaustible driving force for sustainable economic growth. How to quickly promote the development of agriculture and rural areas and ensure that farmers live and work in peace is the only way to promote rural reform and development and accelerate rural economic construction. The optimization of the rural human capital structure is undoubtedly the fundamental way to achieve sustainable growth of the rural economy, and also to solve the "three issues of agriculture, the countryside and farmers " .In order to balance the regional economic development level and reduce the gap between urban and rural economic development, human capital should be used as a breakthrough for coordinated economic development. Therefore, in the context of rural revitalization, the optimization of rural human capital has become an important driving force for rural economic development. Yunnan Province is an important frontier province and a multi-ethnic settlement in China, and a major agricultural province in the southwest. Its development status is of great significance for accelerating China's economic development. However, the GDP of Yunnan Province in 2018 was 1,788.112 billion yuan, which is still a certain distance from other provinces. Compared with other provinces and cities, rural human capital in Yunnan is also extremely scarce, and there is still much room for improvement in its role in economic growth. In view of this, the study of rural human capital and rural economic growth in Yunnan Province has great practical significance. The purpose of this article is to examine the impact of rural human capital on rural economic development, and empirically estimate the specific

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state of the impact, with a view to providing effective policy inspiration for optimizing rural human capital structure and narrowing the urban-rural gap in Yunnan Province.

2. Analysis of the Status Quo of Rural Economy in Yunnan Province

Since the introduction of the rural revitalization strategy, the national government has proposed a series of policies that support agriculture and benefit farmers. Central and provincial finances have continuously increased their investment in the development of agriculture and rural economy in Yunnan Province. Yunnan Province has also actively implemented the state's grants to agriculture, rural areas, and farmers. The preferential policies and preferential support provided by China have effectively promoted the development of the agricultural and rural economy in Yunnan Province. However, due to the weak foundation, there are also many problems and deficiencies in the development of Yunnan's rural areas, making Yunnan's rural areas relatively backward compared to other areas. The following section analyzes and discusses the number of rural employees, the level of education per capita in rural areas, the GDP of the primary industry, and the rural per capita net income, and finds out the problems in the development of rural economy in Yunnan Province. All data used in this paper are from China Statistical Yearbook.

2.1 Number of Rural Employees in Yunnan Province

Yunnan Province is located in southwestern China. By the end of 2017, the total population of Yunnan Province was 48 million, the rural population was 25.44 million, accounting for 53% of the total population of the province, and the number of rural employees was 21.6857 million. Therefore, rural Yunnan has very rich potential human capital.

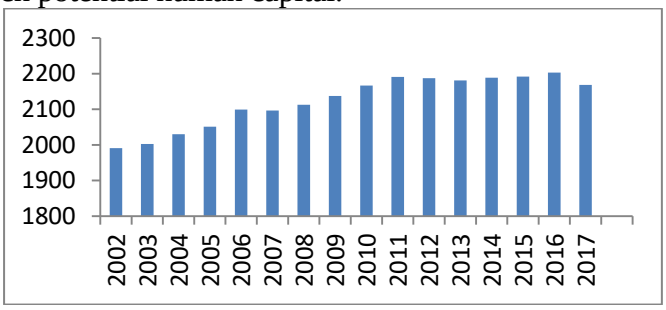

Fig.1 Rural Employment.

As can be seen from table above, the number of rural laborers in Yunnan increased from 2002 to 2017. The number of people in the primary industry in rural areas has been decreasing year by year, and the number of people in the secondary industry has been increasing, but the proportion of total employment has declined, while the number of people in the tertiary industry has been increasing year by year. The possible reasons are mainly: first, in the past fifteen years, the number of enterprises in Yunnan has increased, and the number of enterprises has increased; second, the urbanization population has increased significantly, which has increased the demand for urban housing and thus the construction industry; the third is that with the increase in the number of years of rural labor per capita and the expansion of rural vocational education, more rural labor can be qualified for higher-level jobs, and the accommodation, catering, and wholesale and retail industries in the third industry are relatively saturated. While information technology, science, education, culture, health, and other industries require practitioners to have a higher cultural quality, but the rural employees in Yunnan have a small proportion of secondary and tertiary education. From the above analysis, we can know that increasing the education level of rural employees in Yunnan Province can increase the proportion of employees in the secondary and tertiary industries, thereby accelerating the development of the secondary and tertiary industries, ensuring the smooth transfer of rural surplus labor in Yunnan, and promoting the optimization and upgrading of the industrial structure.

