

# Agricultural Subsidies, Non-farm Employment and Rural Poverty Reduction

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## Abstract

Based on the data of China Household Finance Survey 2015, this paper studied the poverty reduction effect of agricultural subsidies and non-farm employment. By using the Probit regression model, the paper finds that both agricultural subsidies and non-farm employment can effectively reduce the probability of family poverty. And the higher the level of non-farm employment, the more obvious the impact of agricultural subsidies on household poverty reduction. Therefore, in order to improve the effect of rural poverty reduction, it is necessary to guide the transference of redundant rural labor force and increase agricultural subsidies on the basis of non-farm employment. The governments should accelerate the transference of labor force to non-agricultural industries by increasing rural education expenditure in non-major areas, and increase agricultural subsidies in major grain-producing areas to accelerate the process of agricultural modernization.

## Keywords

Agricultural Subsidy; Non-farm Employment; Increasing Income.

## 1. INTRODUCTION

In recent years, China's poverty alleviation efforts have achieved remarkable results, and the number of people living in poverty in rural areas has been significantly reduced. According to data from the National Bureau of Statistics, by the end of 2019, the rural poor, as measured by the current national rural poverty standard, had decreased from 98.99 million at the end of 2012 to 5.51 million, and the head count ratio had dropped from 10.2 percent in 2012 to 0.6 percent. The disposable income of rural residents had increased significantly, and outstanding achievements had been made in regional poverty alleviation. However, China's rural population base is large, and the phenomenon of relative poverty is still relatively serious. How to play the role of various ways to get rid of poverty and further improve farmers' income is an important topic of rural agricultural financial policy research.

As an important way for rural families to get rid of poverty, agricultural subsidies and non-farm employment of rural labor force are widely concerned in the academic field. Most domestic and overseas scholars have affirmed that agricultural subsidies play an important role in grain production, farmers' income and rural economic development. Mc Cloud and Kumbhakar analyzed the impact of agricultural subsidies on agricultural productivity using data from EU countries, and found that agricultural subsidies had positive effects on agricultural productivity and farmers' income [1]. In terms of the effect of specific subsidy methods, compared with comprehensive income subsidies, production-type subsidies can better promote the application of agricultural technology and the large-scale development of agricultural production, and thus improve farmers' income [2]. There is also a point of view that the agricultural subsidy policy has not produced obvious effects on agricultural production and

farmers' income. For example, the increasing policy-based rice subsidy had an unsatisfactory effect on the increase of farmers' income in Zhejiang Province [3].

The non-farm employment of agricultural labor force is considered as an inevitable requirement for developing countries to achieve economic growth. Most scholars agree that only the traditional rural development strategy which takes the transfer of rural labor force as the main goal of development and the improvement of agricultural productivity as the focus can truly solve the problem of rural poverty [4]. Labor mobility not only improves the absolute income of rural households, but also reduces the relative probability of falling into poverty [5]. There are also opinions that the current labor force outflow brings about the shortage of rural labor force and insufficient sharing of family economic scale, which will increase the probability of families falling into poverty [3].

To sum up, most of the current studies on agricultural subsidies use macro data or micro data based on local regional research for case analysis, and the research conclusions are difficult to be extended to the whole country and to compare regional differences. In terms of non-farm employment, the existing literature focuses on the poverty reduction mechanism of non-farm employment of rural labor force. Few studies analyze agricultural subsidies and non-agricultural employment in the same framework directly. Therefore, based on the national sample data, this paper uses Probit model to comprehensively consider the effect of agricultural subsidies, non-agricultural employment level and their synergistic effects on rural family poverty reduction, so as to promote rural families to further improve their income.

The structure of this paper is as follows: the first part is the introduction and literature review; the second part is the theoretical basis and hypothesis; the third part is the construction of the model and the introduction of data; the fourth part is the empirical analysis and results; the last part is the conclusion and enlightenment.

## 2. THEORETICAL BASIS AND HYPOTHESIS

Specifically, the poverty reduction effects of agricultural subsidies and non-farm employment are reflected in the following aspects:

### (1) Effects of agricultural subsidies on poverty reduction

On the one hand, the current agricultural subsidies directly increase farmers' income in the form of income subsidies; on the other hand, the special productive subsidies represented by agricultural machinery purchase subsidies promote the growth of agricultural output and farmers' income.

Therefore, this paper puts forward hypothesis 1: agricultural subsidies have a significant positive effect on poverty reduction.

### (2) The effect of non-farm employment on poverty reduction

The poverty reduction mechanism of non-farm employment mainly includes the increase of non-farm employment income and the improvement of efficiency brought by machinery investment.

Therefore, this paper puts forward hypothesis 2: non-agricultural employment has a significant positive effect on poverty reduction.

## 3. MODEL AND DATA

### 3.1. Model Setting

In order to test the relationship between agricultural subsidies, non-farm employment and rural poverty reduction, this paper uses binary probit discrete selection model. The specific setting model is as follows:

$$Y_i = \beta_0 \text{subsidy} + \beta_1 \text{nonagr} + \beta_2 \text{subsidy} \times \text{nonagr} + \beta_3 x_i + \mu_i$$

Where,  $Y_i$  as the explained variable,  $Y_i=0$  means that the sample household is below the national poverty line, which is poverty, and  $Y_i=1$  means that the family is in a non-poverty state. The explanatory variable is agricultural subsidy, nonagr is the degree of non-farm employment, and the interaction term is subsidy\*nonagr.  $X_i$  is the relevant control variable affecting family poverty, including the age and education level of the head of the household and other variables.  $\mu_i$  is a random error term.

