

Two Level Principal-Agent Analysis in Farmland Transfer

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Abstract

With the acceleration of urbanization, a large number of rural labor forces have been transferred. As the basic means of production, land circulation is becoming more and more frequent. Scale management and land circulation have become the necessary trend of agricultural modernization. Based on the purpose of maximizing the interests of the participants and further optimizing the allocation efficiency of land resources in the process of land transfer, this paper constructs a dual principal-agent model of farmers and intermediary organizations, intermediary organizations and scale operators, which is multi-to-one and one-to-many principal-agent relationship respectively, and finds out the optimal level of effort. Finally, it analyses the influence of different factors on the interests, and puts forward some suggestions to the principal and agent based on the analysis results, in order to promote the further development of the land circulation market.

Keywords

Land Circulation, Principal-Agent, Peasant Household, Intermediary Organization, Scale Management Main Body

1. Introduction

Land transfer refers to the transfer of land use rights in the hands of farmers to a large-scale agricultural operation entity during the contract period, that is, the right to retain the contract and transfer of the right to operate the land.

With the industrialization of the country and the acceleration of urbanization, a large number of farmers in rural areas have begun to enter towns and cities, engage in non-agricultural industries, and some even put the entire labor force of the family into the secondary and the third industries. Coupled with the natural factors of agriculture, the impact of large-scale, unstable agricultural income

and low production of food crops has led to the phenomenon of arable land and extensive management in some places, which not only makes China's food security crisis, but also wastes land resources.

Along with the loss of rural labor, the transfer of farmer's land contractual management rights was induced. For land transfer, the national policy has experienced a process from prohibition to acquiescence to encouragement. In the 1970s and 1980s, China's economic development level was low, and the household contract responsibility system was not fully established, and the phenomenon of rural land use rights was unstable, so the country's rural land transfer during this period is strictly prohibited. In 1984, the "Central No. 1" document mentioned for the first time that farmers who were unable to operate or transferred to other industries could hand over the land to collective management. However, the amount of land transferred at this time was very limited, and more farmers were in a part-time state rather than devoted their all energy to non-agricultural industries. In 1988, the Constitutional Amendment officially deleted the hard requirements for non-transferable land and set up test sites for land transfer in coastal areas. Although the land transfer system was developed in the 1990s, it has not been promoted nationwide. Until the 21st century, the form and scale of land transfer have undergone tremendous changes. In 2008, the "Decision of the Central Committee of the Communist Party of China on Promoting Some Major Issues in Rural Reform and Development" mentioned the need to strengthen the transfer of rural land contractual management rights and allow farmers to carry out paid circulation in various forms. Since then, 2013-2016, Central Document No. 1 further Emphasize the importance of land transfer, and encourage and support the transfer of contracted land to large professional households, family farms, and farmer cooperatives; develop various forms of moderate scale operations; actively cultivate the New business entity, such as large professional households, family farms, farmer cooperatives, agricultural industrialization leading enterprises, etc. In 2014, the State Council issued the "Opinions on Rural Land Acquisition, Collective Management Construction Land Entry, and Homestead System Reform Pilot Work", and decided to conduct pilot projects in more than 30 administrative regions across the country. In recent years, the trend of land circulation has become more and more popular. So far, the land involved in the transaction has reached 102.21 million mu, of which the transfer of agricultural land accounts for the largest proportion of the transaction area.

In the study of the current situation of land circulation, Hongyu Zhang [1] through large observation data, in 1992 there were 4.733 million contract farmers on land subcontract or transfer of 1161 million mu, accounting for 2.3% of contracted farmland and 2.9% of the total contracted land area . Jing Zhao [2] pointed out that there are mainly two types of land transfer-farmers' self-style and government-led type, and analyzed the impact of two types of land transfer on farmers' long-term investment. Yane Li [3] conducted a questionnaire survey on the current situation of land circulation in typical areas of Guizhou Province,

