

Article

The Marketization of Rural Collective Construction Land in Northeastern China: The Mechanism Exploration

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Abstract: The transfer of rural collective construction land into the market (RCCL marketization) is an important starting point for breaking the urban–rural dual system, realizing the sustainable use of land resources and promoting the integrated development of urban and rural areas in China. This study aims to explore the decision-making of rural households in the marketization of rural collective construction land (RCCL) by constructing a two-stage (cognition–decision) theoretical framework. Based on the household survey data collected from the pilot areas in the three northeastern provinces in China, the structural equation modelling (SEM) has been applied. The main findings are as follows: (1) the four types of exogenous latent variables, including information dissemination, management of collective economic organizations (CEOs), family characteristics, and household head characteristics, are intermediary by household cognition, which then positively affect households’ behavior and decision-making. (2) among the factors affecting household cognition, the management of CEOs exhibits the most significant impact, followed by information dissemination, family characteristics, and household head characteristics. (3) the measurable variables, including participation rights, whether there are collective operating assets, education level, and whether members have social insurance, have significant effects on the four exogenous latent variables. (4) the understanding of income distribution policy has the greatest positive impact on household cognition, while risk perception has the opposite effect, indicating an obvious “risk aversion” tendency for rural households. The findings imply that the government should improve the existing RCCL market entry system from the aspects of strengthening collective economic organization construction, land value-added income sharing mechanism, and clarifying rural land property rights, so as to reduce farmers’ decision-making risks and enhance value perception. Overall, the research presented here contributes to investigating the theoretical mechanism of household decision-making and providing empirical evidence on how to improve the marketization of rural collective construction land in China.

Keywords: rural collective construction land market; household cognition; decision-making mechanism; structural equation modelling (SEM)



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1. Introduction

Land is the most basic resource and the foundation of all economic and social activities. The rural land policy is the country’s basic system, which is related to economic and social development and the country’s long-term stability [1,2]. Since the 18th National Congress of the Communist Party of China, the Chinese government has made a series of major decisions and arrangements for the reform of the rural land policy, such as “establishing a unified urban and rural construction land market” [2]. To this end, in December 2014, the central government approved the “Opinion on the Reform of Rural Land Expropriation, Collective Operational Construction Land Marketization, and Homestead System Reform” (hereinafter referred to as the “Opinion”) [3]. In February 2015, the Standing Committee of

the National People's Congress approved the "Decision on Authorizing the State Council to Temporarily Adjust the Implementation of Relevant Laws and Regulations in the 33 Pilot Counties (Cities, Districts) including Daxing District, Beijing" (referred to as the "Decision"), which authorized to temporarily adjust and implement the relevant legal provisions of the "Land Administration Law" and "Urban Real Estate Management Law" in the pilot areas. The deadline for the authorization is 31 December 2017. In March 2015, the former Ministry of Land and Resources officially launched the "Three Land" (i.e., agricultural land, rural collective construction land (RCCL), and homestead land) pilot reform. The RCCL market entry system, as a vital component and core content of the rural "Three Land" reforms, could not only optimize the land use structure, improve the efficiency of resource allocation, and realize the sustainable use of land resources [4,5], but also facilitate to break the urban–rural dual system and realize the comprehensive integrated development of urban and rural areas [6–8]. Therefore, the RCCL reform has become a hot issue since the beginning.

Due to the complexity of the RCCL reform [9], the Opinion clearly stated that the main line is to handle the relationship between households and land by respecting households' wishes and protecting their rights and interests. On the one hand, since land is the basic means of production and living for households, their behavior decisions directly determine whether RCCL can be traded in the market [10–12]. Therefore, taking safeguarding the fundamental interests of the households and promoting the common prosperity of the households as the starting point and goal of the rural reform could ensure the healthy and stable development of the rural society and economy. On the other hand, respecting the wishes of the households can fully mobilize the enthusiasm, initiative, and creativity of the households, and turn the households' yearning for a better life into the driving force to promote the reform of the RCCL [13]. Therefore, how to maintain households' interests on the basis of protecting their reasonable land rights, and to match their needs and wishes, has become the focus and difficulty of deepening the reform of RCCL marketization.

At present, scholars have conducted in-depth research on the four core issues of "who enters the market, which land enters the market, how to enter the market, and how to divide the money" on the reform of the RCCL marketization [14,15]. Specifically, it includes the conditions and scope of entering the market for RCCL [16,17], the subject of the property right to enter the market and the implementing entity [18,19], the rules for entering the market (such as the use and price of the transaction land, the transaction method and channel, and the transfer of land use right) [20–22], income distribution [23,24], and regulatory measures. It can be seen from the existing research that there are abundant research results on the issue of RCCL marketization, and it has become a hot spot for studying rural land system reform. The existing research results have provided a good research foundation and reference for this study. However, the existing research still has the following deficiencies. First of all, from the viewpoint of research perspective, more focus is on the design and implementation of policy systems at the macro level, whereas there are relatively few studies on the micro level, especially the study of the decision-making behavior of households at the empirical level. Second, in terms of research content, most of the current studies focus more on the status quo, obstacles, and realization paths of the reform of the existing RCCL marketization, lacking in-depth, and systematic research on a certain level or a specific issue. For example, how are the households' behavioral decisions made when RCCL enters the market? What are the influencing factors and mechanism? For such specific problems, there are few existing studies and lack of a systematic theoretical analysis framework. Third, in terms of research methods, most of the existing studies employ methods such as statistical analysis and case study. These research methods can only reflect the law of appearance, but it is difficult to figure out the underlying reasons. However, the behavioral decision-making of households is a relatively complicated process. It is necessary to simulate this process by constructing an econometric model.

To sum up, the transfer of RCCL into the market has entered a new stage of reform. The behavioral decisions of households play a vital role in the standardized, orderly, and

efficient transfer of RCCL. Clarifying the decision-making mechanism for the transfer behavior of households' RCCL into the market is a key issue to be solved urgently. Therefore, based on the theory of cognitive communication, this study constructs a theoretical analysis framework for the decision-making mechanism of rural households' participation in the process of RCCL marketization, aims to clarify the influencing factors and measures the degree of influence. Through the fieldwork in the national rural land system reform pilot areas in the three northeastern provinces in China, structural equation modeling (SEM) is used to empirically test the theoretical analysis framework. In the model, household decision-making is hypothesized to be influenced by household cognition, which is simultaneously affected by information dissemination, management of collective economic organizations, and characteristics of household heads and family.

