The Impact of Entrepreneurship on the Income Mobility of Farmers' Families

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Abstract. This paper is based on Chinese Health and Nutrition Survey data, using transition matrix to estimate the relative income mobility of different farmers' families. As the results show: Entrepreneurship has a significant impact on the income mobility of farmers' families. In general, the income mobility of entry-entrepreneurship farmers' families is on the rise; the income mobility of keep-entrepreneurship farmers' families is low, but the mobility quality is the best; the income mobility of exit-entrepreneurship farmers' families is higher, but the mobility quality is the worst, while the income mobility of non-entrepreneurship farmers' families is higher, but the quality is poor. Therefore, farmers choose to start a business will improve their income mobility, and keep in entrepreneurship is conducive to improve their income and help to maintain their dominant position of income. Encourage farmers to be entrepreneurs in the new age, that is helpful to provide a fair competition environment for farmers, to improve farmers' internal flow structure, and to promote fairness and justice.

1. Introduction

The report of the 19th CPC National Congress pointed out: the main contradiction in our country has developed into the contradiction between the growing needs of the people for a better life and the unbalanced and inadequate development. Large income gap is one of the important manifestations of unbalanced development. Since the reform and opening up, with the development of economy, farmers' income has been increasing, and the income gap has been widening. According to the data of the National Bureau of Statistics, the Gini coefficient of per capita net income of rural residents generally shows an upward trend, reaching 0.39 in 2011, gradually approaching 0.4 of the international warning line, and the problem of income gap within farmers deserves attention.

Income mobility refers to the change of the relative position of an individual's income in the whole group in different periods[1], just like the change process of the same group of tourists choosing different floors for accommodation according to their wealth levels in different periods, which can fully reflect the income change of the same group of people[2]. If a society with a large income gap has a higher income mobility, the income gap will not solidify [3]. Therefore, higher income mobility can effectively alleviate the social problems caused by the consolidation of income gap [4]. Therefore, the study of income mobility is a dynamic perspective to study income inequality, and it is also more conducive to solving the problem of income inequality.

Scholars often distinguish income mobility from absolute and relative perspectives. Among them, relative income mobility is the focus in this field. Therefore, the income mobility studied in this paper refers to relative income mobility. The relative income mobility refers to the change of the income position of the same individual or the family in the same group during different periods, with ordinal characteristics[5]. Scholars' research on income mobility can be divided into three directions.The first is the measurement of income mobility, that is, observing the level of income mobility. The transition matrix is the basic tool to analyze the relative income mobility. A series of indexes such as inertia rate, weighted moving average rate and so on are constructed based on the matrix, which are widely used in articles [6,7]. The second is the influencing factors of income mobility. Scholars mostly analyze the influencing factors based on multivariate logic model and regression-based decomposition

method. The results show that the main factors affecting income mobility are education level, occupational characteristics, family income structure, human capital, social relations, family demographic characteristics, and so on[8,9]. scholars pay the highest attention to the influence of education on income mobility, and draw a consistent conclusion that education is positively correlated with the size and quality of income mobility [10]. For other factors, scholars have also analyzed its specific impact on income mobility. The third is the decomposition of income mobility, further explore the structure of income mobility [11,12].

Since the proposal of "mass entrepreneurship and mass innovation", service policies for entrepreneurship and innovation have been continuously launched, and people's enthusiasm for entrepreneurship has been rising. Migrant workers have played an important role in entrepreneurship. According to statistics, the number of people who have returned to the countryside to start their own businesses has reached 7 million, among which 68.5% are migrant workers, about 4.795 million. However, entrepreneurship is a complex and high-risk economic activity, and farmers' active participation in entrepreneurship is just the beginning. Whether entrepreneurship can really increase its income and improve its income status is the key to realizing its role in promoting social equity and justice. Blind participation in entrepreneurship is counterproductive. The existing articles have not discussed the impact of entrepreneurship on income mobility. Therefore, the analysis of the income mobility of farmers who chose to start their own businesses in the past is of reference significance for whether farmers choose to start their own businesses in the future, and it is practical significance for promoting social equity and justice, and the study is a supplement to the existing research on income mobility. So, based on the CHNS2000-2011 data, this paper will use the income transition matrix to analyze the relative income mobility and the mobility quality of farmers' families in each period.