and found that the difference in the scale of agricultural land circulation is mainly reflected in the three aspects of circulation mode, circulation object and circulation scale. The constraints are geographical environment, land price, farmers' own factors and farmland policies and so on. In the market research on rural land transfer, Yulong Li [4] *et al.* constructed an evaluation index system for land transfer maturity consisting of four indicators: land transfer market construction, guarantee mechanism and system, non-agricultural employment drive and agricultural technology development. For farmers, an evaluation method for judging the maturity of land transfer is proposed. Jing Ning [5] *et al.* through survey data on poor areas Quietness and other survey data on poverty-stricken areas, found that land rights can promote land transfer, increase the income of poor households, and raise the level of wages and income of farmers. In the way of land circulation, intermediary organizations have appeared in many places, according to the research report of the Joint Research Group of the Agricultural Modernization and Rural Development Research Center of Zhejiang University and the Zhejiang Provincial Agriculture Department [6], a total of 3069 intermediary service organizations participated in Zhejiang Province. The ratio of the number of farmland transfer intermediary service organizations to the number of villages is 7.8%. At the same time, the agricultural land transfer area in Zhejiang Province has reached 300 mu, accounting for 12.4% of the total cultivated land area of the province. The proportion is among the best in the country. Yongjie Shan [7] *et al.* used the mixed strategy theory to construct the game model of the two sides. After the Nash equilibrium, it was found that the expected return of the two parties could not be realized because of the high expected return and objective factors. Chunjiang Wei [8] used the method of evolutionary game to explore the game problem of the three parties in land circulation, and finally came up with a stable evolution strategy for practical reference. Zhizhang Wang [9] and others believe that intermediary organizations are a powerful guarantee for ensuring the orderly and efficient circulation of rural land. It is necessary for China to further cultivate and develop rural land transfer intermediary organizations on the existing basis. Jun Zhang [10] takes Zhejiang Ningbo as an example to empirically analyze the functions of intermediary organizations in rural land circulation. The existence of intermediary organizations has changed the current situation of rural land circulation disorder, inefficiency and supervision failure. Thus, the existence of intermediary organizations circulation plays an integral role in accelerating land.

This paper analyzes the principal-agent relationship between them based on the relationship between the upstream and downstream supply chain members of "farmer-intermediary organization-scale business entity". In the political and economic life, the principal-agent phenomenon is very extensive. Ross [11] founded the bilateral commission theory (single principal and single agent); Bernheim [12] [13] *et al.* proposed the theory of joint agents (multiple principals and single agents); Martimort [14] established the study of the system's common agent theory Framework; Weiyang Zhang [15] elaborated on the principle of princip-

al-agent theory in his book *Game Theory and Information Economics*. At present, there is not much literature on the use of principal-agent theory to study land circulation. Shukui Tan [16] and others analyzed the principal-agent relationship between the local government and the village committee, and proposed corresponding incentive measures. Fang He *et al.* used the principal-agent model to study the double-risk problem in land circulation, so that the Pareto improvements have been made to the expected benefits of the members of the land transfer supply chain. Rongrong Li [17] and others studied the principal-agent relationship of land transfer cooperatives in Hunan Province. Its research showed that the land has a principal-agent relationship asymmetric information, incomplete contract; cooperatives managers shoulder the multiple principal task, obviously leading role; Multiple reciprocity, vulnerable to vulnerable interests. Yingcong Zhang and Wenxiu Zhang [18] pointed out that in the land transfer market, the relationship between farmers, rural collective economic organizations, intermediary organizations and land users such as owners or economic organizations has the conditions for forming a principal-agent relationship. Huai Li and Lei Gao [19] believe that after the farmers sign the land contract, they have the right to transfer the land, so they can choose to operate independently, or they can choose to entrust other organizations or individuals to operate, and further form a principal agent in the farmland circulation relationship.

