

Economic Effect of Rural Labor Transfer in China

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ABSTRACT

With the continuous development of China's economy and the acceleration of urbanization, more and more rural labor force is gradually transferred to cities and non-agricultural industries. Although the transfer of rural labor force can increase farmers' income, improve farmers' quality of life, and accelerate the process of urbanization and agricultural modernization in China, the unreasonable transfer of rural labor force has also brought some problems to China's agricultural development. This paper mainly through the method of combining theoretical derivation and empirical analysis, using the data from 2010 to 2015 to analyze, study the influence of rural labor transfer on agricultural production, explore the relationship between rural labor transfer and agricultural development and provide relevant policy suggestions.

1. Introduction

As a large agricultural country, the importance of agriculture to our country is self-evident, but our country is in the stage of development from agricultural country to industrial country, so the study of rural labor transfer is necessary. In addition, China is a large population country with abundant labor resources, so the rational use and allocation of labor resources is very important. Studying the impact of rural labor transfer on agricultural development is conducive to achieving the economic goal of full employment. As a developing country, one of the most important features of China's economic growth and agricultural transformation is the transfer of rural labor force from the agricultural sector to the non-agricultural sector and from rural areas to cities. The transfer of rural labor force is an important way for developing countries to accelerate urbanization, increase farmers' income and improve rural comprehensive income^[1].

At present, China's labor supply and demand relationship is undergoing new changes, because China

is in a low fertility level for a long time, resulting in a shortage of labor resources in China, the shortage of working age population. According to statistics, from 2006 to 2015, the growth rate of China's working-age population aged 15-64 decreased year by year, and even showed negative growth from 2013 to 2015. Although the two-child policy was implemented in 2015, the labor institution did not change significantly in a short period of time. At the same time, the structural contradiction of employment was more prominent, and periodic unemployment would often occur. For the labor force transferred from rural areas, it would bear greater impact of periodic unemployment. So how to use rural labor more efficiently and reasonably is a big problem in the labor shortage. Greater government attention and policy support are needed^[2]. Since the reform and opening up in 1978, more and more rural labor began to transfer to the city, which has a great impact on China's agricultural development.

According to statistics, the number of rural labor force

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employed outside China increased from 2 million in 1983 to 282 million in 2016, an increase of nearly 141 times over the past 33 years. In 2016, a total of 1.314 million new jobs were created in cities and towns, and the total number of migrant workers in China was 2.81.71 million, including 16.934 million migrant workers. More and more rural labor force began to shift to cities, which also had a certain impact on China's agricultural development. On the one hand, the transfer of rural labor accelerates the economic development of rural and underdeveloped areas, on the other hand, it also contributes to the economic development of cities and developed areas. The transfer of rural labor force has promoted scientific development, accelerated the process of industrialization and urbanization, promoted the construction of new socialist countryside, and made contributions to accelerating the integration of urban and rural development in China. Therefore, the study of rural labor transfer on agricultural development is very meaningful^[3].

The main structure of this paper is as follows: The second part is literature review. The third part is the theoretical analysis of the impact of rural labor transfer on agricultural development, which mainly includes Lewis model, Lanis-Fei model and agricultural development theory. The fourth part is the analysis of the current situation of rural labor transfer in China. The fifth part is the empirical analysis of the impact of rural labor transfer on agricultural development. It mainly studies the impact of rural labor transfer on agricultural production by establishing the Douglas production function and agricultural production function and conducting regression analysis. The sixth part is the conclusion and policy analysis, and puts forward suggestions on how to efficiently and reasonably transfer rural labor in China.

2. Literature Review

In today's scarce labor resources, the transfer of rural labor resources research is very necessary, since the reform and opening up, the impact of rural labor transfer research has been carried out, this paper mainly from two aspects to analyze the transfer of rural labor, on the one hand is the impact of rural labor transfer factors, on the other hand is the impact of rural labor transfer. Institutional ownership has a promoting effect on enterprise innovation.