2.2 Per Capita Education Level in Rural Areas of Yunnan Province

Education is an effective investment and it plays a vital role in promoting the development and accumulation of human capital. People acquire knowledge through education, then process and deepen knowledge according to their own needs, improve their quality, promote the improvement of labor productivity, promote economic benefits, achieve economic growth, and promote social development. This article mainly analyzes and explores the cultural literacy of rural employees in Yunnan based on their education level and years of education per capita.

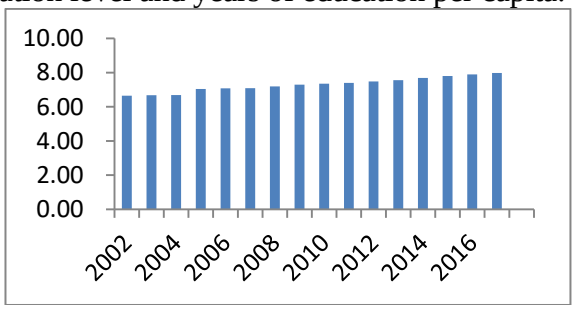

Fig.2 Average Years of Education.

As can be seen from table above, the average years of education in rural areas of Yunnan Province increased from 2002 to 2017, indicating that rural education in Yunnan Province has achieved certain results. The average years of education in rural Yunnan has increased from 6.65 in 2002 to 7.98 in 2012, which is equivalent to the level of junior high school. During the fifteen years, the number of years of per capita education has only increased by 1.33 years, and the growth rate has been slow. On the whole, although the educational level of rural employees in Yunnan Province is gradually increasing, high-quality talents are still scarce.

2.3 Growth of GDP in the Primary Industry

It can be seen from table below that from 2012 to 2017, the GDP of the primary industry in Yunnan Province showed a growing trend. Without considering the price factor, the added value of the primary industry in Yunnan Province increased by nearly 6 times from 46.344 billion yuan in 2002 to 249.886 billion yuan in 2012. From the growth rate, we can find that the GDP of the primary industry in Yunnan Province achieved a year-on-year growth rate of about 6.5% between 2007 and 2008 and between 2012 and 2013. On the whole, the GDP of the primary industry in Yunnan Province has shown a relatively large growth trend over the past 15 years.

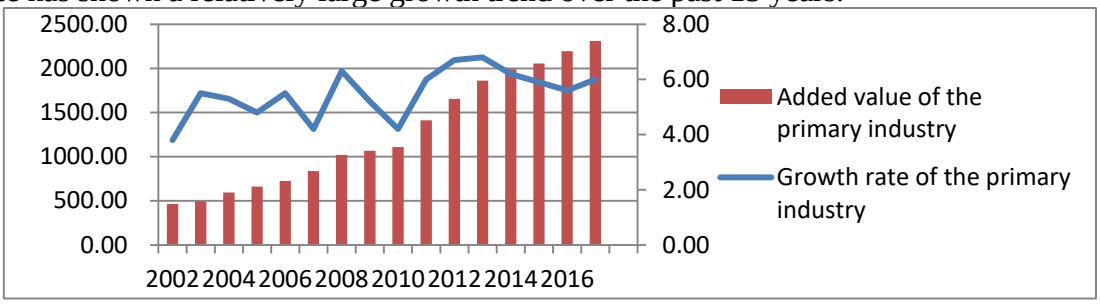

Fig.3 Added Value of the Primary Industry.

2.4 Development Status of Rural Per Capita Net Income

It can be seen from figure below that the per capita net income of rural areas in Yunnan Province in the fifteen years from 2002 to 2017 showed a growing trend. Without considering the price, the per capita net income of rural Yunnan increased from 1,609 yuan in 2002 to 9,862 yuan in 2017, an increase of 6.13 times. From 2002 to 2009, the growth rate of rural per capita net income in Yunnan showed a gentle upward trend. And from 2009 to 2017, rural per capita net income increased significantly. However, the year-on-year growth rate dropped in 2009, possibly due to the lag of the

financial crisis. In general, the per capita net income of rural Yunnan has been increasing year by year, and the development trend is good.

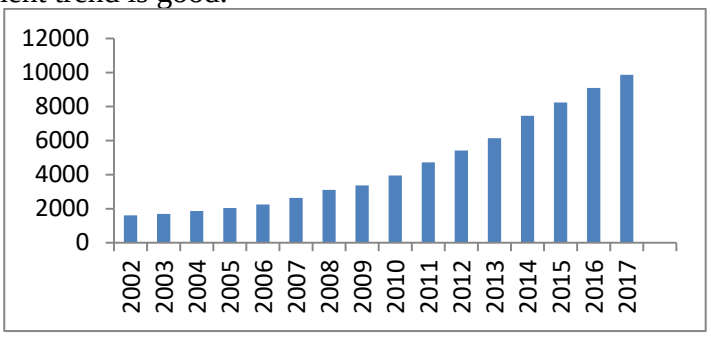

Fig.4 Per capita income of farmers.