The study may have two contributions. In theory, it could describe the cognitive and behavioral decision-making process of households more accurately, and provide new research ideas, analysis frameworks, and method systems for the study of the reform of RCCL marketization. In practice, this study may provide empirical evidence for improving the government's RCCL marketization system, breaking the urban–rural dual land ownership system, establishing a sound urban–rural integration development policy system and achieving the sustainable use of land resources and the overall revitalization of the countryside on the basis of respecting the wishes of households and protecting households' rights and interests.

2. Analysis Framework

Cognitive communication is an interdisciplinary subject formed on the basis of multi-level intersection of cognition and communication [25]. It is committed to study the process of information dissemination, dissemination effects, and the process of information analyzing and judging with human beings as the main body, information as the tool, and dissemination medium as the bridge. It needs to go through the logical sequence of “information reception–information processing–behavioral cognition–decision making” [26,27]. Based on this, this study constructs a two-stage theoretical analysis framework of “cognition–decision” for households' participation in the transfer of RCCL, as is shown if Figure 1.

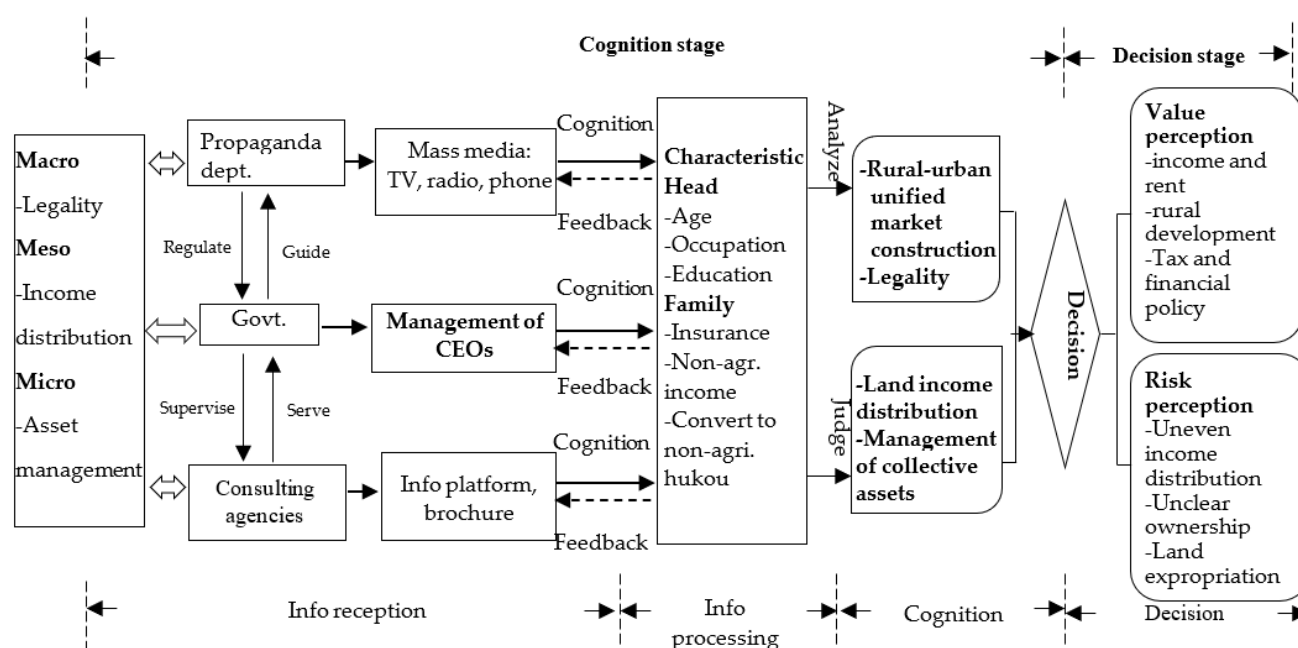


Figure 1. The two-stage theoretical framework of “cognition–decision” in the decision-making of rural households in the marketization of rural collective construction land (RCCL).

2.1. Cognition Stage

First of all, the relevant policies for the marketization of RCCL are information [28,29]. Taking into account the particularity of China's rural land system reform, it can be divided into three levels. At the macro level, before the set-up of pilot areas, the state strictly controlled the entry of RCCL into the market. Therefore, the primary task of the pilot reform policy publicity is to let households know the legality of RCCL marketization. At the meso level, the land income distribution policies, methods, and models of different regions are diverse, which directly affect the interests of all participating entities. A reasonable income distribution policy is the key to the smooth progress of the marketization. At the micro level, the operation and management of collective assets of collective economic organizations (CEOs) has the closest connection with households, and it is also the last link in the propaganda of pilot reform policies. The government, policy propaganda departments, and information consulting agencies act as information disseminators. Among them, the government is responsible for guiding and supervising policy propaganda departments and information consulting agencies, and the latter should serve the government agencies to regulate and control policy propaganda work. Collective economic organizations, mass media, and information platforms serve as communication channels to disseminate information related to the transfer of RCCL into the market. Among them, CEOs have the best understanding of their own conditions and are the transfer of information between the government and rural households.

Secondly, as recipients, households receive policy information and combine it with their own knowledge, experience, and ability so as to form cognition about the transfer of RCCL into the market. This cognitive process will inevitably be affected by policy dissemination and the characteristics of rural households. On the one hand, the information disseminators (CEOs) and dissemination channels (mass media such as TV, broadcast, and cellphone and other information platforms) all play a vital role in the publicity and interpretation of national policies. From different levels and perspectives, households have improved their awareness of the transfer of RCCL into the market. The more channels for households to obtain policy information, the smoother the households' awareness of the RCCL marketization are. Meanwhile, the CEOs have the closest connection with the households and have the best understanding of the basic situation of the collectives, thus they are able to make policy propaganda more targeted. Therefore, the better the operation of the CEOs, the more households trust the collective organization, and thus, the deeper the awareness of the RCCL marketization will be. On the other hand, the characteristics of rural households can be specifically divided into family characteristics and personal characteristics of household heads. Generally, households with a higher level of education have a stronger ability and more willingness to understand and accept new things, while this ability and willingness may gradually weaken with age. Households engaged in agricultural production have closer contacts and ties with CEOs, so they have a more comprehensive understanding of RCCL marketization. The proportion of households' non-agricultural income, whether they are willing to convert to a non-agricultural household registration (hukou), and the availability of social insurance indicate the dependence and risk resistance of rural households on land, which lead to a large difference in the level of awareness of the RCCL marketization. Generally speaking, the less dependent on land and the stronger the family's risk resistance, the more positive their perception of RCCL marketization is.