Zhang Zhixin (2011) found that due to the transfer of a large number of young rural labor to the city, the majority of the population in rural areas are the elderly, women and children. The labor time of these detainees increases significantly, and even exceeds the labor time of young labor under the same conditions^[4]. Wu (2017) analyzed from the three aspects of human capital loss, capital flow

and land transfer that there are still many problems to be solved in the process of rural labor transfer. For example, the transfer of rural labor will widen the economic differences between the exporting areas and other regions, and will have a negative impact on the development of agricultural economy^[5]. He believes that there are still many problems in the development of urbanization, which will have a negative impact on the continued transfer of rural labor in China. Li Xuhui et al. (2018) found that the flow of rural labor outside the province will increase many additional working hours for the left-behind population in rural areas, which will have a negative impact on rural development in China^[6]. By analyzing the data of Shandong, Zhejiang, Henan, Jiangsu and Shanxi from 2004 to 2010, Ge Qingen et al. (2014) concluded that the transfer of rural labor has had a negative impact on agricultural production. China's Lewis turning point has come, but in today's economic structure, there are still more rural labors in urgent need of outward transfer^[7].

On the other hand, the researchers, represented by Mingdou (2012), concluded through a comparative analysis of the data that even if a large number of rural labors were transferred to cities, rural surplus labor could still maintain normal agricultural production^[8]. Shuo (2005) through the analysis of rural labor transfer in Henan Province concluded that the transfer of rural labor to urban and non-agricultural industries can increase farmers' income, improve the quality of life of farmers, but also can increase the overall income of rural areas, which has played a great role in accelerating the development of urbanization in China^[9]. Wen (2010) pointed out that even if the transfer of rural labor force will cause some adverse effects on agricultural development, but in general, the transfer of rural labor force will increase farmers' capital investment in agricultural production, thereby promoting China's agricultural development^[10].

Although many scholars have different views on the impact of the transfer of rural labor force, there are still more and more rural labor force transferring to cities and non-agricultural industries, which is bound to affect the development of agriculture in China. Therefore, this paper mainly analyzes the impact of rural labor force transfer on agricultural development from the perspective of agricultural production, and puts forward relevant policy suggestions.

3. Current Situation of Rural Labor Transfer in China

3.1 Urban and Rural Employment Status

China's total employment showed a rising trend year by

year, from the perspective of urban and rural employment, China's rural employment is less and less, more and more urban employment, the following table shows :

Table 1. Population of Urban and Rural Employment in China 2010-2015

particular year	Employment (thousands)	Urban employed persons (thousands)	Rural employed persons (thousands)
2010	76105	34687	41418
2011	76420	35914	40506
2012	76704	37102	39602
2013	76977	38240	38737
2014	77253	39310	37943
2015	77451	40410	37041

Source: annual data released by the National Bureau of Statistics in 2016

Table 2. Urban and rural population in China, 2010-2015

particular year	Urban population (thousands)	Rural population (thousands)
2010	66978	67113
2011	69079	65656
2012	71182	64222
2013	73111	62961
2014	74916	61866
2015	77116	60346

Data source: the population sampling survey data of the National Bureau of Statistics.

The data of 2010 are the estimated data of the current population census, and the data of the remaining years are the estimated data of the annual population sampling survey.

In general, the total employment in China shows an upward trend year by year. However, from the perspective of separation, the change trend of rural employment and urban employment in China is completely opposite. From the perspective of total population, the number of urban population and rural population in China also show the same trend. Therefore, it can be seen that the reason why the change trend of rural employment and urban employment is opposite is that more and more rural labor force is transferred to cities and can settle in cities. More and more rural household registration is transferred to urban household registration.

3.2 Regional Distribution of Labor Transfer

Table 3. Regional distribution of migrant workers in export and import areas (in thousands)

region	2015	2016	increment
By output:			
the east part	10300	10400	100
Central region	9174	9279	105
western regions	7378	7563	185
northeast	895	929	34
By input :			
the east part	16008	15960	-48
Central region	5599	5746	147
western regions	5209	5484	275
northeast	859	904	45
In other areas	72	77	5

Note : Other areas refer to Hong Kong, Macao, Taiwan and abroad. Data sources : National Bureau of Statistics 2016 migrant workers monitoring report

From Table 3, it can be seen that the fastest growing number of migrant workers in the western region from 2015 to 2016. According to the input area, migrant workers in the eastern region have a negative growth. It can be seen that from the geographical point of view, the trend of China's rural labor force outward transfer is from the eastern region. The reason for this phenomenon is partly due to policy reasons, mainly the proposal and implementation of China's "Belt and Road" policy, and the other part is the spontaneous role of China's labor market. Because most of the knowledge level of China's rural labor force is not high, and the low-quality labor market in the eastern region of China has become saturated, so more and more rural labor forces choose to transfer to other economically underdeveloped areas.

