The influence of land fragmentation on land transfer rent: Evidence from farmers in Guangdong Province

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Abstract: In order to further study the comprehensive benefits of land fragmentation transfer on agricultural operations and determine whether the current fragmentation problem is the core reason for low land circulation efficiency, this study used the survey data of 11 counties in Guangdong Province to assess the real impact of land fragmentation characteristics on rents under current conditions, and obtained the results through empirical testing. The basic conclusion of this paper is that farmers prefer large plots: the larger the plot area, the higher the rent per mu. At the same time, the implementation of "land ownership confirmation" may solidify the situation of land fragmentation. This result means that the negative effect of fragmentation on land use efficiency is great, and solving the fragmentation problem should be the main research direction of land related problems in the future.

Key words: Land Fragmentation rent scale economy land policy

1. Problem raising

At present, our agricultural industry is in the transition period from traditional agricultural industry to modern agricultural industry. In a longer period of time, our country has been carrying out the unremitting exploration of the way of modern agriculture development. The household contract responsibility system, which was implemented in the early 1980s, enabled farmers to regain the right to use land and the right to surplus earnings, significantly boosting farmers' enthusiasm for production. The reform of the basic agricultural management system, which was mainly characterized by land parcel management, separated the collective ownership of rural land from the contracted management of rural land and made important contributions to the rapid growth of agricultural production and rural economy at that time. However, although this "good or bad land distribution method" inspires farmers' enthusiasm in production, its disadvantages gradually appear with the development of the productive forces: The reform of the family contract management system makes the land to be broken and small scale in farming, which leads to the generation of land small scale scattered management problem, and the development of our agricultural modernization has been restricted in this for a long time. Therefore, the academic circle and the government generally believe that, in order to change the small-scale management mode of agricultural land that has long restricted China's agriculture, effectively improve agricultural production efficiency, and promote agricultural moderate scale management are the objective requirements of productivity development. In order to achieve this goal, the Chinese government tries to build a new agricultural management system, promote the development of national agricultural modernization and make it closely follow the development pace of industrialization, information technology and urbanization through the implementation of the policy of the circulation of agricultural land management right. Recently, the land policy of our country has focused on separating the land contract management right into land contract right and land management right. Through clear ownership, stable contract right, activating the management right, the land is developing moderately scaled operations.

However, some research believes that land fragmentation has existed in our country for a long time, which is closely related to our history and national conditions, and its existence has certain rationality. Zhang Yin Junjie et al. (2008) believed that the existence of land fragmentation could disperse agricultural natural risks and reduce agricultural market risks. Ye Chunhui et al. (2008) believe that under certain conditions, farmers can make full use of labor resources and diversify production according to biological habits of crops, thus promoting agricultural yield increase and farmers' income increase. There are two completely different views in the academic circle. Then, is the impact of land fragmentation on land value and farmers' income positive or negative? This is the main issue to be discussed in this study.
2. Theoretical analysis and hypothesis

2.1 Measurement of the overall direction of impact of land fragmentation

Many domestic and foreign studies have evaluated the impact of land fragmentation in China from different perspectives. These evaluation research direction is different, the conclusion is also different. The more critical problem is that, regardless of who is right or wrong about their conclusions, the common problem they fail to address is that farmers will face price estimates of their own factors, most importantly Labour, whether in terms of productivity, costs or profits. The difficulty is that agricultural production has a strong seasonal demand for labor, and there are obvious differences between busy and idle seasons, that is, the wage rate and output contribution rate of labor input are different in different periods, so it is not suitable to use a unified wage rate to calculate costs and profits or use a unified model parameter to estimate the contribution and efficiency of labor output. Therefore, referring to Burt's (1986) conclusion that land rent is a reasonable indicator to measure the value of agricultural land, this study attempts to evaluate the overall impact of land fragmentation and the comprehensive value of land scale management from a more direct perspective -- the relationship between land area and circulation rent. The basic logic is: if the combined positive and negative effects of fragmentation at this stage are negative, it can be expected that farmers will pay a lower rent per mu for this small piece of land when leasing. Otherwise, the opposite is true. The advantage of using the circulating rent as an indicator is that it can avoid the complexity and error of the cost accounting process, evaluate the economic value of land scale from a new Angle, and rethink the policy orientation of encouraging land consolidation.