3. Empirical Analyses

3.1 Indicator Selection and Data Source

This article mainly studies the relationship between rural human capital and Rural economic growth in Yunnan Province. This article selects three variables.

Table 1 Variable Descriptive Statistics.

	K	W	Y
Mean	0.17	7.30	5.50
Median	0.17	7.32	5.56
Maximum	0.29	7.98	6.80
Minimum	0.07	6.65	3.80
Std.Dev.	0.07	0.42	0.88
Skewness	-0.05	-0.07	-0.45
Kurtosis	1.57	2.01	2.29

The output index Y, which measures the level of Rural economic growth, is represented by the added value of the primary industry; the growth rate of rural physical capital stock is represented by K; the knowledge-based human capital W is represented by the number of years of education per capita. In the years of education, we set the value of the years of education without attending school, primary school, junior high school, high school and junior college, junior college and above as 2 years, 6 years, 9 years, 12 years and 15 years. The sample interval selected in this paper is from 2002 to 2017. The index data is mainly taken from the Yunnan Statistical Yearbook and China Rural Statistical Yearbook. The statistical characteristics of the selected index variables are shown in Table 1. Prior to the empirical analysis, the price factor elimination process is performed on the variables that are greatly affected by the price factor.

3.2 Unit Root Test

Before analyzing the impact of rural human capital on Rural economic growth in detail, it is necessary to perform unit root tests on time series data to avoid false regression caused by non-stationary data estimation. To this end, this study uses the ADF test to perform the unit root test. The unit root test results in Table 2 are obtained by E-Views 6.0 software. As can be seen from Table 2, the time series are non-stationary series, but there is no unit root after the first order difference of each variable, that is, each variable Uniform first-order simple integer, so it shows that the variables selected in this paper can be modeled by VAR.

Table 2 Unit Root Test Results.

Variable	Test Type(c, t, p)	ADF Statistics	5% Critical Value	Prob	Conclusion
Y	(0, 0, 0)	0.110715	-1.966270	0.7028	stationary
dY1	(0, 1, 0)	-5.835364	-1.968430	0.0000	non-stationary
K	(0, 0, 0)	0.527369	-1.966270	0.8179	stationary
dK1	(0, 1, 0)	-4.669260	-1.968430	0.0002	non-stationary
W	(0, 0, 0)	4.247023	-1.970978	0.9998	stationary
dW	(c, 1, 0)	-5.032317	-3.119910	0.0020	non-stationary

3.3 Parameter Estimation

Table 3 Determination of Optimal Lag Order.

Lag	LogL	LR	FPE	AIC	SC
0	6.566799	NA	0.000116	-0.548738	-0.418365
1	27.21220	28.58594	2.06e-05	-2.340338	-1.818846
2	38.41722	10.34310	2.02e-05	-2.679573	-1.766962
3	97.87369	27.44145*	2.61e-08*	-10.44211*	-9.138377*

For the selection process of the optimal lag order, the AIC criterion and the SC criterion are used for selection. Since the lag order of the VAR model is reduced by 1, the optimal lag order of the cointegration test model can be obtained, so the lag order of the VAR model in Table 3 We get 2 as the optimal lag order. Model the VAR model for the stationary series according to Table 2. It can be seen that the Rural economic growth level has a high degree of good fitting. It shows that the rural physical capital stock and knowledge-based human capital have a greater impact on the level of rural economic growth.

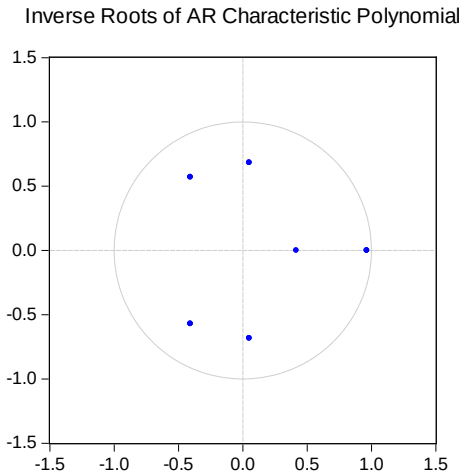

Fig.5 Inverse Roots of AR Characteristic Polynomial.

