

Article

# Variation of Land-Expropriated Farmers' Willingness: A Perspective of Employment and Inhabitation

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**Abstract:** Understanding land-expropriated farmers' welfare change and the determinants of their willingness to change is very important for sustainable urbanization and social stability in developing countries. However, this issue has been seldom explored in previous studies, especially in China. This paper aims to enrich this field by conducting an empirical study using a household survey in 2014 in Nanjing, a major city in the Yangtze River Delta. The impacts of land expropriation on the variation of land-expropriated farmers' employment and inhabitation are explored, while the determinants of land-expropriated farmers' willingness are estimated using ordered logistic regression. Results show that the land-expropriated farmers pay more attention to the changes of employment and inhabitation after land expropriation, rather than land expropriation itself. While employment aspects were key determinants of the farmers' willingness in 1996, factors relating to inhabitation aspects have become more important nowadays. Moreover, it is necessary to grasp the changing rules of land-expropriated farmers' interest appeals in order to adjust the compensation and resettlement policies according to local conditions. Thus, this will improve land-expropriated farmers' willingness. Meanwhile, the government should create a better expectation of employment and inhabitation after land expropriation for farmers. Furthermore, the government should also build a land expropriation information sharing and feedback mechanism in addition to improve the employment and housing security system.

**Keywords:** land use policy; land expropriation; influencing factors; employment and inhabitation; willingness level; ordered logistic regression; China

## 1. Introduction

Land expropriation is a worldwide phenomenon [1]. In developed countries, such as the USA [2] and the Netherlands [3], land expropriation is primarily used as a tool to support large-scale infrastructural developments or to protect and or preserve open space and parks [4]. In developing countries—such as China [5], India [6], or Pakistan [7]—it is also a way to provide land to accommodate rapid urbanization and economic growth. The extent and practice of expropriations are dependent on the respective property rights and legal systems, which differ significantly between countries worldwide. However, many constitutions of developing and developed countries acknowledge that the state has the legitimate power to acquire private land for public interest, subject to compensation [8,9]. In addition, in many developing—and especially in developed—countries, farmers facing expropriation decisions have the right to challenge the governments' decision in court [10].

Although land expropriation might be very useful for economic development and urbanization, it may lead to social problems [11], such as land expropriation conflicts or disputes [12–18], which are caused by different land expropriation compensation policies. Furthermore, it also causes negative impacts on communities' livelihood and environment [19] as well as the health of land-expropriated farmers [20–22]. This occurs despite the land-expropriated farmers being compensated for the lost agricultural land, production, and homes [23]. These negative effects can directly affect the land-expropriated farmers' willingness level, because farmland is not only a means of employment and production, but also a means of social security for agricultural workers [24]. Thus, there is often a need to improve the land expropriation compensation system [6,25].

In China, issues of land-expropriated farmers have become a focus of attention not only for scholars but also for the government. Some researchers argue that the severe conflicts between farmers and government during land expropriation are caused by dissatisfaction with reality in relation to the expectation [26], which is one of the influencing factors of land-expropriated farmers' willingness. Most land-expropriated farmers are full of doubts about what their living (i.e., employment and inhabitation) would be like after land expropriation. Being different to the farmers that actively enter into the urban areas, the land-expropriated farmers often passively live in cities because of land expropriation. Their employment and inhabitation change abruptly without enough time to adapt themselves to urban life. Therefore, they will attribute their unhappy lives to the resettlement and compensation policies [27] instead of to themselves (i.e., personal features). Therefore, understanding the determinants of their willingness from the perspective of employment and inhabitation is very important, especially for the willingness to change during different land compensation policies stages. If the expropriation policy changes and caters to the farmers' interest, the farmers' social safeguard increases and they have good living prospects. Thus, farmers would be keen on having their land expropriated [28]. However, this issue has been seldom explored in previous studies [1,29]. Furthermore, they argued that a higher compensation standard results in a higher satisfaction level. However, a high compensating standard does not necessarily imply higher willingness, as Chinese land-expropriated farmers do not have bargaining rights and have to accept land compensation prices offered by governments [1]. This paper aims to enrich this field.