The existing literature is qualitative research on land transfer, rarely from the perspective of principal-agent, and some are also one-on-one principal agents of analysis. This paper combines the rural villagers in a certain area to be scattered and multi-media, and the intermediary organizations are relatively Less characteristics, quantitative analysis of the multi-to-one principal-agent model between farmers and intermediary organizations, and a single intermediary organization to serve the characteristics of many large-scale business entities in a timely manner to send the latest land information, constructed a one-to-many The principal-agent model. Starts from the goal of maximizing the interests of the principals and improving the efficiency of land resource allocation, and proposes countermeasures to different participating members.

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2. Model Description and Basic Assumptions

2.1. Agency between the Farmer and the Intermediary Organization

2.1.1. Model Description

In reality, farmers in a certain area are scattered and large in number, and there are fewer intermediary organizations. The model takes a mutually alternative farmers and a single intermediary organization have established a many-to-one principal-agent model. Since the farmer is the actual occupant of the land contractual management right in China, in the process of land transfer, the farmer is

the principal at the beginning, and the intermediary organization is entrusted to carry out the land outflow. Since farmers can't observe the level of efforts of intermediary organizations, they can only see a certain amount of information related to the level of effort, so this is a model of information asymmetry.

2.1.2. Model Assumptions

1) Set the farmer's artificial input to his own land as λ_i , μ is the input cost coefficient of the farmers, then the farmers' own input costs are $\frac{\mu}{2}\lambda_i^2$.

2) The land between farmers can be replaced by each other, so the farmers are competitive.

3) The level of effort is the private information of the agent intermediary organization, which the farmer does not know and is unobservable, assuming multiple farmers F_i ($i = 1, 2, 3, \dots, n$) set up principal-agent relationship with an intermediary organizations, intermediary organizations in their own interests and reputation, will strive to fulfill the task entrusted to farmers, at the same time, clients will be affected by other tasks entrusted upon completion of a task entrusted a farmer, suppose that the level of effort of the intermediary organization on the farmers F_i with F_j , is the a_i and a_j , the output level of land transfer is $\pi_i = k_i\lambda_i a_i + \sum_{j=1, j \neq i}^n c_j(a_i - a_j) + \varepsilon_i$, where k_i is the coefficient of influence of

the level of effort a_i on the output level of the client, indicating the competition coefficient of the farmer relative to other farmers, which may interfere with the process of land transfer due to external factors, So the output level is an uncertain random variable, indicating this uncertainty, $\varepsilon_i \sim N(0, \sigma_i^2)$.

4) Assuming that the farmer is risk-neutral, as the principal, the incentive function for the intermediary organization is $s_i(\pi_i) = \alpha_i + \beta_i\pi_i$, α_i is the fixed remuneration of the farmer i to the intermediary organization, and β_i is the incentive coefficient of the farmer to the intermediary organization.

5) Farmers are risk-neutral and their expected returns are

$$E(F_i) = E(\pi_i - s_i(\pi_i)) = (1 - \beta_i)(k_i\lambda_i a_i + c_i(a_i - a_j)) - \alpha_i - \frac{\mu}{2}\lambda_i^2$$

6) The cost of an intermediary organization's efforts is $\frac{ba_i^2}{2}$, among b is the effort cost parameter.

7) Assuming that the intermediary organization is risk averse, its utility function has the characteristics of risk aversion, $u(w) = e^{-rw}$, w is actual income for the intermediary organizing, due to $\varepsilon_i \sim N(0, \sigma_i^2)$. Therefore, the risk cost is set to $\frac{r\beta_i^2\sigma_i^2}{2}$, among r represents the degree of risk aversion.

8) The deterministic equivalent income of the intermediary organization is.

$$RC(w_i) = s_i(\pi_i) - \frac{ba_i^2}{2} - \frac{\mu}{2}\lambda_i^2.$$

9) The retention utility of the intermediary organization is \bar{w} .