2.2. Decision Stage

As the main body of decision-making [30,31], households analyze and judge the urban-rural unified market construction, the legality of entering the market, the income distribution policy, and the management of collective assets in light of the information of RCCL marketization. Based on their comprehensive consideration of the pros and cons of the market entry policy, the value and risk perception are formed. After weighing, a decision is made whether to support the implementation of the market entry policy, and

then households' cognition and behavioral decisions are fed back to the government level by level through the reverse process of "policy communication".

In the decision stage, first, from the perspective of households, what they are most concerned with is the issue of land income. Therefore, the value perception is reflected in "whether long-term and stable value-added income and reasonable transfer rent can be obtained". The risk perception can be reflected by "worrying about not getting a corresponding proportion of income (i.e., uneven income distribution)". Second, households also pay more attention to the superiority of the market entry policy and the completeness of supporting systems. Therefore, the value perception is reflected in "rural development, agricultural growth, households' income increase, and more favorable tax and financial policies.". The risk perception is embodied in "unclear ownership of collective land and fear of land expropriation by the state". Finally, households still have some other concerns about the implementation of the market-entry policy, such as how to use the land value-added income and worry about policy changes.

3. Methodology

3.1. Data Sources

To test the two-stage framework, a field survey was conducted during 2016 and 2017, which was in accordance with the reform process. According to the "Opinion" and "Decision" mentioned above, the first phase of the reform of RCCL marketization started in 2015 and ended in 2017. In the first year (2015), policy propaganda was mainly carried out in the pilot area. The plots that met the conditions for entering the market were determined, and the specific implementation plan for entering the market was formulated. In the second year (2016), the transactions of land parcels in the market were carried out, together with the formulation of transaction rules, implementation of transactions, determination of income distribution, and post-transaction management. The third year (2017) was mainly to summarize the experience of the pilot reform of RCCL marketization, and pave the way for the revision of the "Land Management Law". Therefore, the timing of survey enabled us to capture the outcome of the reform.

In the survey, a multistage sampling method has been employed. First, pilot area including Anda City in Heilongjiang Province, Jiutai City in Jilin Province, and Haicheng City in Liaoning Province, were selected from the 33 pilot area in China (see Figure 2). Second, based on the different process of the reform of RCCL marketization, 10 sample villages meeting the conditions for entering the RCCL market were randomly selected from each pilot city. Third, around 15 villager representatives in each sample village—who have participated, will participate, or are willing to participate in RCCL marketization—were randomly selected. Selecting villager representatives as the survey object is because that they can represent the ordinary villagers. In accordance with the provisions of Article 22 of the "Village Committee Organization Law", "a village meeting shall be held by more than half of the villagers over 18 years old, or more than two thirds of the representatives of the households participating in the meeting, and the decision made by the village meeting shall be passed by more than half of the participants". Meanwhile, as Article 21 regulates, "each villager representative is elected by the villagers from every five to fifteen households, or selected by each villager group".

As regards to the design of the questionnaire, according to the analysis framework, information about the individual characteristics of the households, family characteristics, evaluation of the management of CEOs, attitude, and cognition towards the RCCL marketization were collected. A total of 445 valid questionnaires were finally obtained (146 in Anda City, 149 in Jiutai City, and 150 in Haicheng City).

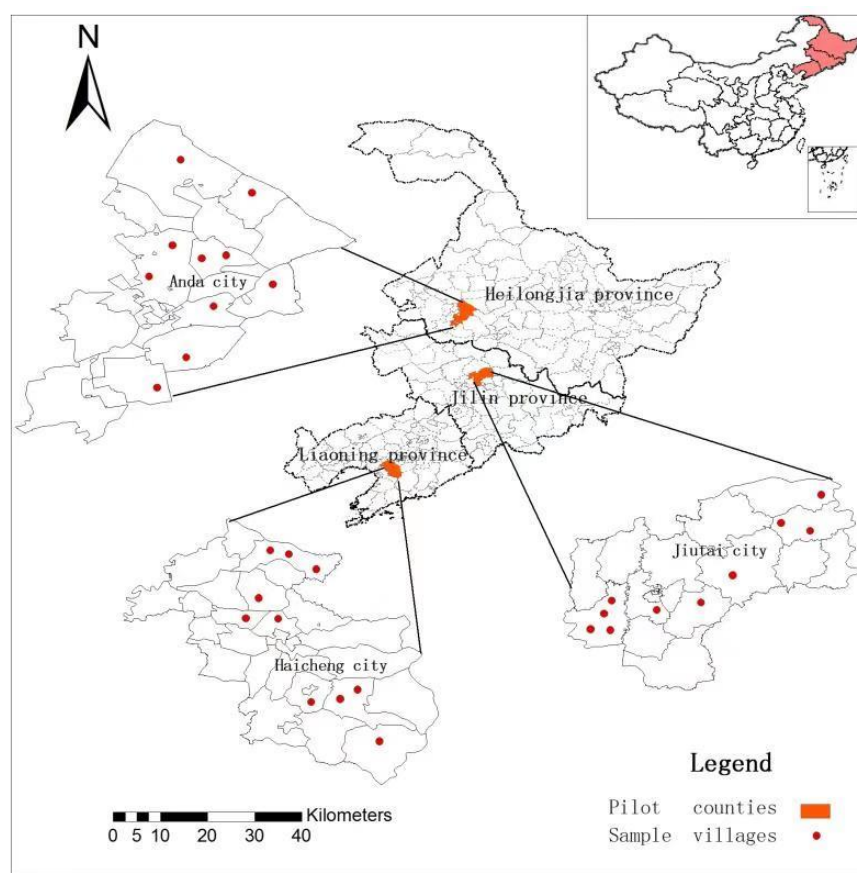


Figure 2. Study area map and spatial distribution of sample village.