Being different from some developing countries in west and central Africa [11], land expropriation could effectively solve local government's poor financial conditions while guaranteeing the lands demanded by the nation's social and economic development in China [5,30–32]. Thus, it is a powerful safeguard for urban development. Apart from the aforementioned positive effects, land expropriation and the subsequent relevant issues have become a prominent social issue in China recently [29], especially in rapidly developing areas. Nanjing is located in China's most developed Yangtze River Delta (YRD), which is the sixth largest urban agglomeration in the world. Over the last few decades, Nanjing has experienced rapid development and urbanization. Simultaneously, Nanjing has experienced four land expropriation policy stages since 1996. Therefore, it is a good example for discussing the variation of land-expropriated farmers' willingness in different policy stages. Moreover, having a job (employment) and a house (inhabitation) for rural people that enter into cities is the core objective of the Chinese New Urbanization Planning "*Xin Xing Cheng Zhen Hua Gui Hua (2014–2020)*", which is being implemented in China.

Therefore, this study proposes an analytical framework for the dual influences of land expropriation policies on farmers' employment and inhabitation, with Nanjing selected as the study area to analyze three research questions: (1) What changes in employment and inhabitation would the land-expropriated farmers have to face after land expropriation? (2) Does the willingness level of land-expropriated farmers change with a revision of the land expropriation compensation policy? (3) Do the determinants that affect the willingness of land-expropriated farmers vary with different policy stages from the perspective of employment and inhabitation change? To answer these questions, this study conducted an investigation on land-expropriated farmers at different policy stages in Nanjing,

while a multiple ordered logistic regression model was adopted to conduct a comparative study on the farmers' willingness and its influencing factors at different stages.

## 2. Study Area and Data Sources

### 2.1. Study Area

In China, a 'city' is an administrative unit that includes agricultural/rural land around a core urban area. The urban area sprawl often occupies farmland or rural land around the city and this process should be achieved by land expropriation. Based on the current China Land Management Law, the municipal government has substantive power, which is authorized by the State Council to expropriate farmland in jurisdictions. In this paper, the case study was conducted in Nanjing City (Figure 1) based on the following reasons. Firstly, over the last few decades, Nanjing has experienced rapid development and urbanization, with the total population increasing from 5.25 million in 1996 to 8.22 million in 2014 (Nanjing Statistics Bureau, 2015). Along with this rapid socioeconomic development, Nanjing has witnessed fast development with dramatic urban growth and farmland loss, which is very typical in the Yangtze River Delta (YRD) even in China [33]. The experiences and lessons from Nanjing can be used to guide policy making for other areas in China. Secondly, Nanjing has experienced four land expropriation policy stages since 1996, which will be elaborated in Section 2.2. There are two methods for comparative analysis of policy effects. One is to analyze the effect of different land expropriation in the same area. The other is to analyze the effect of the same policy in different areas. The first one is used in this paper. This can provide good natural experimental evidence and effectively present how the land-expropriated farmers will respond. Thirdly, it is convenient to analyze the variation characteristics of farmers' willingness under different land expropriation policies (or institutional environments) in this area.