2.1.3. Model Establishment and Solution

The information asymmetry between the farmers and the intermediary organizations, although the farmers clearly understand the quality of the land, but because of its remote geographical location and scarce resources, farmers actually do not know much about the relevant policies and trading markets of land transfer. At a disadvantage, build a many-to-one principal-agent model here.

$$\max_{\beta_i} E(F_i) = (1 - \beta_i)(k_i \lambda_i a_i + c_i(a_i - a_j)) - \alpha_i - \frac{\mu}{2} \lambda_i^2 \tag{1}$$

s.t.

$$\alpha_i + \beta_i(k_i \lambda_i a_i + c_i(a_i - a_j)) - \frac{b a_i^2}{2} - \frac{r \beta_i^2 \sigma_i^2}{2} \geq \bar{w} \tag{IR} \tag{2}$$

$$\max_{a_i} \alpha_i + \beta_i(k_i \lambda_i a_i + c_i(a_i - a_j)) - \frac{b a_i^2}{2} - \frac{r \beta_i^2 \sigma_i^2}{2} \tag{IC} \tag{3}$$

For the simplification of (IC), the optimal level of efforts of the intermediary organization can be obtained.

$$a_i = \frac{\beta_i(k_i \lambda_i + c_i)}{b} \tag{4}$$

Therefore, the above proxy model can be rewritten as

$$\max_{\beta_i} E(F_i) = (1 - \beta_i)(k_i \lambda_i a_i + c_i(a_i - a_j)) - \alpha_i - \frac{\mu}{2} \lambda_i^2$$

s.t.

$$\alpha_i + \beta_i(k_i \lambda_i a_i + c_i(a_i - a_j)) - \frac{b a_i^2}{2} - \frac{r \beta_i^2 \sigma_i^2}{2} \geq \bar{w} \tag{IR}$$

$$a_i = \frac{\beta_i(k_i \lambda_i + c_i)}{b} \tag{IC} \tag{5}$$

Let the participation constraint equal sign be established, solve α_i , and bring a α_i and a_i into the objective function, and find out under the condition that the principal user maximizes the expected utility.

$$\beta_i = \frac{1}{1 + \frac{b r \sigma_i^2}{(k_i \lambda_i + c_i)^2}} \tag{6}$$

Bring (2) type into (1), you can get

$$a_i = \frac{(k_i \lambda_i + c_i)^3}{b(k_i \lambda_i + c_i)^2 + b^2 r \sigma_i^2} \tag{7}$$

The expected utility of the farmer is

$$E(F_i) = \frac{b r \sigma_i^2}{(k_i \lambda_i + c_i)^2 + b r \sigma_i^2} \left(\frac{(k_i \lambda_i + c_i)^4}{b(k_i \lambda_i + c_i)^2 + b^2 r \sigma_i^2} - c_i a_j \right) \tag{8}$$

2.1.4. Results Analysis

1) We can considering β_i as the risk-sharing ratio, it indicates the propor-

tion of risks that the intermediary organization should share in the process of agricultural land outflow. As $0 < br\sigma_i^2 < 1$, so I know $0 < \beta_i < 1$, explain that in the case of information asymmetry, the intermediary organization has to bear certain risks.

2) The level of effort of the intermediary organization is proportional to λ_i , c_i , and inversely proportional to σ_i^2 . It shows that the greater the farmer's investment in the land, the greater the competitiveness, the more enthusiasm the intermediary organization serves the farmers, and the promotion of land outflow. The intermediary organizations are more affected by the random factors of the outside world, which is more detrimental to the completion of the land transfer business.

3) From the perspective of the expected utility of farmers, Inverse relationship between a and b. That is, the greater the level of efforts of the intermediary organizations on other farmers, the more unfavorable the income of the farmers. Therefore, from the perspective of farmers, in order to maximize profits, it is necessary to improve their own competitiveness and engage in good relations with intermediary organizations.

2.2. Agency between the Intermediary Organization and the Scale Operation Entity

2.2.1. Model Description

In fact, as an intermediary, the intermediary organization aims to obtain more operating income. After they concentrate the information on the land transfer of the farmers, they will send signals to a number of large-scale business entities and entrust them to regulate the land (such as agriculture). Land use, grain and grain use, in order to obtain more intermediate interests, so there is a one-to-many principal-agent relationship between the intermediary organization and the scale operation entity. The scale operation entity is the ultimate agent of land transfer and its main source of income. In the inflowing land, we will do our utmost to increase the level of land output. During this period, the intermediary organization is not able to observe the level of efforts of the scale of the main business, only to see the final output level, so this is an information asymmetry Model.