3.3 Age Structure of Rural Labour Force

Table 4. Age composition of rural migrant workers in China from 2012 to 2016 (unit: %)

Ages	2012	2013	2014	2015
16-20 jahr	4.9	4.7	3.5	3.7
21-30 jahr	31.9	30.8	30.2	29.2
31-40 jahr	22.5	22.9	22.8	22.3
41-50 jahr	25.6	26.4	26.4	26.9
50 aged above	15.1	15.2	17.1	17.9

Data Source: National Bureau of Statistics 2016 migrant workers monitoring report

From Table 4, China's rural labor force is still dominated by young adults, but the proportion continues to decline, the average age of rural labor continues to

increase. From the average age, the average age of rural labor force in 2016 was 39 years old, which was 0.4 years higher than that of last year. In terms of age structure, the proportion of rural labour under 40 is 53.9 per cent, down 1.3 percentage points from the previous year. The proportion of rural labour over 50 is 19.2 per cent, an increase of 1.3 percentage points over the previous year. It can also be seen that China's rural labor aging phenomenon is serious, which is an important problem in China's labor market.

3.4 Education Level of Rural Labour Force

Table 5. Composition of educational level of rural migrant workers in China from 2012 to 2016

level of education (unit : %)	2012	2013	2014	2015
No school	1.5	1.2	1.1	1.1
primary school	14.3	15.4	14.8	14.0
junior high	60.5	60.6	60.3	59.7
senior high	18.0	16.1	16.5	16.9
college or higher	5.7	6.7	7.3	8.3

Data sources: National Bureau of Statistics 2012-2016 migrant workers monitoring report

From the perspective of educational level, most of the rural labor force in China is junior high school, and the educational level is not high. However, from the perspective of trend, the knowledge level of rural labor force in China is constantly improving. From the above analysis results, the improvement of the knowledge level of rural labor force can promote China's agricultural development. Therefore, the emergence of this phenomenon shows that China's policy of attaching importance to education has achieved effective results. The improvement of rural labor knowledge level can provide guarantee for the more effective operation of China's labor market.

4. Authentic Proof Analysis

4.1 Model Specification

This paper studies the impact of rural labor transfer on agricultural production by establishing Cobb-Douglas production function. Because Cobb-Douglas production function is the most widely used production function with strong explanatory power, the output of agricultural production is related to a variety of production factors of agricultural input. In order to study the impact of rural labor transfer on agricultural output, Cobb-Douglas production function is established. The basic model of

Cobb-Douglas production function is $Q = AL^\alpha K^\beta$, where Q represents the total output, A represents the constant term, L represents the input of labor capital, K represents the input of capital, α represents the output elasticity of labor, and β represents the output elasticity of capital. This paper mainly constructs the production function from three aspects of labor, capital and technology. Firstly, the explanatory variables are selected as the total output value of agriculture, forestry, animal husbandry and fishery (Y), the input of labor capital is selected as the employees of agriculture, forestry, animal husbandry and fishery (L), the input of capital is selected as the pure amount of agricultural fertilizer application (K), and the technical progress of farmers is selected as the total power of agricultural machinery (A). $Y = \lambda_0 A^{\lambda_1} L^{\lambda_2} K^{\lambda_3}$ (1) In order to make data analysis more accurate and reduce heteroscedasticity, we logarithmicize formula (1) and transform exponential equation into linear equation as follows: $\ln[Y = \lambda_0] + \lambda_1 \ln A + \lambda_2 \ln L + \lambda_3 \ln K$ (2).

4.2 Variable Definition

For the convenience of research, this paper mainly selects the data from 1996 to 2015 for analysis. The data are mainly from the National Bureau of Statistics and the 2016 National Statistical Yearbook. The specific data are as follows:

It can be seen from the above table that China's agricultural, forestry, animal husbandry and fishery employees are negatively correlated with China's total agricultural output. China's total agricultural output increases year by year, but the number of agricultural, forestry, animal husbandry and fishery employees decreases year by year. Other factors, such as capital and technology level and China's agricultural output showed a positive correlation characteristics, are increasing year by year. It can be found that China's agricultural technological progress and agricultural capital investment have certain substitution for China's agricultural, forestry, animal husbandry and fishery practitioners.

