

The Impact of Poverty Alleviation Input on Increasing Income of Rural Poor Population in Western China

—An Empirical Study based on A City in S Province

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Abstract—Based on the data of A city of S Province in Western China and field investigation, this paper builds a model and analyses the results of the investigation, explores the important impact of poverty alleviation investment on the income increase of rural poor people in Western China, and puts forward relevant policy recommendations. The study found that the poverty alleviation investment of the Poverty Alleviation Office and the Finance Bureau is positively correlated with the per capita GDP of the poor households. The more special funds allocated for poverty alleviation, the higher the income of the poor households. At the same time, education, health level and related skills all have an impact on income. Therefore, when investing in poverty alleviation in the western region, the allocation ratio of poverty alleviation funds for education, health and skills should be increased, so as to give priority. Improving the education level of farmers, ensuring the health of farmers, conducting skills training, and developing characteristic industries to increase the income of poor people, and then transforming investment into farmers' self-development ability to eradicate poverty fundamentally.

Keywords—*poverty alleviation investment; poverty in the west; precise poverty alleviation;*

I. INTRODUCTION

The poverty situation facing China is still very serious, and the problem of poverty is even more serious in the western region. The State Council attaches great importance to poverty alleviation and fortification, listing it as one of the three major battles to be accomplished in building a well-off society in an all-round way, and has made a series of important decisions. Up to now, the incidence of poverty in 12 provinces, districts and municipalities in the western region has all fallen below 10%, and great achievements have been made. However, 16.34 million poor people have not been lifted out of poverty, accounting for 53.6% of the whole country. More than half of the poverty-stricken people in the whole country are in the western region. The incidence of poverty in the western region is 2.5 percentage points higher than the national average, so the task of lifting poverty in the western region is arduous.

There are many factors affecting the income growth of the poor, including poor living environment, frequent natural disasters, low comprehensive quality of the population, poor self-development ability, slow adjustment of agricultural structure, imperfect agricultural production service system, imperfect labor employment system, poor investment in

poverty alleviation funds, lagging market system construction and so on. Among them, poverty alleviation investment is one of the key factors. To get rid of poverty, poverty alleviation is to achieve common prosperity. Common prosperity is the basic principle of socialism. Xi Jinping put forward the strategy of "precise poverty alleviation". He emphasized that eliminating poverty, improving people's livelihood and gradually realizing common prosperity are the essential requirements of socialism and an important mission of the Party. At the High-level Forum on Poverty Reduction and Development, the need to increase investment in poverty alleviation was emphasized. Poverty alleviation investment plays a vital role in the whole process of poverty alleviation. Studies have shown that poverty alleviation investment has a positive effect on increasing the income of poor people. This paper selected A city of S province in the western region for field investigation, data collation and model analysis to study the impact of poverty alleviation investment on the income increase of rural poor people in the western region, and put forward relevant suggestions to promote poverty in the western region. Increase the income of the population, improve the ability of farmers to develop themselves, and eradicate poverty fundamentally.

II. FRAMEWORK OF THEORETICAL ANALYSIS

The relationship between poverty alleviation investment and population income increase. Osaore Aideyan believes that the inadequate and inappropriate use of poverty alleviation funds may even play a contrary role in poverty alleviation work, which will not only affect the confidence of the poor people to get rid of poverty, but also affect the timing of poverty alleviation projects [1]. Wang Ping pointed out that the operation procedure and management system of poverty alleviation funds should be standardized. In order to ensure that the limited poverty alleviation funds play their due role effectively, they should also actively participate in the process of poverty alleviation if conditions permit. To improve the effectiveness of poverty alleviation funds through poverty alleviation to households and adopt flexible and diversified ways of fund operation [2]. Zhou Ruichao et al. obtained the effectiveness of productive capital input, labor input and arable land use on poverty alleviation by means of fuzzy comprehensive evaluation and data envelope analysis. Wang Chunhua and Wang Rixu pointed out that poverty alleviation discount loans mainly provide credit support for the production activities of poverty-stricken areas and poor people in order to promote the economic development of poverty-stricken areas