2.2.2. Model Hypothesis

1) The same piece of land will attract the attention of many large-scale business entities at the same time, so the agent's scale business entity is a competitive relationship.

2) In order to achieve a higher level of land output, scale business entity C_i the level of effort is assumed to be a_i . At the level of the agent's efforts, the level of land output is $\pi_i = k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) + \delta$, among them k_i is the level of effort, The agent receives the reward $s_i(\pi_i) = \beta_i \pi_i = \beta_i \left(k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) + \delta \right)$, $c_j (a_i - a_j)$ represents the level of output obtained by agent C_i from the land competing for C_j , and the level

of land output will be disturbed by the outside world. To measure this randomness, δ to measure this randomness, $\delta \sim N(0, \sigma_i^2)$.

3) Since the income of the scale-operated entity transferred to the land is entirely derived from the output level of the land, the principal intermediary organization generally does not give a fixed remuneration.

4) The principal intermediary organization is risk neutral, and its expected utility is

$$E(U) = \sum_{i=1}^n (1 - \beta_i) \pi_i$$

5) The effort cost of the scale operation entity is $\frac{ba_i^2}{2}$, among them is the agent's effort cost factor.

6) The main body of scale operation is risk aversion, and its utility function has the characteristics of risk aversion. $u(w) = -e^{\mu w_i}$, w_i is the actual income of the scale of the business, due to $\delta \sim N(0, 1)$, so the risk cost of the scale of the operating entity is $\frac{\mu\beta_i^2\sigma_i^2}{2}$.

7) The deterministic equivalent income of the scale business entity C_i is $RC(w_i) = s_i(\pi_i) - \frac{ba_i^2}{2} - \frac{\mu\beta_i^2\sigma_i^2}{2}$.

8) The retained utility of the scale business entity is \bar{w}_i .

2.2.3. Model Establishment and Solution

After the large-scale business entities have been transferred to rural land, the intermediary organizations cannot observe their efforts. They can only see the final output level. Therefore, the intermediary organization and the scale management entity are the principal-agent relationship of information asymmetry. At the same time, an intermediary organization may have to commission multiple agents at the same time, so build a one-to-many principal agent model here.

$$\max_{\beta_i} \sum_{i=1}^n (1 - \beta_i) \left(k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) \right) \tag{9}$$

$$\beta_i \left(k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) \right) - \frac{ba_i^2}{2} - \frac{\mu\beta_i^2\sigma_i^2}{2} \geq \bar{w}_i \quad (\text{IR}) \tag{10}$$

$$\max_{a_i} \beta_i \left(k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) \right) - \frac{ba_i^2}{2} - \frac{\mu\beta_i^2\sigma_i^2}{2} \quad (\text{IC}) \tag{11}$$

For the (11) formula, you can get

$$a_i = \frac{\beta_i (k_i + nc_i)}{b}, \tag{12}$$

So the model can be rewritten as

$$\max_{\beta_i} \sum_{i=1}^n (1 - \beta_i) \left(k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) \right)$$

$$\beta_i \left(k_i a_i + \sum_{j=1, j \neq i}^n c_j (a_i - a_j) \right) - \frac{b a_i^2}{2} - \frac{\mu \beta_i^2 \sigma_i^2}{2} \geq \bar{w}_i \quad (\text{IR})$$

$$a_i = \frac{\beta_i (k_i + n c_i)}{b} \quad (\text{IC}) \quad (13)$$

Bring the Equation (13) into the objective function, you can get

$$\beta_i = \frac{1}{2} + \frac{b \sum_{j=1, j \neq i}^n c_j a_j}{2(k_i + n c_i)^2} \quad (14)$$