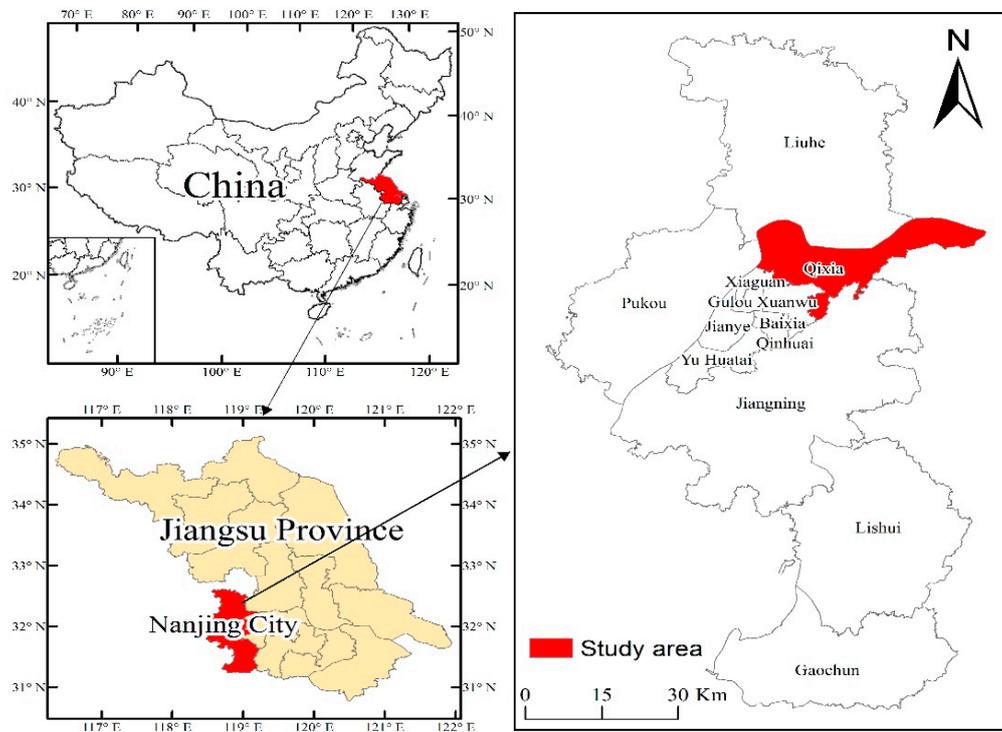


Figure 1. Location of the study area.

## 2.2. Land Expropriation Policy in Nanjing

In mainland China, land expropriation is the process in which the government transforms the rural collective-owned land into stated-owned land [34]. The farmland cannot be directly transferred for non-agricultural use according to the revised China Land Management Law in 1998. The land compensation policy and compensation standard of Nanjing city is mainly formulated by the government of Nanjing. It is important to point out that the change of land compensation standard of Nanjing must comply with national policy. There are four land compensation policies stages for land expropriation in Nanjing since 1996 (Table 1) and two main characteristics can be detected.

**Table 1.** Changes of compensation policies for land expropriation in Nanjing.

Stages	Compensation Standard	Employment and Supplement Method
1996 (No. 131) 17 June 1996–19 April 2000	Differentiate public and non-public interest. Non-public: 3–6 times of annual output value. Public (i.e., road): 54,000 yuan/ha.	① Employment arrangement Municipal and public: by governments Non-public: by land user ② Self-employment: 25,000 yuan RMB per person (Monetary compensation)
2000 (No. 86) 20 April 2000–9 April 2004	① Divided into three different level areas: Central urban area/suburbs/county area. ② Differentiate municipal and non-municipal projects. Non-municipal: 5–10 times of annual output value. Municipal: 120,000 yuan/ha.	Monetary resettlement for all land-expropriated farmers: according to ages, projects and areas
2004 (No. 93) 10 April 2004–31 December 2010	Unified compensation standards: 270,000 yuan/ha. 70%: living security for land-expropriated farmers; 30%: for collective economy and public welfare.	① Non-employment arrangement ② Establish reemployment training system
2010 (No. 264) 1 January 2011–now	Divided into three different compensation level areas: First level: 1,695,000 yuan/ha; Second level: 1,230,000 yuan/ha; Third Level: 870,000 yuan/ha.	① Social security treatment ② Reemployment and job skill training

Note: (1) 1996 (No. 131) represents the No. 131 document of the government of Nanjing issued in 1996; (2) The level of compensation in Table 1 comes from document of the government of Nanjing.

First, the compensation standard for land-expropriated farmers was increased with economic development and it was gradually differentiated across different regions or by different land-expropriation purposes. During the stages of 1996–2000 and 2000–2004, the highest land compensation was increased from 6 to 10 times of the annual output value per hectare (ha). During 1996 to 2000, there was no difference for land compensation in different sub-rural areas of Nanjing. However, during 2000 to 2004, three different regions of compensation level were divided into the central urban area (Districts of Gulou, Jianye, Xuanwu, Xiaguan, Qinhuai and Baixia), suburban area (Districts of Qixia and Yu Huatai), and county area (Districts of Jiangning, Pukou, Liuhe, Gaochun, and Lishui). Furthermore, in both of these two stages, land compensation for public land use and non-public land use were differentiated.