2. Research method

This paper will measure and analyze the relative income mobility based on the classical transition matrix tool, compare the income mobility and the flow quality of the four types families in the whole samples.

Income mobility mainly reflects the change of income position of an individual or family from one period to another. Suppose that from period t to period t_1, the income of each period is m grades from low to high. In the t period, the income level of the individual or family is x(i grade), in the t_1 period, the income level of the individual or family is y (j grade). The transition matrix expression is:

$$\mathrm{P}(x, y) = [p_{ij}(x, y)] \in R_+^{m \times m} \, .$$

(1)

Equation (1) is a matrix of order $m * m$, P_{ij} denotes the probability of that in the t period, the income level is x (i grade) and that in the $t+1$ period, the income level is y(j grade). Therefore, every element in the matrix is between 0 and 1. For the calculation of P_{ij}, as follows:

Assume that X,Y has a finite first order moment and that the income for each period is divided into m levels from low to high, and $0 < \omega_1 < \omega_2 < \omega_3 < \cdots < \omega_{m-1} < \infty$, as follows:

$$p_{ij} = \frac{\Pr(\omega_i \leq x \leq \omega_{i+1} \, \& \, \omega_j \leq y \leq \omega_j)}{\Pr(\omega_i \leq x \leq \omega_{i+1})} \, .$$

(2)

Based on equation (2), the following matrix can be obtained:

$$P = \begin{vmatrix} P_{11} & P_{12} & \cdots & P_{1m} \\ P_{21} & P_{22} & \cdots & P_{2m} \\ \cdots & \cdots & \cdots & \cdots \\ P_{m1} & P_{m2} & \cdots & P_{mm} \end{vmatrix}$$

(3)

In equation (3), the meaning of elements such as P_{12} indicates the probability that income of an individual or a family is in the first grade in the t period and in the second grade in the $t+1$ period. According to equation (3), a series of relative income mobility indexes such as inertia ratio, weighted

moving average rate and so on can be obtained, and the quality of income mobility can be measured by calculating the probability of upward and downward mobility in groups. In this paper, the above two indexes are selected to measure the income mobility, and the quality of income mobility of the four groups is calculated and compared.

Inertial rate: the proportion of an individual or family whose income position is constant in the *t* period and *t+1* period, that is, the arithmetic mean value of the probability on the diagonal line of the calculation matrix.

$$\mu = \frac{1}{m} \sum_{i=1}^{m} P_{i=j} \quad . \tag{4}$$

The μ is greater, the income mobility is lower; the μ is smaller, the income mobility is higher.

Weighted moving average (WMA): the probability of moving with the weighted average moving amplitude as the weight. The equation is as follows:

$$\lambda = \frac{1}{m} \sum_{i=1}^{m} \sum_{j=1}^{m} |j-i| P_{ij} \quad . \tag{5}$$

The bigger λ is, the higher income mobility is; and the smaller λ is, the lower income mobility is.

The quality of income mobility is to compare the probability of upward mobility of each income class or whole and the probability of downward mobility. The formula for measuring the quality of overall income mobility is as follows:

$$\text{Upward Mobility: } P_1 = \sum_{i=1}^{m-1} \sum_{j=i+1}^{m} P_{ij} \quad . \tag{6}$$

$$\text{Downward Mobility: } P_2 = \sum_{i=j+1}^{m} \sum_{j=1}^{m-1} P_{ij} \quad . \tag{7}$$

Among them, the ratio of upward mobility to downward mobility can more intuitively indicate the quality of income mobility. If the ratio is greater than 1, it is beneficial to most people.

3. Data and Analysis

The microcosmic data used in this paper is CHNS data (China Health and Nutrition Survey), The data cover the eastern, central, western and northeast regions of China, with a total of 9 provinces. Based on the fact that the craze of migrant workers' entrepreneurship is accompanied by a new wave of entrepreneurship, this paper chooses the data from 2000 to 2011 as the research object, and the background of the times is even more connected. It will have reference meaning to present and future.

In addition, based on the survey of small business income in CHNS data, it covers business, service industry, manufacturing, mobile, construction and other aspects, which covers the scope of business activities of farmers in a more comprehensive way. Therefore, the farmers who obtain commercial income are regarded as entrepreneurial farmers. In order to make the income of different years comparable, the CPI index was applied to nominal income in 2011.