4.3 Regression Analysis

OLS regression analysis of equation (2), the regression results are as follows:

When $n = 20$, $k = 3$, DL is 0.774, DU is 1.410. The regression results show that the DW value is greater than 0 and less than DL, and the equation has a positive autocorrelation. The R-square is close to 1, and the goodness of fit is high. The regression results can be concluded that the correlation coefficient of agriculture,

Table 6. Data table on gross output value and influencing factors of agriculture, forestry, animal husbandry and fishery in China, 1996-2015

Year	Total output value of agriculture, forestry, animal husbandry and fishery (ten thousand tons)	Agriculture, forestry, animal husbandry and fishery practitioners (thousands)	Pure amount of agricultural chemical fertilizer (ten thousand tons)	Total power of agricultural machinery (kilowatts)
1996	22353.7	32260.4	3827.9	38546.9
1997	23788.4	32677.89	3980.7	42015.6
1998	24541.9	32626.4	4084	45207.7
1999	24519.1	32911.76	4124.3	48996.12
2000	24915.8	32797.5	4146.41	52573.61
2001	26179.65	32451.01	4253.76	55172.1
2002	27390.8	31990.58	4339.39	57929.85
2003	29691.8	31259.63	4411.6	60386.54
2004	36238.99	30596	4636.6	64027.91
2005	39450.89	29975.54	4766.22	68397.85
2006	40810.83	29418.41	4927.69	72522.12
2007	48892.96	28640.68	5107.83	76589.56
2008	58002.15	28363.6	5239.02	82190.41
2009	60361.01	28065.26	5404.4	87496.1
2010	69319.76	27694.77	5561.68	92780.48
2011	81303.92	27355.42	5704.24	97734.66
2012	89453.05	27032.25	5838.85	102558.96
2013	96995.27	26701.20	5911.86	103906.75
2014	102226.09	23359.20	5995.94	108056.58
2015	107056.36	22458.90	6022.6	111728.07

Source: National Statistical Yearbook 2016, based on the National Bureau of Statistics.

Dependent Variable: Y				
Method: Least Squares				
Date: 05/08/17 Time: 21:05				
Sample: 1996 2015				
Included observations: 20				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
L	-2.343210	1.193526	-1.963266	0.0662
K	20.50031	17.85826	1.147946	0.2669
A	0.270523	0.721005	0.375203	0.7121
R-squared	0.952040	Mean dependent var	51674.62	
Adjusted R-squared	0.946398	S.D. dependent var	29443.86	
S.E. of regression	6816.903	Akaike info criterion	20.62968	
Sum squared resid	7.90E+08	Schwarz criterion	20.77904	
Log likelihood	-203.2968	Hannan-Quinn criter.	20.65884	
Durbin-Watson stat	0.260124			

Figure 1. OLS regression analysis results of influencing factors of agricultural output

forestry, animal husbandry and fishery practitioners on agricultural output is negative, but the correlation coefficient of other factors ' capital investment and agricultural technology level on agricultural output is positive, which shows that the transfer of rural labor force to the city not only does not reduce agricultural output, but will increase agricultural output. From the above diagram, every 1 % reduction of rural labor force will increase agricultural output by 2.34 %. The reason for this phenomenon is likely to be that the substitution effect of agricultural capital investment and technological progress on rural labor force exceeds the impact of rural labor force on agricultural output.

Based on the above theoretical analysis, it can be seen that the transfer of rural labor does not necessarily have a negative impact on agricultural development. Since China's reform and opening up, the process of industrialization and urbanization has been accelerating, and more and more rural labor force has been transferred to cities, which has led to the shortage of agricultural labor supply in China and has adversely affected China's agricultural development. In order to alleviate this situation, China has introduced some preferential agricultural policies, such as direct subsidies for farmers: farmland protection subsidies, agricultural machinery purchase subsidies, corn producers subsidies. Support the development of new agricultural business entities: new farmer occupation cultivation, farmer cooperatives and family farm capacity building, agricultural credit guarantee system construction. These policies can effectively increase the input of agricultural capital, can introduce cheaper production factors, improve the quality of labor so as to improve the technical level, increase China's agricultural output, and promote China's agricultural development.