[4]. Wang Sangui and others pointed out that poverty alleviation investment in social services should be substantially increased, focusing on solving the problem of high medical expenses for farmers and their children in poverty-stricken areas, improving the management of poverty alleviation funds, and letting the local authorities. government can choose projects according to the needs of farmers [6]. Zhao Xi and others pointed out that the management of poverty alleviation projects should be strengthened under the restriction of the total amount of poverty alleviation investment. All kinds of poverty alleviation funds should be matched with each other and centralized to improve the overall efficiency [7]. Based on the statistical data of Guizhou Province from 1990 to 2010, it is found that there is a long-term stable positive equilibrium relationship between the investment of poverty alleviation funds and the expenditure of financial support for agriculture in Guizhou Province and the per capita net income of households. Some scholars also use time series data to make an empirical study on the relationship between fiscal expenditure on agriculture and farmers' income. The results show that fiscal expenditure on agriculture has a significant positive impact on rural residents' income [10].

In a word, we can see from the existing studies that the factors affecting the income increase of the poor are complex, among which the investment in poverty alleviation is undoubtedly one of the most important factors. Therefore, it is of great significance to study the impact of the investment in poverty alleviation on the income increase of the poor in the Western Rural areas. When this study studies the impact of the investment in poverty alleviation on the income increase of the poor in the western rural areas, the income of the poor is also related to their authentication. related variables, such as grasping skills and physical health, are comprehensively analyzed, and the effects of various variables on income increase and poverty alleviation are also discussed.

2. Model establishment

In order to better evaluate the policy effect of poverty alleviation investment of "Eight Running Groups and Two Groups" in A County, it is necessary to build a regression model, which takes the net per ca pita income of poor

households as dependent variable, and the poverty alleviation investment of "Eight Running Groups and Two Groups" as independent variable. Relationship. The object of study was all the poor households in A county and city in 2017. The data used in the model were sorted out according to the data and information provided by the Poverty Alleviation Office of A county and city.

III. DATA SOURCE, SAMPLE DESCRIPTION AND MODEL CONSTRUCTION

A. Data sources

The total population of A city in S province is 542,000. There are 24 poor villages and 6,666 poor families. The incidence of poverty is 2.04%. This paper takes A city of S Province as a case study of precise poverty alleviation in rural areas. The object of study is all poor households in A city in 2017. The data and information of poor households provided by Poverty Alleviation Office of A city are used. At the same time, based on the data and written materials obtained from our field survey, village sampling is used in the field survey. The main form of investigation is household survey based on stratified sampling, questionnaire issuance and random interview.

B. Sample description

2017A total of 168.11 million yuan of special financial poverty alleviation funds were invested in the city in 2001. Among them: 22.63 million yuan of financial poverty alleviation funds of central provinces and municipalities, and 14.54.8 million yuan of financial poverty alleviation funds of municipalities at the corresponding level of A. A city set up two groups of leading departments in 2017 to carry out the key promotion of precise poverty alleviation. The main departments include district poverty alleviation bureau, District Finance bureau, district development and reform bureau, district agriculture and forestry bureau, District people's and social bureau, land sub-bureau, District Housing bureau, education and sports bureau, health and planning bureau, District Civil Affairs Bureau and district disability federation. For social security projects and other supporting projects, each department invests as shown in the table.

TABLE I POVERTY ALLEVIATION INVESTMENT IN COUNTY AND DISTRICT IN 2017

Particular year	District Poverty Alleviation Bureau and District Finance Bureau	District Development and Reform Bureau	Total
	Special funds for poverty alleviation	Work-for-money	
2017 year	14548	45	22720
Total	14548	45	22720

Note: Two groups of Eight Offices of A City were established in 2017, so there are no 2016 data.

(2) Per capita net income of archival card holders in districts and counties from 2015 to 2017

TABLE II A POVERTY ALLEVIATION INVESTMENT IN 2017 UNIT: 10,000 YUAN

Particular year	Non poor households		Year-on-year growth	Poverty-free households in those years		Year-on-year growth	Documentation Cardholders	Year-on-year growth
	households	per-capita net income		households	per-capita net income		per-capita net income	
2015 year	4384	4893.01		1477	6686.83		12272.37	

Year	Population	GDP (RMB 100 million)	GDP Growth (%)	Per capita GDP (yuan)	Per capita GDP Growth (%)			
2016year	3309	5291.91	8.10%	1132	10615.15	58.70%	13744.9	11.90%
2017year	3662	6327.62	11.90%	253	10341.82	-2.60%	14865.24	8.10%

(3) GDP and per capita GDP of A City from 2015 to 2017

TABLE III A GDP AND PER CAPITA GDP IN 2015-2017

Particular year	Average annual GDP (RMB 100 million)	Year-on-year growth	Per capita GDP (yuan)	Year-on-year growth
2015year	769.53	6.7%	167527	-15.9%
2016year	901.95	7.6%	195460	16.7%
2017year	1000	9.8%	184501	-5.9%

Note: No statistical data on GDP in 2017 are published, which is estimated by the estimates.

C. Model establishment

Taking the per capita net income of poor households as dependent variable, the poverty alleviation investment of "eight-run two groups" as independent variable, and introducing related control variables, the specific variables are

shown in table 5, to study the relationship between the poverty alleviation investment funds and the per capita annual income of poor households.

TABLE IV VARIABLE DESCRIPTION

Variable attribute	Variable name	Variable code	Variable meaning
dependent variable	Per capita net income of poor households	INCO	Per capita net income of poor households
independent variable	Special funds for poverty alleviation	Q1	Special Funds for Poverty Alleviation Invested by Poverty Alleviation Bureau and District Finance Bureau in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Work-for-money	Q2	Work-for-relief funds invested by the Development and Reform Bureau in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Industrial poverty alleviation	Q3	Industrial and Ecological Poverty Alleviation Funds Input by Agriculture and Forestry Bureau in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Ecological poverty alleviation	Q4	Employment Venture Capital Invested by the Bureau of Human Resources and Social Affairs in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Employment and Entrepreneurship	Q5	Relocation funds invested by Land Branch Bureau in 2017/Poverty Population in A City*Population of Poor Families
	Relocation	Q6	Renovation Funds of Dangerous Housing Invested by the Housing Bureau in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Reconstruction of dangerous buildings	Q7	Education Poverty Alleviation Fund Invested by the Bureau of Education and Sports in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Education for poverty alleviation	Q8	Health Poverty Alleviation Funds Invested by the Bureau of Health and Planning in 2017/Total Poverty of Poor People in A City*Population of Poor Families
	Health poverty alleviation	Q9	Social Security Funds Invested by the Civil Affairs Bureau in 2017/Total Poverty of Poverty in A City*Population of Poverty-stricken Families
	social security	Q10	Disability Assistance Fund Invested by the Disabled Persons Federation in 2017/Total Poverty of Poor People in A City*Population of Poor Families
control variable	Educational level of head of household	EDUE	Illiteracy and semi-illiteracy 0, primary school 1, junior high school 2, senior high school 3, junior college or above 4
	Health status of head of household	HEAL	Take 0 for health, 1 for one disease, 2 for two diseases.
	Family sickness	DISE	Number of Disabled and Major Patients in the Family
	Householder's Labor Skills	SKIL	No labor force and lost labor force 0, ordinary labor force 1, skilled labor force 2
	Number of household labour force	LABO	Total number of household ordinary and skilled workers

Table IV, cont			
Householder's working hours	TIME	Average daily working hours of householders	
Poor household attributes	ATTR	The average poor household takes 0, the low-income poor household takes 1, and the five-insurance poor household takes 2.	

TABLE V DESCRIPTIVE STATISTICS OF VARIABLES

	average value	Median	standard deviation	skewness	kurtosis	minimum value	Maximum value
INCO	6865.24	4500.00	1752.98	1.24	7.05	65.00	11306.00
Q1	14548	794.01	214.12	0.86	0.32	147.01	23617.06
Q2	45.00	21.54	358.51	0.86	0.32	5.99	63.48
Q3	355.78	250.40	326.79	0.86	0.32	25.20	477.19
Q4	94.6	40.49	14.92	0.86	0.32	10.24	112.67
Q5	27.8	10.83	78.00	0.86	0.32	0.41	64.56
Q6	190.80	112.32	45.39	0.86	0.32	31.16	342.77
Q7	587.97	309.95	225.73	0.86	0.32	154.98	904.74
Q8	246.46	188.57	6.29	0.86	0.32	4.28	547.13
Q9	4000.56	283.49	206.66	0.86	0.32	141.75	47968.62
Q10	2627.79	1121.53	1.12	0.86	0.32	120.77	3468.43
EDUE	1.46	1.00	0.87	0.30	-0.49	0.00	4.00
HEAL	0.58	1.00	0.55	0.23	-0.68	0.00	2.00
DISE	0.86	1.00	0.75	0.89	1.38	0.00	5.00
SKIL	0.34	0.00	0.50	0.48	-1.50	0.00	2.00
LABO	1.75	1.00	1.09	0.56	0.32	0.00	6.00
TIME	1.34	0.00	2.62	2.69	5.71	0.00	12.00
ATTR	1.78	1.00	0.64	-0.08	-0.59	0.00	2.0

Construct regression model and carry out policy significance analysis

$$income = \begin{cases} \alpha_0 + \alpha_1 Q_1 + \beta_1 educ_1 + \beta_2 heal_2 + \beta_3 dise_3 + \beta_4 skil_4 + \beta_5 labo_5 + \beta_6 time_6 + \beta_7 attr_7 + \varepsilon_1 \dots (1) \\ \alpha_0 + \alpha_2 Q_2 + \beta_1 educ_1 + \beta_2 heal_2 + \beta_3 dise_3 + \beta_4 skil_4 + \beta_5 labo_5 + \beta_6 time_6 + \beta_7 attr_7 + \varepsilon_2 \dots (2) \\ \dots \\ \alpha_0 + \alpha_{10} Q_{10} + \beta_1 educ_1 + \beta_2 heal_2 + \beta_3 dise_3 + \beta_4 skil_4 + \beta_5 labo_5 + \beta_6 time_6 + \beta_7 attr_7 + \varepsilon_{10} \dots (10) \end{cases}$$

among α_0 It is a constant term. α_1 reach It is a α_{10} independent regression coefficient. β_1 reach β_8 In order to control the regression coefficients of variables, ε It is an error term.

Regression analysis of the above models shows that the regression results are as follows:

TABLE VI MODEL REGRESSION RESULTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
C	-4089.34 ***	-4089.82 ***	-4068.33 ***	-4089.21 ***	-4089.67***	-4054.82 ***	-4089.44***	-4090.34 ***	-4089.46 ***	-4089.57 ***
EDUE	628.62 ***	627.99 ***	630.12 ***	628.52 ***	628.61 ***	629.67 ***	629.62 ***	627.48 ***	629.62 ***	626.13 ***
HEAL	-811.32 ***	-811.55 ***	-811.67 ***	-811.45 ***	-811.78 ***	-811.32 ***	-811.45 ***	-811.57 ***	-813.00 ***	-814.56 ***
SKIL	2567.39 ***	2567.42 ***	2567.25 ***	2567.91 ***	2567.34 ***	2567.49 ***	2567.40***	2567.96 ***	2567.41 ***	2567.51 ***

Table VI, cont

DISE	-732.55 ***	-732.57 ***	-732.88 ***	-732.05 ***	-732.23 ***	-732.70 ***	-732.54 ***	-732.11 ***	-732.23 ***	-732.60 ***
LABO	312.82 ***	312.23 ***	312.68 ***	312.34 ***	312.79 ***	312.97 ***	312.34 ***	312.49 ***	312.82 ***	312.48 ***
TIME	86.47 ***	86.47 ***	86.47 ***	86.45 ***	86.47 ***	86.48 ***	86.47 ***	86.43 ***	86.47 ***	86.45 ***
ATTR	1879.67 ***	1879.45 ***	1879.27 ***	1879.87 ***	1879.26 ***	1879.34 ***	1879.17***	1879.68 ***	1879.16 ***	1879.23 ***
Q1	37.36 ***									
Q2		676.00 ***								
Q3			189.28 ***							
Q4				586.45 ***						
Q5					89.44 ***					