This paper focuses on the impact of entrepreneurship on farmers' income mobility, so we calculate the indices of income mobility of four types families (entry-entrepreneurship, exit-entrepreneurship, keep-entrepreneurship,non-entrepreneurship) in the all of households. In order to reduce the error, the proportion of entrepreneurial income in household income should be more than 10% or be equal to 10%. The number of samples in each analysis period is 3198, 3174 and 3620, respectively.

According to the transformation matrix, the flow probability of different income groups in the population is calculated, and the matrix is formed. The following indexes are calculated. See table1 .

Table 1. Indexes of relative income mobility

Index	group	2000-2004	2004-2006	2006-2009	2009-2011	Mean	Std.
Inertia Ratio	(1)	0.247	0.261	0.211	0.166	0.221	0.042
	(2)	0.2	0.291	0.349	0.292	0.283	0.062
	(3)	0.293	0.324	0.371	0.313	0.325	0.033
	(4)	0.281	0.296	0.283	0.276	0.284	0.009
Weighted Average Move Ratio	(1)	1.218	1.234	1.413	1.437	1.326	0.115
	(2)	1.537	1.337	1.251	1.244	1.342	0.137
	(3)	1.102	1.075	1.006	1.009	1.048	0.048
	(4)	1.299	1.253	1.313	1.318	1.296	0.030
Up-Mobility / Down-Mobility Ratio	(1)	1.261	1.533	1.45	1.905	1.537	0.270
	(2)	0.898	0.691	0.844	0.775	0.802	0.089
	(3)	1.12	1.629	1.975	2.025	1.687	0.417
	(4)	0.991	0.98	0.906	1.092	0.992	0.076

Note: (1)entry-entrepreneurship, (2)exit-entrepreneurship, (3)keep-entrepreneurship, (4)non-entrepreneurship

Table1 shows that, from 2000 to 2011, the inertia ratio of keep-entrepreneurship families is higher than that of the other three types peasant families, indicating that the income mobility of this type families is lower than that of the other three types families. Secondly, on the whole, the income mobility of the exit-entrepreneurship families is the lowest in the three types, and the income mobility of the entry-entrepreneurship families is high in the four stages, and it shows an upward trend. There was no obvious change in income mobility in these stages of non-entrepreneurship families.

As can be seen from Table1, during the four periods of time, the weighted moving average ratio of keep-entrepreneurship families are in the lowest position, so, the income mobility is the lowest. The income mobility of the entry-entrepreneurship families shows an upward trend, while that of the exit-entrepreneurship families shows a downward trend. The income mobility of the non-entrepreneurship families is at a medium level, and there is no significant change.

It can be seen from Table1 that, on the whole, the mobility quality of keep-entrepreneurship peasant families is the best and shows an upward trend. The mobility quality of the entry-entrepreneurship peasant families is the second, and the Up-Mobility / Down-Mobility Ratio of the two types families is greater than 1, indicating that the number of upward families is greater than that of downward families in each stage, and the ratio also shows an upward trend. The ratio of non-entrepreneurship families fluctuates around 1, and there is no significant change, indicating that the number of upward families is basically equal to the number of downward families in each stage.The mobility quality of exit-entrepreneurship families is the worst.

4. Summary

Based on the China Health and Nutrition Survey data, this paper analyzes the impact of entrepreneurship on the income mobility of farmers' families and draws the following conclusions:

The income mobility of keep-entrepreneurship families is the lowest, but the quality of mobility is the best.The income mobility of non-entrepreneurship families is high, but their mobility quality is poor, and there is no significant change in the four stages of the mobility and quality. As to the entry-entrepreneurship families, the overall income mobility is high, and the quality of income mobility is good. The income mobility of exit-entrepreneurship is high, but the quality of their income mobility is the worst. It can be seen that the choice of entrepreneurship is conducive to improve the income mobility, and maintain a higher income status.

Based on the above conclusions, the following suggestions are put forward: first of all, from the point of view of the government, the government should continue to vigorously support the return of migrant workers to set up their own businesses, increase the vitality of rural development, and further improve the mobility structure of farmers. Secondly, for farmers, although the choice of

entrepreneurship is conducive to improve the quality of the internal mobility of farmers on the whole, it is still an uncertain activity when it comes to micro individuals. Farmers should fully consider their own and family conditions. The strong support from the government is a good opportunity for capable and qualified farmers.

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