2.2 Research review and hypothesis of this paper

Theoretically, land fragmentation has both positive and negative effects on agricultural production. On the one hand, it promotes the diversification of farmers' planting, thus reducing the risk of farmers engaged in agricultural production. On the other hand, it not only increases the cost of agricultural production, reduces the production efficiency, causes the waste of land resources, but also hinders the improvement of agricultural output and technical efficiency. On the whole, through theoretical research, most people believe that it brings more prominent negative effects on agricultural production. Therefore, the hypothesis of this study is that land fragmentation has a negative impact on the overall land management benefits. In terms of data, it is reflected in the relationship between land area, land number, distance from home and circulation rent.

Considering the multi-functionality of rural land, the comprehensive value of farmers' land should be a multi-dimensional and comprehensive concept. In recent years, a large number of scholars in the domestic academic circle have studied the transfer of rural land in theory and practice. However, there are few researches on the relationship between fragmentation and rent. In particular, there are no empirical researches on this aspect, which is the innovation of this paper.

3. Data and analysis

3.1 Data source and instructions for use

The data used in this paper are from household survey data of Rice Circulation and Industrial Economy Post Research Team of Guangdong Province in 2017. With the help of Guangdong Rice Industrial Technology System Experimental Station, the investigation team selected the main rice production towns in the area where the experimental station was located, and conducted field surveys on farmers in the main rice producing areas of Guangdong Province. Two villages with large rice planting area were selected from each town, and farmers engaged in rice production were randomly selected from each village for investigation. The formal investigation began in late July 2017 after a two-month pilot survey was conducted in advance and specific villages were identified. The main members of the investigation team are mainly composed of graduate students and undergraduates from the School of Economics and Management of South China Agricultural University. The specific survey sites were Chaoyang District, Shantou City, Shixing District, Shaoguan City, Lianshan District, Qingyuan City, Yangjiang Pinggang District, Huicheng District, Huizhou City, Nanxiong District, Leizhou City, Zhaoming City, Meixian County and Xingning City, Taishan District, Jiangmen City and Yunfu City, Luoding District. A total of 727 rice-producing farmers from 19 towns and 23 villages in 11 counties were collected in the survey, and data related to rice production were collected. Surveys of rice producers include household population and labor utilization and income, arable land and land use, input-output and cost-effectiveness of rice production (including input-output at the plot level), farmers' willingness to grow grain and utilization of rice production technology. The data can meet the needs of this study.

Based on land-level data, this paper mainly focuses on the relationship between the area size of circulating land and the rent level. Regarding the use of data, the following points are explained:

(1) This study only uses the transfer plot data of the transferring party. The reason is that when multiple families transfer several pieces of land out, for example, 20 pieces of land with an area of 1 mu, only the contiguous 20 mu can be observed from the Angle of transfer. From the Angle of turning out, only 10 separated 1 mu of data can be seen. (2) The transferred land can come from the contracted land of villagers or the collective floating land of villagers; There are systematic differences between the two, so only the contracted land data of villager transfer is examined here. (3) Samples without money or rent in kind are excluded for the reasons described above. After sorting out the results, 1,024 plot samples of 306 transferred households were screened from 727 rice
producing households. Among the 1,024 samples, samples transferred from village collectives or enterprises were excluded, leaving 888 samples. Excluding those without money or rent in kind, 385 samples remained, accounting for 43.36%. In the samples of payment of rent in kind or in currency, 50 samples of missing data in other forms or abnormal data are excluded, and the final remaining 335 valid samples are from 112 transferred households. The average rent of valid samples is 290.04 yuan/mu, and the rent mode is 300 yuan/mu.

3.2 Relationship between the degree of fragmentation and rent

Table 1 Relationship between the degree of fragmentation and rent

<table>
<thead>
<tr>
<th>Land area (mu)</th>
<th>Number of samples</th>
<th>rent (yuan/mu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0, 1]</td>
<td>166</td>
<td>225.3066</td>
</tr>
<tr>
<td>(1, 2]</td>
<td>55</td>
<td>284.2727</td>
</tr>
<tr>
<td>(2, 4]</td>
<td>64</td>
<td>339.0734</td>
</tr>
<tr>
<td>(4, 8]</td>
<td>23</td>
<td>421.3043</td>
</tr>
<tr>
<td>(8, ∞)</td>
<td>27</td>
<td>437.0370</td>
</tr>
<tr>
<td>Total (mean)</td>
<td>335</td>
<td>341.3988</td>
</tr>
</tbody>
</table>