3.2. Research Methods

3.2.1. Structural Equation Modeling (SEM)

Structural equation modeling is a confirmatory multivariate statistical analysis technique. Compared with linear correlation analysis and linear regression, SEM can simultaneously deal with the relationship between latent variables and their indicators [32–35]. The “cognition-decision” theoretical framework of the RCCL marketization in this paper analyzes the relationships among information dissemination (IC), the management of CEOs (MO), the individual characteristics of the household head (HC), and the family characteristics (FC) and farmers’ cognition (Cog) and decision (Dec) on RCCL marketization. These six latent variables are difficult to observe and measure directly. Each latent variable needs to be quantified by one or more measurement variables, which conforms to the structure and conditions of the SEM. Therefore, this study employs SEM to explore the decision-making mechanism and transmission path of rural households’ RCCL marketization. The specific form is as follows:

$$\eta = B\eta + \Gamma\xi + \zeta \quad (1)$$

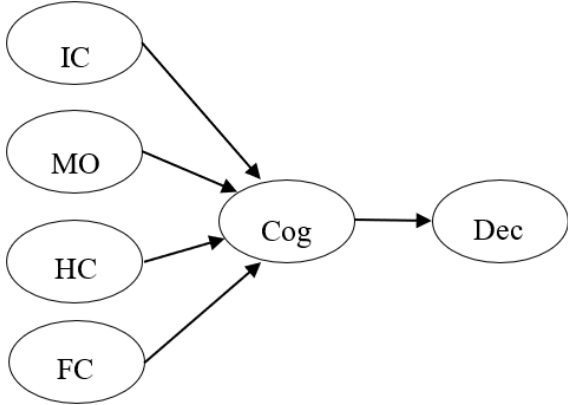
$$x = \Lambda x\xi + \delta \quad (2)$$

$$y = \Lambda y\eta + \varepsilon \quad (3)$$

where Equation (1) is the structural equation which determines the linear relationship between the latent variables; while Equations (2) and (3) are measurement equations identifying the links among latent and observed variables. ξ indicates the exogenous latent variables, including IC, the MO, the HC, and the FC. η represents the endogenous variables including households’ Cog and Dec on RCCL marketization. Λx and Λy are factor loading matrixes of the observed variables on latent variables. x and y are exogenous

and endogenous observed variables, respectively. B and Γ are coefficients; ζ , ε , and δ are error terms. The detail structural path and basic path assumptions are shown in Table 1.

Table 1. Structural path and basic path assumptions.

Structural Path	Basic Path Assumption
 <pre> graph LR IC((IC)) --> Cog((Cog)) MO((MO)) --> Cog HC((HC)) --> Cog FC((FC)) --> Cog Cog --> Dec((Dec)) </pre>	<ul style="list-style-type: none"> ➤ Information dissemination (IC)→Households' cognition (Cog) ➤ Management of CEOs (MO) →Households' cognition (Cog) ➤ Individual characteristics of the household head (HC)→Households' cognition (Cog) ➤ Family characteristics (FC)→Households' decision (Dec)

3.2.2. Variable Selection

First, as to IC, according to the decision-making framework and the SEM, the government uses mass media and information platforms to publicize the policy of RCCL marketization. On the one hand, the purpose of the publicity is to let ordinary households get a deeper understanding of the policy and allow them to learn their position, rights, and obligations in the reform. Quantitative information dissemination effects can be measured by such indicators as: Whether households have the right to know about the RCCL marketization (IC₁), whether households have the right to participate in the RCCL marketization (IC₂), and whether households have the right to supervise the RCCL marketization (IC₃).

Second, in terms of the MO, CEOs not only connect the government and households in the process of policy dissemination and households' cognitive feedback, but also connect households and land-using units in the process of market entry. The MO largely affects households' perceptions of the transfer of RCCL into the market and is mainly reflected by: Whether the CEOs have transfer experience (MO₁), whether they have collective assets (MO₂), and the evaluation of village affairs disclosure (MO₃).

Third, with regards to HC and FC, household is the most basic decision-making unit in the RCCL reform. Households with different family characteristics may have huge differences in their cognition and decision on RCCL marketization. Family characteristics may mainly be reflected in three aspects: Whether the family members have social insurance (FC₁), the willingness to convert rural hukou to urban hukou (FC₂), and the proportion of non-agricultural income (FC₃). In rural China, the head of the household generally plays a vital role in decision-making. As such, the individual characteristics of household head can be measured by the age (HC₁), occupation (HC₂) and education level (HC₃).

Last, in terms of households' Cog, it is a multi-level relationship formed by "top-down propaganda and bottom-up feedback" between the state, CEOs and households. Macroscopically, the recognition of the legality of entering the market can be based on whether households have heard of the urban–rural integrated construction land market (Cog₁) and whether they know that RCCL can be directly transferred to the market without the government land acquisition process (Cog₂). At the macro level, the understanding of the distribution policy of land value-added income in the region (Cog₃) is a deeper understanding of the market transfer policy, and it is also the most concerned issue of households. At the micro level, different CEOs have different resource endowments, which result in different operation and management of the collective assets. The understanding of the management of collective assets (Cog₄) is fundamental for the cognition of RCCL marketization.

On this basis, households will weigh the pros and cons, that is, the perception of value (Dec_1) and risk (Dec_2), which constitute households' behavior decision making (Dec) and determine whether they are willing to enter the RCCL market.

The detailed model variables and their statistical descriptions are shown in Table 2.

Table 2. Descriptive statistics of the variables.