In developed regions in China, farmers depended less on farmland, so the land expropriation (neither public interest nor non-public interest) had little influence on them. Therefore, in the stages of 2004–2010 and 2011 up to now, Nanjing did not differentiate public and non-public land expropriation in addition to not compensating according to the annual output value. Instead, all lands were expropriated with unified standards. During 2004–2010, the land compensation for one hectare was 270,000 yuan RMB and it was stipulated that 70% of the compensation must be used for the farmers' minimum standard of living, while the other 30% should be used for collective economy and public welfare. The reason why this method is introduced is to avoid expropriated farmers spending all the land expropriation compensatory payment in a short period of time and to ensure the sustainable livelihood of land expropriated farmers. In 2011, compensation began to be endowed according to integrated land section and the lands were divided into three levels. The compensation for land of level 1 was 1,695,000 yuan/ha, level 2 was 1,230,000 yuan/ha and level 3 was 870,000 yuan/ha.

Secondly, the resettlement modes varied at different policy stages. Overall, resettlement of land-expropriated farmers transformed from a job placement to a monetary placement. It was stipulated in the No. 131 document (1996–2000) that “if land is expropriated for municipal and public use, the farmers' jobs must be arranged by the government; for land expropriation for organization use, farmers should be placed by the organization. If no placement be arranged, the farmers should be given 25,000 yuan RMB once and for all (commonly known as ‘buyout fee’)”. After 2000, land expropriation is mainly compensated with money (pay for social security and drawn out monthly), while job placement is seldom arranged. Instead, land-expropriated farmers could receive career training to improve their employability and to promote their re-employment.

### 2.3. Data Sources

The data of this study comes from a household survey, which was carried out from March to April 2014. During the survey, the method of face-to-face interviews with land-expropriated farmers was used to obtain the information for the following questions: the basic information of the expropriated farmland, farmers' employment, and inhabitation change before and after the land expropriation in addition to the demographic and economic characteristics of the farmers' household. The face-to-face interviews were conducted directly without interference from local officials, thus the completeness and accuracy of the data were ensured [35]. The interviewed communities were selected with the help of the local land resource bureau and then, the households were randomly selected from each community. Meanwhile, the sample selection adhered to the following two principles as used by Li et al. [36]. One unit of the investigation was a family, i.e., a questionnaire was completed by a family. The other involves investigating whether the interviewees' land has been expropriated and their resettlement in a new community, as we will estimate the influence of residence environment on land expropriated farmers' willingness.

The method of multi-stage random sampling was used according to the relationship of district, town (street) and community to family to collect data. First, Qixia District, which is close to the city (Figure 1), was randomly selected from the five suburban districts (Qixia, Yu Huatai, Pukou, Liuhe and Jiangning) of Nanjing, in which land expropriation cases take place frequently in recent years. Second, 4 (Mai Gaoqiao, Yanziji, Yao Huamen, and Maqun) out of 11 streets of Qixia District were randomly selected. Third, four new urban communities for land-expropriated farmers were selected from the four streets, respectively. It should be noted that land-expropriated farmers, who were interviewed at the four different land expropriation stages, correspond to the four urban communities respectively. Finally, a total of 400 questionnaires (100 questionnaires in each community) were distributed, of which 84.00% (336 questionnaires) were valid. The quantity of questionnaires of four land expropriation policy stages of Nanjing were 79, 90, 78, and 89, respectively.

In order to investigate the willingness of land-expropriated farmers, the question “Were you willing to have your land expropriated?” is set in the questionnaire. The overall willingness of respondents was measured by a five-point Likert scale ranging from 1 (very unwilling) to 5 (very

willing). The results (Figure 2) show that among 336 questionnaires, more than one-third of the respondents were willing (including very willing) to have their land expropriated and near one-third were very unwilling, which covers about 28.86%. The survey results for different stages (Table 2) in Nanjing also show that with the economic development, there were fewer farmers choosing not to lose their lands. Therefore, the proportion (34.52%) of farmers willing to have their land expropriated in this study was less than that of a previous study [28], which conducted investigation on 203 land-expropriated households in Minhang District and Songjiang District of Shanghai and showed that more than 50% farmers were willing to live without land.