The AR ROOT image test of the VAR model shows that the inverses of the moduli of all feature roots fall in the unit circle, indicating that the estimated VAR model is stable.

3.4 Impulse Response Function

The graph of the impulse response function of the VAR model after the impact is as follows:

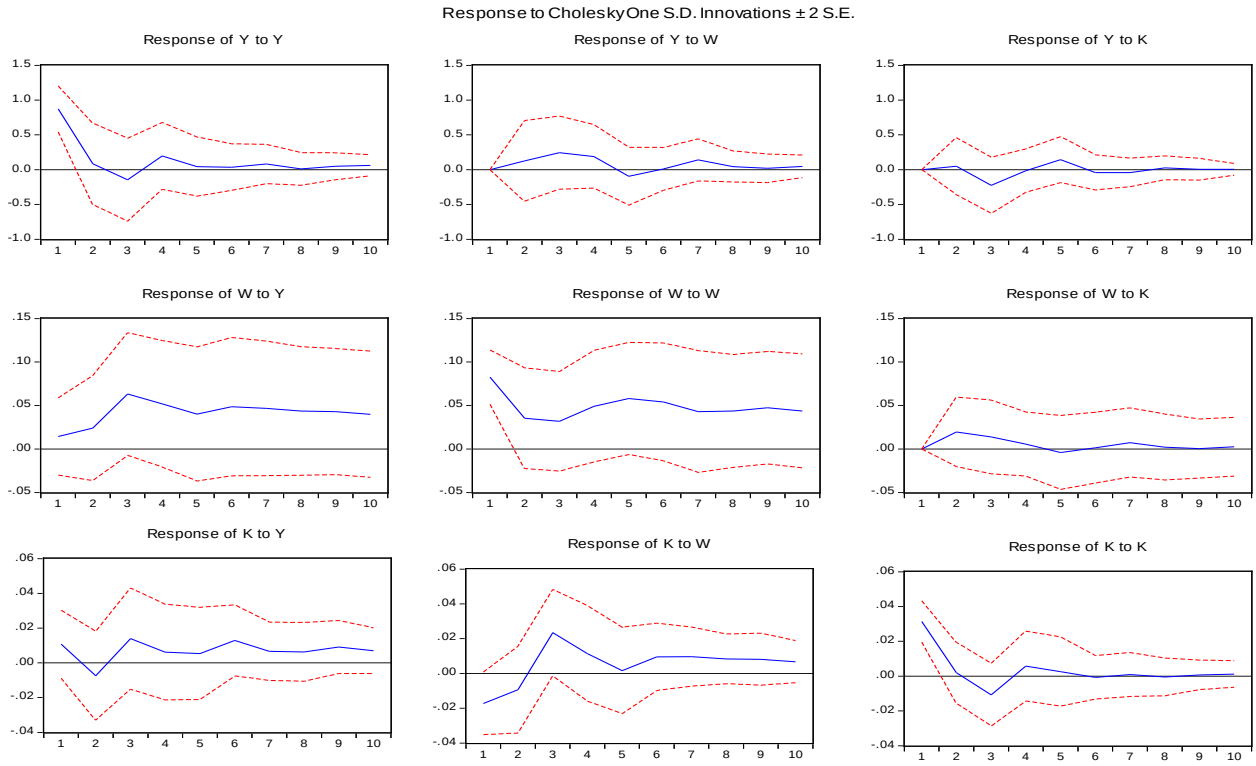

Fig.6 lmpulse Response Function.

As shown in Figure 6, after the positive impact of knowledge-based human capital on rural economic growth, rural economic growth has shown a strong growth trend in the first and second periods, and over time, after the sixth issue, the impact of this shock has been moderated, but the impact of knowledge-based human capital on agricultural economic growth has continued to grow. After the rural physical capital stock has given a positive impact to rural economic growth, rural economic growth has shown a strong growth trend in the second and third phases. With the passage of time, the impact of this shock tends to decrease after the sixth period, indicating that rural physical capital The impact of stocks on Rural economic growth will be even greater in the short term.

3.5 Variance Decomposition

The results of the variance decomposition of exchange rate changes are as follows:

Table 4 Variance Decomposition.