5. Conclusions and Policy Suggestion

5.1 Research Conclusions

Through the combination of theoretical research and empirical research, we can get the following conclusions:

China's rural labor force 'aging' phenomenon is serious, the quality of the labor force continues to improve

It can be seen from the data analysis that the 'aging' phenomenon of China's rural labor force has emerged, which shows that China's rural labor force has transited from absolute surplus to relative surplus, and the marginal output of rural labor force on agriculture is increasing. If the rural labor force continues to shift to urban and non-agricultural industries, it will have a negative impact

on China's agriculture. At the same time, the policy implementation effect of improving the quality of farmers in China is obvious, and the knowledge level of rural labor force in China is continuously improved, which provides a basis for improving the level of agricultural technology in China.

Overall, China 's rural labor transfer promotes agricultural development

From the results of empirical analysis, China's rural labor force has a reverse correlation with China's agricultural development, that is, the transfer of rural labor force to cities increases China's agricultural output, and other factors such as capital and technology have a positive correlation with China's agricultural output, that is, the increase in agricultural capital input and the progress of technological level also increase China's agricultural output and promote China's agricultural development.

From the perspective of labour factors, the transfer of rural labour has adverse effects on agricultural development

On the one hand, the transfer of rural labor force in China has reduced the number of labor force that China invests in agriculture. On the other hand, it has reduced the quality of labor force in China's agricultural sector and changed the structure of labor force in China's agricultural sector. It is mainly manifested in the serious "aging" phenomenon of rural labor force, and the proportion of female labor force has increased year by year, which has adversely affected China's agricultural production and hindered the sustainable development of China's agriculture.

The substitution effect of capital and technology on the labour force is evident

From the regression results, agricultural capital and technical elements are positively correlated with China's agricultural output. The increase of the two elements will increase China's agricultural output. The substitution effect of agricultural capital and technical elements exceeds the impact of rural labor transfer on agricultural output, and ultimately leads to an increase in China's agricultural output.

5.2 Policy Proposal

Increase financial expenditure on agriculture in China and continue to promote the implementation of preferential agricultural policies

Since the Central Committee of the Communist Party

of China issued the first “No. 1 Document” on the “three rural issues” in 1982, the state has paid more and more attention to the development of the agricultural sector, and has successively introduced many preferential agricultural policies. In 2014, the Ministry of Agriculture issued 50 preferential agricultural policies, of which only grain subsidies, seed subsidies, comprehensive agricultural subsidies, agricultural subsidies and other four subsidies reached 160 billion yuan. The implementation of these policies has greatly increased China’s agricultural output and promoted the development of urbanization in China. But China’s farmers’ grain income is difficult to improve this is still a problem plaguing the sustainable development of agriculture, in order to solve this problem, the state should continue to increase the financial expenditure of the agricultural sector, continue to strengthen the agricultural sector subsidies and investment.

Strengthening investment in education and agricultural technology for rural labour

From the analysis results can be seen that China’s rural labor force is still in the low quality level stage, the knowledge level is low, and the demand for high-quality labor force in modern society is more and more, so increasing investment in rural education can promote the development of urbanization in China. The government can improve the quality of rural labor force by increasing financial support, establishing more rural schools, strengthening compulsory education and strengthening subsidies for students in poor areas. Technical factors will also have a great impact on China’s agricultural development. In order to improve the technical level of agriculture in China, the government can increase the use of new agricultural science and technology by increasing agricultural scientific research and agricultural technology promotion. Strengthen the vocational and technical training of rural labor force to promote the improvement of technical level.

Encourage and promote the return of rural labourers to entrepreneurship

Encouraging rural labor to return home employment can increase the investment of agricultural labor in China on the one hand, on the other hand can increase the investment of agricultural capital, so as to promote agricultural development. The government can give more preferential and policy support to the rural labors who return home for employment, promote the development of private enterprises, and attract more rural labors to return home for employment by establishing agricultural projects^[10].

Promoting integrated urban and rural development

From the current point of view, the gap between urban and rural areas in China is still relatively obvious, and the gap between urban and rural areas is large. In order to coordinate the integration of urban and rural development, the government should establish a more effective social security system, improve the level of rural social welfare in China, such as improving China’s rural medical security system, improve China’s rural education environment, the implementation of complete compulsory education in poor areas, etc., on the other hand, the government should provide more protection to the rural labor force, such as migrant workers’ wage security, unemployment security, etc., which can promote the integration of urban and rural development in China.

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