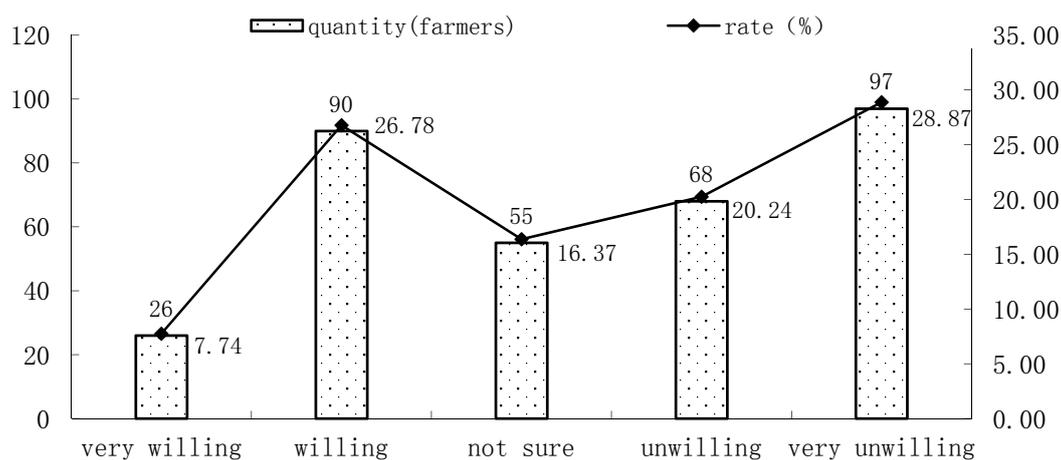


Figure 2. The willingness level distribution curve of 336 land-expropriated farmers.

Table 2. Willing levels of land-expropriated farmers at different stages.

	1996–2000 (No. 131)		2000–2004 (No. 86)		2004–2010 (No. 93)		2011–Now (No. 264)	
	Quantity	Rate (%)	Quantity	Rate (%)	Quantity	Rate (%)	Quantity	Rate (%)
Very willing	2	2.53	5	5.56	8	10.26	11	12.36
Willing	12	15.19	13	14.44	16	20.51	49	55.06
Not sure	14	17.72	18	20.00	5	6.41	18	20.22
Unwilling	13	16.46	23	25.56	25	32.05	7	7.87
Very unwilling	38	48.10	31	34.44	24	30.77	4	4.49
Total	79	100.00	90	100.00	78	100.00	89	100.00

From the perspective of different stages, there is not a high proportion of farmers who are very willing to lose their land, although this increased. In the stage of 1996–2000, the proportion of farmers who were very willing to lose their lands was only 2.53% and the proportion of these who were willing was 15.19%. However, when the No. 264 document was implemented in 2011, farmers who were willing to have their lands expropriated reached 55.06% of the total sample. The proportion of the farmers who answered ‘very unwilling’ keeps decreasing from 48.10% in 1996–2000 to 4.49% in 2011. The changes of the answers have confirmed the success of the adjustment in the land expropriation policies in Nanjing to some extent, suggesting that the policy adjusting direction and tactics might be good references for similar developed areas. In the periods 1996–2000 and 2000–2004, the proportions of ‘willing (including very willing)’ account for no more than 20%, compared to the 60% or more who are ‘unwilling (including very unwilling)’. However, during the periods of 2004–2010 and 2011 until now, the proportions of those whose answers were willing (including very willing) reached 30.77% and 67.42% respectively, while the total of ‘unwilling’ and ‘very unwilling’ was only 12.36%. This indicated that the farmers’ acceptance of land expropriation compensation and resettlement policies was increasing as shown in Table 3.