### 3.2. Data

This paper uses the survey data of China Household Finance Survey and Research Center in 2015 to study the poverty reduction effect of agricultural subsidies and non-farm employment. The data are highly representative. This paper takes rural households as the investigation object, eliminates the missing values of key variables, and obtains a total of 3874 valid samples.

### 3.3. Variable

**Explained variable.** The explained variable of this paper is whether the family is poor or not. The value is 0 if the family is poor, and 1 if not.

**Main explanatory variables.** Agricultural subsidies: according to the information of chfs questionnaire, the agricultural subsidies in this paper are the monetary subsidies that the respondents' families get from agriculture. The Labour force is measured by international standards for those aged 15-64 who are able to work.

**Control variables.** Referring to the existing research, in order to reduce the estimation deviation as much as possible, this paper selects as many variables as possible from the individual head of household, family level and macroeconomic level according to the factors affecting family economy. For example, age, education level, family size, etc.

## 4. EMPIRICAL RESULTS

First of all, the Pearson correlation coefficient between the variables is less than 0.6, which indicates that there is no serious multicollinearity. Probit model is used to examine the relationship between agricultural subsidies, non-farm employment and rural poverty reduction. Column (1) of Table 1 shows the regression results of benchmark model of national samples. The marginal effect is shown in the regression results. It can be seen that agricultural subsidies and non-agricultural employment can effectively reduce the probability of rural families falling into poverty. Thus, hypothesis 1 and hypothesis 2 are verified. The interaction between farm subsidies and non-farm employment levels is positive and significant at the 1% level. The higher the level of non-farm household employment, the more obvious the effect of agricultural subsidies on household poverty reduction. That is to say, non-farm employment strengthens the poverty reduction effect of agricultural subsidies on rural households. From the regression results of the control variables, the coefficients of the head of household's age and education level are significantly positive, indicating that they have a significant role in promoting family poverty reduction. The possible explanation is that the head of household, as the decision-maker of the family, the higher the level of education, the more helpful it is to improve the children's education level and the overall economic level of the family, while personal health has an impact on the income of the individual and the family. Students have a direct impact. For example, the phenomenon of "poverty caused by illness" and "returning to poverty due to illness" occurs.

On the basis of benchmark regression, column (2) and column (3) of Table 1 respectively report the regression results of samples from major grain producing areas and non major grain producing areas. It can be found that the level of non-farm employment significantly reduces

the probability of families falling into poverty in both major grain producing areas and non major grain producing areas. Agricultural subsidies and interaction items are significantly positive in the main grain producing areas, but not in the non main grain producing areas. In other words, the effect of increasing agricultural subsidies is greater than that of non main grain producing areas. The regression results of other variables are consistent with the benchmark model.

**Table 1.** Regression result

variable	(1)	(2)	(3)
subsidy	0.3746*** (0.1314)	0.4450*** (0.1542)	0.2043 (0.2715)
non-farm employment	0.4540*** (0.0251)	0.5057*** (0.0416)	0.4330*** (0.0316)
subsidy*nonagr	1.8661*** (0.5582)	1.8657** (0.7717)	1.2964 (0.8552)
age	0.0037*** (0.0007)	0.0025** (0.0010)	0.0052*** (0.0010)
education	0.0080*** (0.0021)	0.0090*** (0.0029)	0.0070** (0.0031)
gender	0.0242 (0.0221)	0.0113 (0.3080)	0.0333 (0.0320)
health	0.0167** (0.0068)	0.0209** (0.0090)	0.0116 (0.0103)
land	0.0023*** (0.0006)	0.0016** (0.007)	0.0035*** (0.0010)
car	-0.0130 (0.0889)	-0.0326 (0.0318)	0.0126 (0.0376)
house	0.0222 (0.0215)	-0.0016 (0.0274)	0.0585* (0.0349)
asset	0.0392*** (0.0067)	0.0345*** (0.0092)	0.0426*** (0.0099)
finance	0.0068 (0.0051)	0.0112 (0.0078)	0.0044 (0.0069)
mechanization	0.0047*** (0.0018)	0.0111*** (0.0085)	0.0064** (0.0028)
family size	-0.0254*** (0.0057)	-0.1145 (0.0302)	-0.0194** (0.0081)
burden	-0.0223*** (0.0074)	-0.0781* (0.0399)	-0.0236** (0.0104)
regional economic development	0.0160 (0.0215)	0.0630 (0.1341)	0.0083** (0.0289)
N	3874	2176	1698
Pseudo R <sup>2</sup>	0.1811	0.1820	0.1907

\*\*\*, \*\* and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

## 5. CONCLUSION

Increasing farmers' income is one of the goals of agricultural subsidy policy, and non-farm employment of labor force is considered to be the main way to effectively promote poverty reduction in rural areas. Based on the micro data of CHFS, this paper establishes probit model considering the impact of non-farm employment on the basis of traditional agricultural subsidies promoting rural poverty reduction. This paper empirically studies the poverty reduction effect of agricultural subsidies and non-farm employment, and whether the non-farm employment of rural labor force can promote the poverty reduction effect of agricultural subsidies. The empirical results show that both agricultural subsidies and non-farm employment can effectively reduce the probability of rural families falling into poverty, and the higher the level of non-farm employment, the stronger the poverty reduction effect of agricultural subsidies on rural families, and this effect is more obvious in the main grain producing areas. In addition, the education and health level of the head of household, cultivated land area and mechanization degree can effectively promote the increase of rural household income. The above conclusions indicate that to further improve the effect of rural poverty reduction, policy-oriented efforts should be made to guide the transfer of surplus rural labor force, make full use of rural human resources, and create more non-farm employment opportunities for farmers. At the same time, agricultural subsidies should be carried out on the basis of realizing non-farm employment, so as to give full play to the synergistic promoting effect of agricultural subsidies and non-farm employment.

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