Latent Variables		Observed Variables	Description	Mean	Var.	S.D.
Cognition	Information dissemination (IC)	Whether households have the right to know about the RCCL marketization (IC ₁)	0 = no; 1 = yes	0.88	0.107	0.327
		Whether households have the right to participate in the RCCL marketization (IC ₂)	0 = no; 1 = yes	0.87	0.114	0.337
		Whether households have the right to supervise the RCCL marketization (IC ₃)	0 = no; 1 = yes	0.85	0.125	0.354
	Management of CEOs (MO)	Whether the CEOs have transfer experience (MO ₁)	0 = no; 1 = yes	0.480	0.250	0.500
		Whether the CEOs have collective assets (MO ₂)	0 = no; 1 = yes	0.460	0.249	0.499
		Evaluation of village affairs disclosure (MO ₃)	1 = very bad; 2 = bad; 3 = fair; 4 = good; 5 = very good	4.080	1.076	1.037
	Head's characteristics (HC)	Age (HC ₁)	Age of the household head	52.820	137.163	11.712
		Occupation (HC ₂)	1 = pure household; 2 = part time household; 3 = non-farm	1.490	0.683	0.683
		Education (HC ₃)	1 = illiteracy; 2 = primary school; 3 = middle school; 4 = high school; 5 = above high school	2.930	0.761	0.761
	Family characteristics (FC)	Social insurance (FC ₁)	0 = no; 1 = yes	0.750	0.190	0.436
		Willingness to convert to urban hukou (FC ₂)	0 = no; 1 = yes	0.220	0.170	0.412
		Non-agri. income (FC ₃)	1 = 10% and below; 2 = 10–20%; 3 = 20–40%; 4 = 50% and above	2.560	2.017	1.420
	Household's cognition (Cog)	Whether households have heard of the urban–rural integrated construction land market (Cog ₁)	0 = no; 1 = yes	0.560	0.247	0.497
		Whether they know that RCCL can be directly transferred to the market without the government land acquisition process (Cog ₂)	0 = no; 1 = yes	0.580	0.244	0.494
		Understanding of the distribution policy of land value-added income in the region (Cog ₃)	1 = Very litter; 2 = Little; 3 = Neutral; 4 = Well; 5 = Very well	2.650	1.516	1.231
		Understanding of the management of collective assets (Cog ₄)	1 = Very litter; 2 = Little; 3 = Neutral; 4 = Well; 5 = Very well	3.300	1.471	1.213
Decision	Household's decision (Dec)	Value perception (Dec ₁): Whether long-term and stable value-added income and reasonable transfer rent can be obtained	0 = none; 0.25 = more favorable tan and financial policies; 0.5 = rural development, agricultural growth and household's income increase; 0.75 = reasonable transfer rent; 1 = long-term and stable income	0.619	0.054	0.232
		Risk perception (Dec ₂): Worrying about not getting a corresponding proportion of income	0 = none; 0.25 = others; 0.5 = unclear land ownership; 0.75 = land expropriation; 1 = uneven income distribution	0.769	0.127	0.356

4. Results

Based on AMOS17.0, maximum likelihood estimation has been used to estimate the SEM shown in Table 1. Table 3 and Figure 3 present the estimation results of the model path coefficient. In the SEM estimation, a series of indicators are used to measure the goodness of fit of the model. Table 4 shows the baseline model (i.e., the unrestricted model). The indicators of the model are as follows: Chi-square = 356.156 (df = 122,

$p = 0.000$), RMSEA = 0.043, NFI = 0.915, CFI = 0.920). These estimates indicate that the influence mechanism and transmission path between information dissemination (IC), organization and management (MO), individual characteristics (HC), family characteristics (FC), households' cognition (Cog) and behavioral decision-making (Dec) are acceptable, and the SEM has a good fit.

Table 3. Estimates of the structural equation modeling (SEM) model path coefficients.

Relationship			Unstandardized Path Coefficient	S.E.	C.R.	P	Standardized Path Coefficient
Cog	<—	IC	0.880	0.258	3.406	***	0.561
Cog	<—	MO	1.457	0.585	2.490	**	0.809
Cog	<—	HC	0.168	0.101	1.670	*	0.229
Cog	<—	FC	1.259	1.354	0.930	*	0.502
Dec	<—	Cog	0.044	0.048	0.923	**	0.237
IC ₁	<—	IC	1	—	—	—	0.750
IC ₂	<—	IC	1.206	0.129	9.342	***	0.886
IC ₃	<—	IC	1.092	0.116	9.430	***	0.765
MO ₁	<—	MO	1	—	—	—	0.335
MO ₂	<—	MO	1.013	0.284	3.569	**	0.536
MO ₃	<—	MO	1.081	0.582	1.858	*	0.281
HC ₁	<—	HC	−9.982	5.486	−1.820	*	−0.553
HC ₂	<—	HC	0.214	0.212	1.007	*	0.159
HC ₃	<—	HC	1	—	—	—	0.740
FC ₁	<—	FC	0.624	0.627	0.994	*	0.570
FC ₂	<—	FC	−1.083	1.108	−0.978	*	−0.205
FC ₃	<—	FC	1	—	—	—	0.136
Cog ₁	<—	Cog	0.660	0.172	3.833	***	0.650
Cog ₂	<—	Cog	0.689	0.171	4.026	***	0.589
Cog ₃	<—	Cog	1.508	0.393	3.838	***	0.699
Cog ₄	<—	Cog	1	—	—	—	0.403
Dec ₁	<—	Dec	1	—	—	—	0.379
Dec ₂	<—	Dec	−2.440	2.762	−0.377	*	−0.599
X ²			356.156				
df			122				
RMSEA			0.043				
CFI			0.915				
NFI			0.920				

Note: *, **, and *** indicate that p is significant at 10%, 5%, and 0.1% levels, respectively. The path with “—” means that the models regard it as a significant path during estimation and use it to estimate whether other paths are significant.

Table 4. The direct, indirect, and total effects among latent variables.

Path	Standardized Path Coefficient		
	Direct Effect	Indirect Effect	Total Effect
IC→Cog	0.561	NA	0.561
IC→Dec	NA	0.133	0.133
MO→Cog	0.809	NA	0.809
MO→Dec	NA	0.064	0.064
HC→Cog	0.229	NA	0.229
HC→Dec	NA	0.054	0.054
FC→Cog	0.502	NA	0.502
FC→Dec	NA	0.055	0.055
Cog→Dec	0.237	NA	0.237