**Table 3.** Results of satisfied level of land-expropriated farmers for land requisition compensation.

	1996–Now		1996–2000 (No. 131)		2000–2004 (No. 86)		2004–2010 (No. 93)		2011–Now (No. 264)	
	Quantity	Rate (%)	Quantity	Rate (%)	Quantity	Rate (%)	Quantity	Rate (%)	Quantity	Rate (%)
Very satisfied	26	7.74	2	2.53	1	1.11	10	12.82	13	14.61
Satisfied	51	15.18	3	3.80	9	10.00	15	19.23	22	24.72
Not sure	43	12.80	5	6.33	11	12.22	8	10.26	21	23.59
Not satisfied	216	64.28	69	87.34	69	76.67	45	57.69	33	37.08
Total	336	100.00	79	100.00	90	100.00	78	100.00	89	100.00

A low land expropriation compensation standard, which was considered a major reason for land expropriation conflicts, had once been criticized by many scholars [1,29]. Furthermore, after a rural collective's land is expropriated, local governments would also arrange employment and residences for farmers. This compensation for proper resettlement is of great significance to increase the farmers' satisfaction and to maintain social stability. Therefore, compensation and resettlement were considered comprehensively in the design of this survey. Overall, most land-expropriated farmers were not satisfied with the compensation and resettlement. Among all the samples, 64.28% of land-expropriated farmers were not satisfied, with satisfied ones only covering 15.18% and much fewer being very satisfied (only 26 investigated farmers, which covered only 7.74%). However, the satisfaction distribution of all stages shows that farmers choosing 'very satisfied' and 'satisfied' continued increasing, with their proportions increasing to 14.61% and 24.72% in 2011, respectively. In contrast, the proportion of the farmers who chose 'not satisfied' continued decreasing from 87.34% in 1996–2000 to 37.08% after 2011, which is much lower than 50%. This indicates that the land-expropriated farmers' satisfaction with regards to land expropriation compensation and resettlement continued increasing from period to period. Thus, the adjustment of land expropriation policies was effective and adapted to the changes of the farmers' demands in Nanjing.

### 3. Methodology

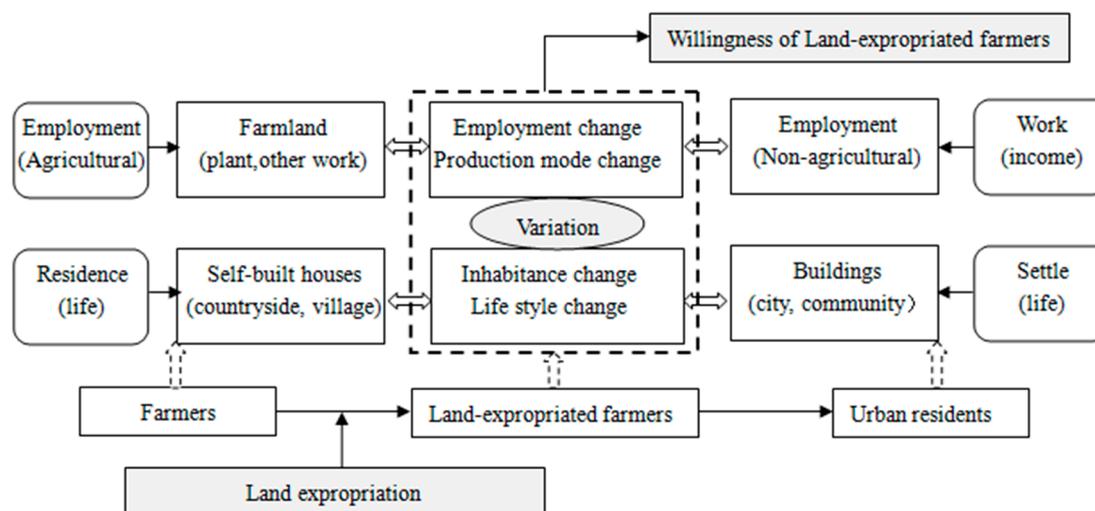
Compared with agricultural workers [35] in China, there are mainly two stages for land-expropriated farmers to enter and integrate into urban life. The first one is their residential spatial migration from rural to urban areas, accompanied by the changes of their HuKou status (i.e., household register) from agricultural to non-agricultural. The other one is the adaptation and integration of their employment and inhabitation styles, accompanied by self-identification of their HuKou status. Being different from peasant workers who enter the city actively for employment and inhabitation, land-expropriated farmers enter the city passively, as encouraged by the government. