

## Income Determinants in Rural Yulin

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**Abstract.** Yulin city is the energy industry base of China, and there is huge amount of coal, petroleum, natural gas and other kind of mineral resources. On one hand, Yulin city is a big city of energy, and it has high-speed total industrial output value. On the other hand, there are a lot of Poor County and poverty population in Yulin City. As a result, it is important for us to do research on this area. In this paper, the author firstly discussed the evolution on peasant's income during the past ten years. The author found household's income had been increased constantly on resource-rich areas, but the growth of household's income has been unstable. And there were apparent characteristics of stage on increase of household's income. Besides, the income gap between urban and rural areas has been obvious. Secondly, the author constructed household's income determine equation, and analyze factors which influenced household's income by using multiple regression method. The author drew a conclusion that the amounts of labor, whether to get the environmental pollution compensation, family size, labors' average outdoor-work time during the year and so on were significant factors which affected peasant's income. According to the conclusions above, the author puts forward some suggestions.

### Introduction

There is a general agreement that poverty is widespread and prevalent in Chinese rural areas. Many studies have also confirmed that the rate of poverty in the rural areas is higher than in urban areas [1]. As a national energy and heavy chemical industry base, Yulin is an energy-rich but ecologically fragile zone. Income gap between urban and rural areas is widening from 99 Yuan in 1981 to 19199 Yuan in 2016. On this situation, how to solve the farmers' income growth problem has become the biggest problem in Yulin City. The goal of any poverty reduction strategy is to increase income and other welfare indicators. Any policy which aim is to increase must first understand the composition and determinants of rural income, so that target interventions can be applied appropriately [2].

### Materials and Methods

Data used in this research are from a comprehensive household income and expenditure survey of farm households in Yulin city of China. The data were collected between April and June 2016. Yulin is a resources-rich city but 76% of the rural population is poor. Generation of rural non-farm employment for the poor has emerged as an important rural development policy topic. Thus, the contrasting features of a thriving off-farm sector bedevil with a high poverty rate makes the State an interesting study area.

The sample consists of 110 farm house, which were chosen by a multi-stage random sampling technique. Then, four villages were randomly selected for this research and about 30 households were sampled in each village. Apart from migrant farm workers, who came from other city on a seasonal basis, all households living in the village can be classified as farm households and non-farm households.

The study analyzes the determinants of total income at the household level. This is useful in particular, to understand the factors which affect total income and why the income of some households is large and others are small. The author estimate a regression model of total income against a set of explanatory variables, using the Ordinary Least Square (OLS) techniques.

## Result and Discussion

The questionnaire shows that thirty- five percent of the sample households in rural Yulin receive income from off-farm sources and non-agriculture wage is the most important which mainly derived from formal and informal jobs in construction, manufacturing, education, health, commerce, administration and other services. 29% households derive mainly income from characteristic agriculture, such as millet, beans and jujube. 28% households derive most income from crop farming which is mainly subsistence in nature, is by far the most important single source of income for the rural households. The remaining households' income is mainly from land transfer and remittance.

Even though all the sample households have land, not all of them cultivate their land. Some of them abandon land and choose to work in nearby counties. Because of the little educational and professional qualification, most peasant-workers are engaged in construction and service, which reduce their earning from available non-agriculture activities.

Many studies have shown that rural households in developing countries earn more from own-farming than any other income source [3]. Only in a few countries where landless peasants constitute a sizable population, is the importance of non farm incomes greater than own-farm income. Moreover, in theory, the functional income distribution of off-farm income differs over households and regions [4]. In this case, nonfarm wage employment is much more important than farm wage employment income, although the poorer households tend to be below the nonfarm wage. There is also some evidence that there may be a segmented rural labor market and that there are some cases for which the agriculture wage may be higher than the average nonfarm wage.

## Determinants of Total Income

The sample statistics of the dependent and explanatory variables included in the model are shown in Table 1.

Table 1. Descriptive statistic (N=110)

Variables	Description	Mean+SD
Family size	Number of household members	3.927+1.555
Labor	Number of primary labor in household	2.109+0.871
Age	Age of household head [years]	48.873+12.262
Education	Number of years of schooling of the household head [year]	8.345+2.913
Work time	Number of months work in nearby counties in average year [month]	8.218+4.792
Farm size	Area cultivated by household in survey year [mu]	2.264+3.035
Corn scale	The proportion of corn cultivated in survey year [%]	0.226+0.303
Compensation	Dummy for whether to get the pollution compensation[yes=1,no=0]	0.545+0.500
Income	Income is expressed in per capital term [Yuan]	12600+8168.19