Further available

$$a_i = \frac{k_i + n c_i}{2b} + \frac{b \sum_{j=1, j \neq i}^n c_j a_j}{k_i + n c_i} \quad (15)$$

The expected return of the principal intermediary organization is

$$E(U) = \frac{1}{2} \left(1 - \frac{b \sum_{j=1, j \neq i}^n c_j a_j}{(k_i + n c_i)^2} \right) \left(\frac{(k_i + n c_i)^2}{2b} + (b-1) \sum_{j=1, j \neq i}^n c_j a_j \right) \quad (16)$$

2.2.4. Results Analysis

1) β_i indicates the risk-sharing ratio of the scale of the operating entity, due to $0 < b \sum_{j=1, j \neq i}^n c_j a_j < 1$, therefore $\frac{1}{2} < \beta_i < 1$. In the case of asymmetric information, the scale of the risk borne by business entities than intermediary organizations.

2) Due to $a_i = \frac{k_i + n c_i}{2b} + \frac{b \sum_{j=1, j \neq i}^n c_j a_j}{k_i + n c_i}$, it can be seen that the level of effort of

the scale business entity C_i is directly proportional to the level of effort of other scale business entities, that is, the scale of business entities can improve their efforts through mutual competition, thereby improving their own income levels.

3) According to the formula (16), the greater the level of effort paid by the scale operator, the smaller the income of the intermediary organization. This is due to information asymmetry. The intermediary does not pay a fixed remuneration to the scale operator, but only a certain output. The horizontal ratio is used as the incentive, and the intermediary organization's incentive coefficient $\frac{1}{2} < \beta_i < 1$ for the scale operation entity. Therefore, in order to obtain more benefits, the scale operation entity manages the land with the greatest effort in private. In comparison, the intermediary organization obtains less benefit.

3. Conclusions

3.1. Preventive Measures for Two-Level Principal-Agent Risk

In the process of land transfer, there are common interests and conflicts between

various stakeholders. With regard to the two-level principal-agent relationship of land transfer, the conflict of interest in each level of principal-agent relationship will inevitably affect the previous level. For example, the conflict between the intermediary organization and the scale-operating entity will inevitably affect the household income of the farmer. Therefore, an effective supervision and adjustment system is needed to promote the healthy development of the land transfer market. In this process, the intermediary organization is both a principal and an agent, playing an important intermediate role.

In the first-level principal-agent relationship, the intermediary organization should establish a stable cooperative relationship with the farmers, reduce the interference of random factors, and promote the smooth flow of land. For farmers, a stable cooperative relationship can reduce transaction costs, increase their understanding of the land transaction market, and help prevent moral hazard in the principal-agent process. In the second-level principal-agent relationship, the intermediary organization should strengthen the supervision of the scale business entity and ensure the rational use of the land on the premise of pursuing the interests. The main body of scale operation should strengthen its own construction and increase its own competitive capital to obtain the qualification to flow into the land.