Variance Decomposition of y				
Period	S.E.	Y	W	K
1	0.872532	100.0000	0.000000	0.000000
2	0.886805	97.70736	1.985400	0.307239
3	0.958477	85.98222	8.187281	5.830501
4	0.996704	83.40937	11.17816	5.412476
5	1.012205	81.05893	11.70943	7.231641
6	1.013690	80.94101	11.68541	7.373579
7	1.027260	79.42802	13.23420	7.337780
8	1.028564	79.23546	13.38721	7.377335
9	1.029863	79.25316	13.38586	7.360980
10	1.032782	79.17042	13.50821	7.321370

As shown in Table 4, it can be clearly seen that during the decomposition of the variance of Rural economic growth, the stocks of knowledge-based human capital and rural physical capital have little impact on Rural economic growth in the first few periods. Over time, the proportion of variance that can be explained by the stock of knowledge-based human capital and rural physical capital is

gradually increasing, reaching 13% and 7% in the tenth period. From the decomposition results, as time goes by, knowledge-based human capital and rural The stronger the explanatory power of the physical capital stock, it also shows that knowledge human capital and rural physical capital stock have a longer time to affect Rural economic growth. Compared with the stock of rural physical capital, changes in knowledge-based human capital can better explain changes in Rural economic growth, but their proportions also have lower problems.

4. Policy Recommendations

The increase of rural human capital in Yunnan has a positive effect on rural economic growth, but because of the low stock of rural human capital in Yunnan, the promotion of rural economic growth is relatively limited. Therefore, this article puts forward the following countermeasures and suggestions on the actual situation of rural areas in Yunnan Province. First, strengthening investment in rural education and narrowing the education gap between urban and rural areas. The state should vigorously increase support for rural education. In rural Yunnan, teaching equipment is poor, teaching environment is poor, and teachers are insufficient. Therefore, the government should give full play to its main role in education investment, actively introduce high-quality teachers, strictly monitor the direction of education funding, and ensure that education funding is genuine. Second, we will increase investment in public goods in rural areas and improve the rural talent introduction mechanism. The government needs to create a good external environment for the introduction of high-quality talent. Continuously improve the social security system in rural areas of Yunnan Province, speed up the construction of social security systems such as old-age care, medical care, unemployment, and work injury, and gradually establish and improve relevant policies and regulations to protect the flow of talents. Third, establish and improve the rural education and training system. The government should strengthen basic knowledge training and specialized skills training for rural labor. At the same time, schools and enterprises should be encouraged to cooperate with each other to jointly train high-quality and highly-skilled talents to meet the needs of rural economic development and promote better and faster economic development. The government should encourage more private enterprises to engage in the production and processing of agricultural products, allow more agricultural workers and enterprises to cooperate with each other, and establish a complete rural industrial chain.

References

[1] Dmitry Skorobogatchenko, Sergey Viselskiy, Vitaly Borovik, Vitaly Borovik, Irina Bogomolova, Sergey Bogomolov. Economic efficiency growth of agricultural roads' construction in the region [P]. Proceedings of the Volgograd State University International Scientific Conference "Competitive, Sustainable and Safe Development of the Regional Economy" (CSSDRE 2019), 2019.

[2] Leigh Ann Simmons, Bonnie Braun, David W. Wright, Scott R. Miller. Human Capital, Social Support, and Economic Well-being among Rural, Low-income Mothers: A Latent Growth Curve Analysis [J]. Journal of Family and Economic Issues, 2007, 28(4).

[3] Acemoglu, D.Microfoundation for social increasing returens in human capital accumulation [J]. Quarterly Journal of Economics, 1996, (3): 779-804.

[4] Benhabib, J. and Spiegel, Mark M. The role of human capital in economic development evidence from aggregate cross-country data [J]. Journal of Monetary Economics, 1994, (34): 143-173.

[5] Caselli, Franceso and Feyrer, James. The Marginal Product of Capital [J]. Quarterly Journal of Economics, 2006, (122): 535-568.

[6] Lucas R E., On the Mechanics of Economic Development [J]. Journal of Monetary Economics, 1988(88): 3-42.

[7] Mankiw N Gregory, David Romer, David N Weil. A contribution to the empirics of economic growth [J]. Quarterly Journal of Economics, 1992, 107(2): 407-437.

[8] Yi Liu, Jiawen Peng, and Zhihao Yu. 2018. Big Data Platform Architecture under The Background of Financial Technology: In The Insurance Industry As An Example. In Proceedings of the 2018 International Conference on Big Data Engineering and Technology (BDET 2018). ACM, New York, NY, USA, 31-35.

[9] Zhang Yanjun, Yang Xiaodong, Liu Yi, Zheng Dayuan, Bi Shujun. Research on the Frame of Intelligent Inspection Platform Based on Spatio-temporal Data. Computer & Digital Engineering [J], 2019, 47(03): 616-619+637.