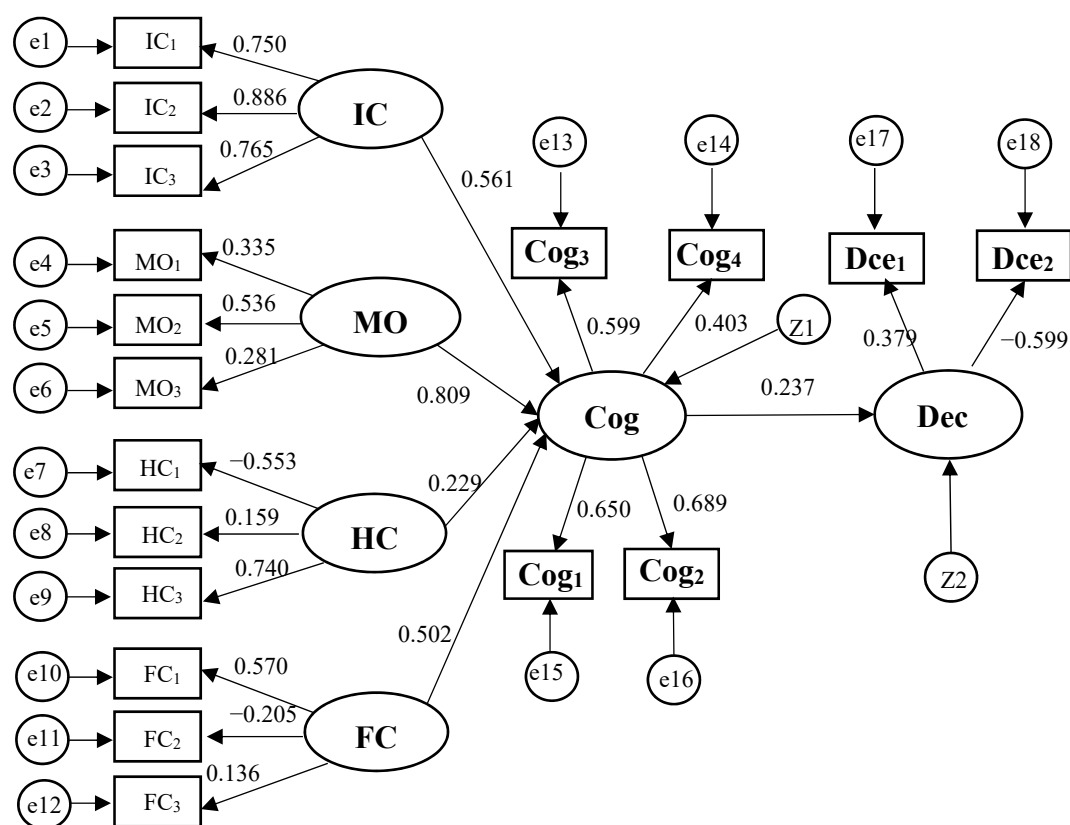


Figure 3. Structural equation modeling and standardized parameter estimates.

4.1. Factors Affecting Households' Cognition and the Mechanism

4.1.1. Information Dissemination (IC)

As Table 4 shows, the IC has a positive effect on households' Cog on RCCL marketization, with a standardized path coefficient of 0.561 ($p < 0.001$), which acts as the main factor that affects the Cog. This means that the more efficient the information dissemination channel, the more secure the rights to know, participate in and supervise the RCCL marketization, and thus the more thorough and deeper the households' understanding of RCCL marketization will be. Among the three dimensions of IC, right to participate (IC₂), right to supervise (IC₃), and right to know (IC₁) all have positive correlations with Cog, with the degree of influence decreases successively, and the standardized path coefficients are 0.886, 0.865, and 0.750, respectively. As can be seen, IC₂ has the great impact on Cog, because when households personally participate in the process of RCCL marketization, some previously vague questions can be answered from CEOs and other households, thus speeding up information dissemination and improving the dissemination quality. Followed is the impact of right to supervise (IC₃). When households have the right to supervise the RCCL transfer market, the process will be more transparent, and households are able to form an objective and rational judgment on the pros and cons of the transfer of RCCL to the market and take the initiative to learn about the relevant information. The right to know about the market transfer (IC₁), however, has the least impact on Cog. The main reason is that households are often in a passive position in the reform of the rural land system, and their RCCL has a low participation in the transfer market. It is the village committees and the land users who directly decide on issues related to the RCCL transfer. Households only have the "ex post right to know". This would arouse their dissatisfaction on the one hand, and reduced the transparency of the market entry process. It reveals that there is a lot room for improvement for the government, policy propaganda departments and CEOs. Only by guaranteeing the households' "ex ante right to know" can they be effectively transformed into cognition on RCCL marketization.

4.1.2. Management of CEOs (MO)

There is a positive correlation between the MO and the households' cognition on RCCL marketization (Cog). The standardized path coefficient is 0.809 ($p < 0.05$), which identifies it as another important factor that affects households' cognition. The better the management of the CEOs is, the higher the households' awareness of the transfer of RCCL into the market. Each increase of MO would increase Cog by 0.809. The further analysis of the measurement variables shows that, the degree of impact on Cog can be ordered as: Whether there are collective assets (MO_2) > whether the CEOs have transfer experience (MO_1) > the evaluation of village affairs disclosure (MO_3). Among them, MO_2 is the most significant factor. Collective operating assets and resource assets together constitute rural collective assets. As the members of the CEOs, it is the households' right to share the profits at a reasonable proportion. In recent years, with the certification of the rights of collective operating assets to rural households, households' sense of property rights has gradually increased. While obtaining the value-added benefits of collective assets, households become more enthusiastic to learn about the related policies of RCCL marketization. CEOs' transfer experience (MO_1) also plays a vital role. Compared with the households whose CEOs have no experience in the transfer of RCCL, the households whose CEOs have transfer experience have more opportunities to get a better understanding of the newly-presented RCCL marketization, and thus, increase the impact on Cog. Compared to MO_1 and MO_2 , the impact of the evaluation of village affairs disclosure (MO_3) on Cog is limited. One possible explanation is that the average score of MO_3 is 4.080 with a standard deviation of 1.037, indicating that the evaluation of the village affairs disclosure by the households is good, and the difference between households is relatively small. Besides, the pilot project of RCCL marketization has just been established, thus there is time lag and only few cases of RCCL have been transferred. As such, the advantage of improving village affairs disclosure is not yet obvious.

4.1.3. Household Head's Personal Characteristics (HC)

The HC are positively correlated with Cog. The standardized path coefficient is 0.229 ($p < 0.10$), which means that the promotion of RCCL marketization not only requires the publicity and guidance of the government and CEOs, but also needs to pay more attention to the HC. Specifically, the degree and direction of influence of the different measured variables are various. First, there is a negative correlation between the household's age (HC_1) and Cog, with a path coefficient of -0.553 . That is, as the household head's age grows, the ability and willingness to recognize and accept new things gradually weaken. As Table 2 shows, the average age of household heads is 53 years old. The CEOs and policy propaganda departments should pay sufficient attention to the aging trend of population and adopt targeted strategies to improve households' cognition on RCCL marketization. Second, the education level (HC_3) has an important impact on Cog, and its path coefficient is 0.740, indicating that with the improvement of household heads' education, their cognition and judgment ability have been continuously enhanced, and their cognition of the RCCL reform is more in-depth. They usually become active responders and supporters of national policies. Third, heads' occupation (HC_2) has a significant positive impact on households' cognition, and its path coefficient is 0.159, implying that households' engagement in non-agricultural industries make them more open-minded and have more opportunities to increase their cognition of relevant policies.