Table 1 describes the overall relationship between the degree of fragmentation and rents. It can be seen that the lower the degree of fragmentation (the larger the land area), the higher the rent per mu: the average rent of land less than 1 mu is only close to 225 yuan/mu, and the average rent of land more than 8 mu is close to 440 yuan/mu. As can be seen from the table, the larger the land size, the higher the absolute rent level. In addition, from the perspective of rent relative value, the smaller the plot, the more likely its rent per mu is lower than the mode; The larger the plot, the more likely the rent per mu is higher than the mode; Generally speaking, the larger the lot size, the higher the rent per mu.

4. Conclusion and enlightenment

This chapter will make a brief summary of the previous analysis, and discuss the policy implications of this study according to the existing conclusions, and finally point out the shortcomings and areas that can be improved in this paper.

4.1 Basic conclusion

Through relevant theoretical analysis, this study discusses the advantages and disadvantages of fragmentation management and its basis conditions. From the perspective of rent, this paper uses the survey data of 11 counties in Guangdong Province to test the comprehensive impact and economic value of land expansion under the current conditions. The conclusions drawn in this paper are as follows:

First, empirical analysis shows that the increase of land parcel area will improve economic value and land rent per mu. With the development of non-agricultural market, the increase of labor force cost, the innovation of agricultural technology, the improvement of insurance market, the development of agricultural marketization and the diversification of consumption, the benefits of land fragmentation to agricultural production will become very limited. What is more prominent is its disadvantages of hindering economies of scale and delaying the transformation of planting methods. The fixed effect of the control village indicates that reducing the degree of individual fragmentation can increase the rent relatively limited, and the economic significance of reducing the degree of fragmentation in a larger scope is more significant.

Second, the implementation of "land ownership confirmation" may solidify the situation of land fragmentation. Due to external influences between plots and economies of scale effect of land resources, plots show strong features of "contiguous utilization" in agricultural production, such as unified layout of plated crops, joint use of agricultural machinery, collective construction of shared irrigation facilities, etc. However, the construction of pulverized property rights to farmers is strengthened at present, which may not be conducive to the serial circulation. The reason behind this problem may be that after the consolidation of farmers' "fragmented property rights", village committees have no way to organize "minority subordination to majority" transfer transactions, and there may be the phenomenon of "holdout households" voting down, which is not conducive to the implementation of land consolidation projects and collective land adjustment. Therefore, the registration and certification of rural contracted land (that is, the policy of "land confirmation"), which is being promoted at the present stage, may solidify the situation of land fragmentation from the level of property rights, leading to even more conflicts between "fragmentation rights" and "land use".

4.2 Policy enlightenment

From the empirical results of this study, it is not difficult to see that encouraging land consolidation and consolidation is beneficial from the perspective of improving economic benefits. At present, there are three ways to promote land consolidation in China: transfer of land to the market, consolidation of government land and land, and land redistribution without the principle of "equal distribution of the good and the bad, and matching of the near and far". However, is the efficiency of land transfer market to land integration high or low? Further, what is its impact on agricultural production? What is the impact of appraisal right confirmation on collective decision-making of "whole land use" such as land consolidation? Discuss how to achieve the "unified" side of the "unified" management system when the policy of confirming rights is basically implemented. These questions are in the formulation of land and land policies to be further studied.

Based on the above analysis, the author puts forward the following suggestions for future land policy orientation: First, establish a specific type of land market to avoid ineffective spontaneous transfer. Based on the regional nature of the local land market, local governments
formulate and guide the establishment of a special type of land market according to local conditions, so that the transfer of land has a good performance in solving the fragmentation problem. Second, strengthen the collectives' adjustment rights to land interests, and weaken the contract relationship between farmers and specific plots. The policy of "household contracting" and "confirming the right of agricultural land" has strengthened the property right of rural households over land, and played a negative role in solving the fragmentation problem unexpectedly in practice. Therefore, we should realize the conflict between the two in time and optimize the policy. Thirdly, the permanent migration of peasants to cities was guided to greatly reduce the number of peasants and increase the quantity and surface volume of land in the hands of peasants. It can increase the probability of land adjacent, shorten the interlocking operation, reduce the cost of land transfer between farmers and people, and reduce the degree of fragmentation of agricultural land by establishing an orderly land transfer market.

References