\*\*SD is robust standard deviation

Of the eight variables included in the regression model, seven were found to have significant impact in determining household income (Table 2). Family size has a negative impact on household income. This is not surprising, as income is not expressed in total household income. Every additional family member added to the household decreases average net income by approximately 24.2% on average. Because of the amount of labor in a family is limited, expanding family size cannot increase average income. But in the long run, it will benefit the increase in income. Labor positively influences average income and increasing the labor by one number would increase income by about 45.8%. The result also indicate that increasing education by one year, work time by one month, and farm size by one mu would increase average income by 6.7%, 5.3%, and 5.0% , respectively. This result is quite consistent with those of other similar studies. If farmers get more

education, they will have more opportunities to get a job. Meantime, more education can help farmers increase the time to work outside which also promote increase of the family income. Obviously, scale production is conducive to improving efficiency and the mechanical efficiency is higher than manual. Large agricultural machinery can only play a role in large-scale production. Expanding production scale is an effective way to increase output and agriculture income. Farmers' income increases every year, the scale of agricultural production raises gradually, and agricultural production and farmers' income is positively correlation which means the farm scale plays a significant positive role on promoting farmers' income in Yulin.

Table 2. Determinants of total household income (OLS, estimates)

Variables	Average household income Coefficient	t-value
Family size	-0.242***	-4.90
Labor	0.458***	7.79
Age [years]	-0.001	-0.24
Education [years]	0.067***	3.81
Work time [months]	0.053***	3.56
Farm size [mu]	0.050**	2.03
Corn scale [percentage]	-0.637***	-3.07
Compensation [dummy]	0.399***	5.44
Constant	8.077***	27.90
R-squared	0.7105	
F-stat	20.68	

\*\* \*\*\*Coefficients are significant at the 5 and 1% level, respectively; The dependent variable is the average annual household income expressed in CNY, N=110

Interestingly, increasing one more percentage corn scale will lower average income by 63.7%, which is a notable negative effect and also implies that there is smaller contribution of cultivating corn to average income in rural Yulin. Inability to get the pollution compensation will cut down average income by approximately 40%, which only appear in special areas, just like Yulin. Overall, the results suggest that off-farm factors are the significant factors that affect average income. Age have no influence on average income in the study area.

## Conclusion

This study examined income determinants of average income among rural farm households in Yulin. The results show that households earn income from many different sources and mainly from off-farm sources like working in nearby counties. The result also clearly shows that for the poor households, farming is the main income source. On the other hand, for the relatively rich households, off-farm employment is the main income sources. Econometric analysis shows that family size, labor, education, work time, corn scale and whether to get compensation are significant factors that determine average income. Labor can significantly increase agricultural output. With the advancement of urbanization, household's labor force decrease rapidly. Work time and farm size are the same as the labor which can increase farmer income. What needs to be highlighted here is the education and whether to get compensation.

Firstly, as the social economy develops, the accumulation of rural human capital promotes the technological progress which improves agriculture productivity and transforms the mode of agricultural production [5,6]. Secondly, the transition of population production preference improves the rural labor's human capital which is conducive to form a team of modern farmers with high professional skills and human capital [7]. Furthermore, along with the accumulation of rural physical capital, progress of agriculture technology and free circulation of land, organization of agricultural production will be changed in the form of enterprise. Thirdly, demographic transition

encourages agriculture labor transfer to non-agriculture sector which makes the agriculture population decrease and agriculture production scale expand. More abundant capital supply and increasing labor costs make it possible for mechanical substituting labor, and then farmer's income will gradually be increased. Last, the demographic transition process accompanies by a decline in fertility which reduces the number of rural labor. Because of this progress, the capital stock per labor improves which is also beneficial to transform traditional agricultural production organizations and increase of income.

The paper also shows that whether to get compensation is the significant factor which influences income. But, this is not the driving force for sustainable growth. Resources will eventually be exhausted, so farmers can not rely on resources to protect their own living standards. They should put more energy into agricultural production or outdoor-work. Northern Shaanxi climate condition is suitable for developing characteristic agriculture which is an effective means to help farmers increase income. As nonfarm employment and income are often a much neglected element of rural development strategic debates, it is crucial for one key fact to enter the policy debate: nonfarm income is very important to Yulin rural households, constituting 51% of their income.

The first policy implication of results is that agriculture activities should be promoted, because it remains the major income source of the rural poor. The second implication is that direct targeting of the poor households for income transfer should also be considered in designing poverty reduction strategies. Finally, the results of this study indicate that nonfarm income is much more important than farm income. High entry barriers and capital requirements for rural nonfarm activity that the poor are simply not equipped to overcome. Government should develop public infrastructure to help increase the size of rural towns and small cities. Better infrastructure and denser population drive down transaction costs and boost investment in both the agriculture sector and the nonagricultural sectors.

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