3.2. Conclusions and Recommendations

This paper analyzes the relationship in the land transfer supply chain by using the principal-agent model, and builds a many-to-one and one-to-many two-level principal-agent model based on the actual situation. Based on the maximization of the interests of both parties, the optimal effort level, the optimal incentive coefficient and the corresponding client's expected utility were obtained. And it analyzed the corresponding parameters affecting the target. The results show that strengthening the competition between farmers and the competition among the scale operators is conducive to the effective allocation of land resources and the improvement of farmers and the scale business entity, which is conducive to the development of the land transfer market, which not only responds to national policies, but also makes rational use of national land resources. Therefore, as the outflow party and inflow party of land circulation, it is necessary to strengthen their own competitiveness. Farmers can invest a certain cost on the land and improve the quality of the land as a bargaining chip to increase the turnover price. The scale operation entity can expand its business scale and introduce more advanced technologies to enhance their competitiveness in the industry, with a view to maximizing their own profits while promoting land transfer.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Zhang, H.Y. (2002) The Transfer of Rural Land Adjustment and Use Rights in China: Some Comments. *Management World*, No. 5, 76-87.
- [2] Zhao, J. (2018) Study on the Impact of Agricultural Land Transfer on Long-Term Investment of Farmers in Agriculture. Master's Thesis, Shanxi University of Finance and Economics, Taiyuan, 12-19.
- [3] Li, Y.N. (2016) Research on the Status Quo and Restrictive Factors of Agricultural Land Transfer in Guizhou Province: China's Agricultural Resources and Regionalization. *Research Report*, No. 3, 97-110.
- [4] Li, Y.L., Zhu, Y.F., *et al.* (2015) Research on Rural Land Transfer Maturity Evaluation Based on Analytic Hierarchy Process. *Journal of Central University of Finance and Economics: Theoretical Economy*, No. 9, 63-70.
- [5] Ning, J., Yin, H.D., *et al.* (2018) Is Land Confirmation Right-Right?—Empirical Analysis Based on Survey Data from Poverty-Stricken Areas: Agricultural Economic Issues. *Others*, No. 9, 118-127.
- [6] He, F. and Wen, C.X. (2013) Research on Interest Coordination Mechanism of Rural Land Indirect Transfer Supply Chain—Based on Principal-Agent Model: Operational Planning and Management. *Theoretical Analysis and Method Discussion*, 22, 60-67.
- [7] Shan, Y.J., Liang, X.Y. and Xue, R.H. (2017) Analysis of the Benefits of Land Circulation Subject Based on Mixed Strategy Game Model. *World Agriculture*, No. 8, 135-139.
- [8] Wei, C.J. and Zhang, S.N. (2017) Analysis of the Evolutionary Interests of the Main Body of Rural Land Transfer in China. *Economic Survey*, No. 2, 49-55.
- [9] Wang, Z.Z. and Jian, L. (2010) Research on Related Issues of Rural Land Transfer Intermediary Organization: Scientific Decision. *Enterprise Management*, No. 3, 43-50.
- [10] Zhang, J. (2012) Study on Rural Land Transfer Intermediary Service. Journal of Nanjing Agricultural University.
- [11] Ross, S.A. (1973) The Economic Theory of Agency: The Principal's Problem. *American Economic Review*, **63**, 134-139.
- [12] Bernheim, B.D. and Whinston, M.D. (1986) Common Agency. *Econometrica*, **54**, 923-942. <https://doi.org/10.2307/1912844>
- [13] Bernheim, B.D. and Whinston, M.D. (1985) Common Marketing Agency as a Device for Facilitating Collusion. *Rand Journal of Economics*, **16**, 269-281. <https://doi.org/10.2307/2555414>
- [14] Martimort, D. and Stole, L. (2009) Market Participation in Delegated and Intrinsic Common-Agency Games. *Rand Journal of Economics*, **40**, 78-102. <https://doi.org/10.1111/j.1756-2171.2008.00056.x>
- [15] Zhang, W.Y. (2004) Game Theory and Information Economics. Shanghai People's Publishing House, Shanghai, 397-538.
- [16] Tan, S.K., Zhao, Y. and Liu, X.L. (2018) Study on the Principal-Agent Relationship between Local Government and Village Committee in Preventing Land Acquisition Conflict. *Journal of Huazhong Agricultural University (Social Science Edition)*, No. 3, 130-136.
- [17] Li, R.R. and Mei, S.Y. (2014) Research on the Principal-Agent Relationship of Land Transfer Cooperatives: Xinjiang Agricultural Land Economy. *Agricultural Industry*

Organization, No. 9, 25-32.

- [18] Zhang, Y.C. and Zhang, W.X. (2005) Analysis of Principal-Agent Relationship in Rural Land Transfer Market. *Rural Economy*, No. 4, 31-32.
- [19] Li, H. and Gao, L. (2009) Analysis of Multiple Principal-Agent Structure and System Imbalance in China's Agricultural Land Circulation: Agricultural Economic Issues. *Resource Allocation*, No. 11, 71-77.