4.1.4. Family Characteristics (FC)

As the most basic decision-making unit, the characteristics of family has a positive effect on Cog, with a standardized path coefficient as 0.502 ($p < 0.10$). Among the measured variables of FC, the coefficients of whether the main members of the family have social insurance (FC_1), the willingness of converting rural hukou (household registration) to urban hukou (FC_2), and the proportion of non-agricultural income (FC_3) are 0.570, -0.205 , and 0.136, respectively. To be more specifically, at present, the RCCL marketization still faces

uncertainties, so the CEOs and households need to bear certain risks. Households with weaker risk resistance are more inclined to avoid or refuse to support the RCCL transfer. Therefore, the ability of risk resistance plays the most important role in the decision-making stage. Among them, FC_1 to a large extent determines the risk resistance of a family. When rural households are willing to switch to urban hukou ($FC_2 = 1$), on the one hand, their attention and enthusiasm for rural land reform and village affairs will decline; on the other hand, they often have non-agricultural employment and live in urban areas, and thus, have little communication with CEOs and villagers. Therefore, these households have a slightly poorer cognition of the RCCL marketization. FC_3 has a significant and positive impact on Cog, i.e., the higher the proportion of household's non-agricultural income, the better the cognition of the RCCL marketization. This indicates that the increase of FC_3 has decreased household's dependence on land. Therefore, the advantage of increasing households' land property income through the RCCL marketization can be more obvious. Therefore, households with relatively high non-agricultural income are more concerned about the RCCL marketization.

4.2. The Influencing Mechanism of Households' Cognition on Decision-Making Behavior

As can be seen from Table 3 and Figure 3, households' cognition on RCCL marketization has a significant and positive impact on their decision-making behavior, with a standardized path coefficient as 0.237 ($p < 0.05$), indicating that the improvement of Cog can increase the willingness of households to support the RCCL marketization. Meanwhile, results from Table 4 show that there are nine influencing paths between the six latent variables: IC, MO, HC, FC, Cog, and Dec. Among them, the total effect of path "MO→Cog" is the largest, which is 0.809. Whereas the total effect of path "HC→Dec" is the smallest, which is 0.054. It shows that the MO plays a very important role in households' cognition of RCCL marketization.

Among the measurable variables that reflect Cog, the standardized path coefficients of urban and rural construction land market (Cog_1), the legality of entering the market (Cog_2), income distribution policy (Cog_3), and collective asset management (Cog_4) are 0.650, 0.689, 0.599, and 0.403, respectively, all significant levels are at the 0.1% level. The standardized path coefficient of Cog_3 is the largest, which is the main aspect of Cog that affects Dec. It shows that in the decision-making of RCCL marketization, households are most concerned about the land income distribution issue after the RCCL transaction. The average value of Cog_3 is 3.300 (out of 5), indicating that households' awareness of income distribution policy is not high. It should be focused on in future policy propaganda.

Among the measurable variables that reflect behavioral decision-making, the standardized path coefficients of value perception (Dec_1) and risk perception (Dec_2) are 0.379 and -0.599 , respectively, with a significance level of 5%. This shows that the elasticity of Dec_2 is greater than Dec_1 . Moreover, the average value of Dec_2 is 0.769, which is also greater than Dec_1 (which is 0.619). This means that households' decision to enter the RCCL market has obvious characteristics of "risk aversion". The reform is still in the initial stage, although households are very enthusiastic about it, the relevant supporting implementation policies are not clear enough. Households do not have a clear understanding of the policy supporting measures such as income distribution that they are most concerned about, hence they do not have a very clear and optimistic expectation for the future. It is believed that the implementation of RCCL marketization is "not worth the gain". Their higher-risk, lower-value "risk aversion" psychology will continue to strengthen the risk perception (Dec_2), as a result, households are more likely to choose not to support the RCCL marketization. Under such circumstance, it will inevitably affect the process and effect of the RCCL marketization. The transfer of RCCL in the region will be blocked as the willingness of households' decreases, and the income of the village collective due to the RCCL transfer will gradually decline. The advantages and benefits that households can personally share in the RCCL marketization cannot be fully achieved. This would

further weaken the value perception (Dec_1), which in turn affects households' enthusiasm to support the RCCL marketization.

From the above analysis, it can be seen that households' "risk aversion" psychology may become a key factor restricting their support for the implementation of the RCCL marketization. If the land income distribution and other related supporting policy cannot be clarified, it will make the households' decision-making fall into the loop of "high risk, low value \rightarrow enhanced risk perception (Dec_2) \rightarrow lower willingness \rightarrow weakened value perception (Dec_1) \rightarrow further reduced willingness". The final result is that households' willingness to support the implementation of RCCL marketization would drop significantly.

5. Discussion

Compared with the extant literature [14–22,36], most of which put emphasis on the situation, obstacles and ways of realization of the RCCL marketization, this study may have the following contributions. First of all, from the research perspective, this study focuses on rural households which are the basic unit to participate in the decision-making of rural CEOs. Most existing research focuses on the macro policy system for the transfer of RCCL, ignoring the micro behavior of households. Besides, respect for the wishes of households is also the prerequisite and basis for the RCCL marketization. Secondly, in terms of research content, this study systematically analyzes the decision-making process of households' participation in RCCL marketization, identifies the main factors that affect households' behavioral decisions, and reveals the influencing mechanism and transmission paths between different variables. Thirdly, in terms of research methods, this study constructs a SEM path diagram and basic path assumptions based on a two-stage theoretical framework of "cognition-decision". Then use field survey data to verify the theoretical analysis framework and research hypothesis. New research ideas, analysis frameworks, and method systems can be provided for other related research.

This study still has the following deficiencies. First of all, with regard to variable selection and quantification, this study is based on the theory of cognitive communication and constructs a theoretical analysis framework of "cognition-decision". However, households' cognition and decision-making behaviors are difficult to be directly observed [37–39]. In lights of the methods in existing research, variables are selected on the basis of data availability, households' acceptability of questionnaire, and the accuracy of definition of research questions. Quantification is carried out by assigning values to the measurable variables of each latent variable. The magnitude of values is a relative concept. The focus of this study is to reveal the decision-making process, main influencing factors, and direction of influence. Secondly, with regard to the sample size, it is relatively small in this study, whereas it is more representative and typical. Because it is the villager representatives who were interviewed in our survey, and the number of households represented meets the research needs. It will not affect the accuracy and reliability of the results of this study. Some existing studies also have similar sample sizes [40,41]. Apart from this, in accordance with the "Opinions", the relationship between subjects and interests involved in the reform of RCCL marketization are both very complicated and must follow the principle of "prudent and steady progress". Therefore, various pilot counties (cities, districts) have also adopted a gradual approach. In the initial stage, only villages that are willing to transfer RCCL are selected as the main pilot areas, and then gradually expand to other villages that have the conditions to pilot. This situation is also one of the reasons for obtaining a small sample size in the field survey.

In the future, the following aspects can be studied in depth. From the perspective of research, it is necessary to pay more attention to the connections between the government, the village CEOs and the households. In terms of the research content, policy scenarios can be set to dynamically simulate and predict households' decision-making behaviors, which will make relevant policy-making more targeted and achieve better results. In terms of data collection, fixed observation points can be established, so that continuously, dynamic and comparable data can be obtained, which can describe the dynamic change of households

participating in the decision-making on RCCL marketization more accurately. With regards to research methods, the coupling of multiple models is still a key issue that needs to be resolved in the future to accurately simulate the decision-making behavior of households participating in the RCCL marketization.

6. Conclusions

This study constructs a two-stage (cognition-decision) analysis framework in rural households' decision-making in the process of RCCL marketization. On the basis of the survey data collected in the pilot regions of the national rural land reform in the three northeastern provinces in China, SEM has been employed to study the influencing factors, transmission process, and mechanism of the decision-making behavior of rural households from two dimensions including households' value and risk perceptions.

The main findings are as follows. First, the four types of exogenous latent variables, information dissemination, management of CEOs, household head's characteristics, and family characteristics, are mediated by household cognition, which in turn positively affect households behavior decision. Second, among the factors affecting household cognition, the management of CEOs has the greatest direct effect, followed by information dissemination, and characteristics of both family and household head, in sequence. Third, the right to participate in the market entry (IC_2), whether there are collective operating assets (MO_2), education level (HC_3), whether the members have social insurance (FC_1) have better explanation of the four types of exogenous latent variables including IC, MO, HC, and FC. Fourth, the observed variable income distribution policy (Cog_3) has the greatest positive impact on household Cog, while risk perception (Dec_2) has the greatest negative impact on households behavior Dec. Further, households' behavioral decisions present obvious characteristics of "risk aversion".

Based on the above findings, this study may get the following policy recommendation. First, it is necessary to build a land value-added income sharing mechanism following the principles of fairness and efficiency which takes into account the interests of the state, the village collectives and individual households. The state can realize the free flow of production factors between urban and rural areas through the integrated use of land resources. The CEOs can attract domestic and foreign investment via RCCL marketization, which could help rural revitalization, increase households' non-agricultural employment opportunities, and realize the sustainable transfer of RCCL. Households can also obtain a corresponding proportion of property income from RCCL marketization to improve their risk resistance and reduce their dependence on land.

Second, the construction of CEOs should be strengthened. This may be achieved by the following channels. The transfer of RCCL into the market involves multiple subjects and interests. Instead of introducing relevant service agencies to participate in the RCCL transfer, it is better to strengthen the CEOs by improving their capabilities of negotiation, communication and coordination, maximizing the use of the inefficient and idle RCCL, and ensuring that all links in the process of RCCL marketization are open and transparent, especially the distribution of income. In addition, the government should actively guide and supervise policy propaganda departments and information consulting agencies to increase publicity on the effectiveness of RCCL marketization reform, take full advantages of mass media, information platforms, publicity manuals, and other information dissemination channels, and ensure households' right to supervise the marketization so as to achieve households' recognition and support.

Third, the property rights of rural land should be clarified so as to facilitate the transfer of RCCL. The RCCL marketization is conducive to optimize the allocation efficiency and sustainable use of land resources. Thus, it is necessary to improve the registration process of RCCL and complete the certification work as soon as possible. This is an important prerequisite for ensuring the smooth progress of RCCL marketization. Meanwhile, the "Land Management Law" regulates that RCCL is included in the scope of marketization, which provides CEOs and households more choices. However, it is bound to affect rural

land expropriation and the “three rights separation” policy for homesteads. Therefore, it is necessary to clarify the property rights of rural land, coordinate the reform of the rural land system, and reduce households’ risk concerns.

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Glossary

Abbreviation	Definition
CEOs	Collective economic organizations
RCCL	Rural collective construction land
SEM	Structural equation modeling
Abbreviations in the model:	
Cog	Households’ cognition
-Cog ₁	-Heard of the urban–rural integrated construction land market
-Cog ₂	-Know that RCCL can be directly transferred to market
-Cog ₃	-Understanding of the distribution policy of land value-added income
-Cog ₄	-Understanding of the management of collective assets
Dec	Households’ decision
-Dec ₁	-Whether stable value-added income and reasonable rent can be obtained
-Dec ₂	-Worrying about not getting a corresponding proportion of income
FC	Family characteristics
-FC ₁	-Whether have social insurance
-FC ₂	-Willingness to convert to urban <i>hukou</i>
-FC ₃	-Non-agricultural income
HC	Individual characteristics of the household head
-HC ₁	-Age of the household head
-HC ₂	-Occupation of the household head
-HC ₃	-Education of the household head
IC	Information dissemination
-IC ₁	-Right to know about the RCCL marketization
-IC ₂	-Right to participate in the RCCL marketization
-IC ₃	-Right to supervise the RCCL marketization
MO	Management of CEOs
-MO ₁	-Whether the CEOs have transfer experience
-MO ₂	-Whether the CEOs have collective assets
-MO ₃	-The evaluation of village affairs disclosure

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