IV. EMPIRICAL ANALYSIS

A. Model analysis

According to the regression table of the model, the goodness of fit between model (1) and model (10) is 0.68, which can explain most of the information of income growth of poor households. The F value of the model is about 992, and the P value is significant at 1%, indicating that the independent and dependent variables of the model are significant on the whole. The regression coefficient of the independent variable Q 1 in the model (1) is 37.36%, which shows that the poverty alleviation input of the Poverty Alleviation Office and the Finance Bureau is positively correlated with the per capita GDP of the poor households. The more special funds for poverty alleviation are allocated, the higher the income of the poor households is. Similarly, from model (2) to model (10), the poverty alleviation funds invested by various departments are positively correlated with the per capita net income of poor households, indicating that the more funds invested by various departments in poverty alleviation, the higher the income of poor households. Among the control variables, the higher the education level of the head of household, the higher the net income per capitated disease status of poor household heads is negatively correlated with their per capita net income. The healthier the household heads are, the higher the per capita net income of the household. On the contrary, the more diseases they have, the lower the per capita net income of the household. Family sickness is negatively correlated with per capita net income, which indicates that the more the number of patients, the lower the per capita net income of the family. The per capita net income of skilled workers is generally higher than that of ordinary workers. The more household labor force, the higher per capita net income. The regression coefficient of household head's working time is positive, which indicates that the longer the average working time of household head is, the higher the net income per capita is.

B. Field investigation and analysis

After the implementation of the poverty alleviation and fortification plan, the situation has improved, mainly with industrial support, employment support, transformation of dangerous houses, health poverty alleviation, bottom-pocket guarantee and education support. In the field survey stage,

according to the questionnaire survey of the farmer households interviewed and the comparison of the work desk accounts in villages and towns, we found that the city of A has implemented directional tracking, constant assistance and constant policies, relying on the poverty alleviation and development information system, continued to implement policies such as industry, health and poverty alleviation micro-loans for the poverty-free households, implemented poverty alleviation measures at different levels, and encouraged the poverty-free households to develop long-term industrial projects. Many poor peasant households in the survey are due to the difficulty in sustaining medical expenses due to illness and the loss of labor capacity due to illness. After the intensification of poverty alleviation efforts, poor people enjoy serious illness insurance, major illness relief, chronic illness relief, and the job placement of helping responsible persons is also satisfactory.

V. ENLIGHTENMENT FROM THE CONCLUSIONS

From the above analysis results of this study, it can be concluded that:

(1)The more special funds allocated for poverty alleviation, the higher the income of poor households, and the poverty alleviation funds invested by various departments are positively correlated with the per capita net income of poor households. Through the significant level of 1%, it shows that the more funds invested by various departments for poverty alleviation, the higher the income of poor households. Therefore, under the current situation of the large number of poor people in the western region, the government should also increase the investment in the western poor areas, and ensure the effectiveness of the use of funds. We can consider linking the performance of poverty alleviation with the political future and economic income of cadres and individuals, and optimizing the mechanism of selecting and employing personnel.

(2)The higher the education level of the head of household, the higher the net income per capita. In the investigation, we also found that "ideological poverty" is the status quo of many farmers. The level of knowledge and culture is generally low. They are not willing to accept new things, far from the Internet, and their short-term vision inhibits their own development.

This is also one of the reasons for the long-term poverty of Western farmers.

(3)The healthier the head of household is, the higher the net income per capita. In the field survey, we also found that disease is the cause of poverty for many farmers. Medical expenses caused by disease are difficult to sustain, and the loss of labor capacity due to illness is a common phenomenon in poor areas in Western China. Therefore, in poverty alleviation investment, we should increase investment in health and implement health poverty alleviation reimbursement in an all-round way. Policies provide good basic guarantee for poor households.

(4)The skill of the head of household is positively correlated with the net income per capita, so it is also very important to increase the allocation of funds for poverty alleviation by skill. Through training, the skill level of poor households can be improved by means of production reward, labor subsidy and skill training. All kinds of resources can be integrated, scientific and technological personnel and local talents can be organized, and "menu" training can be actively carried out according to the actual situation of poor labor force.

To sum up, all departments need to increase their investment in poverty alleviation in the western region, increase the allocation proportion of poverty alleviation funds for education, health and skills, increase the effective utilization rate of funds, enhance cadres' motivation for poverty alleviation, and give priority to support their aspirations, popularize Internet knowledge, pay attention to farmers' health, do a good job of early defense, conduct skills training, and develop characteristic industries to achieve poverty. Income increases in population.

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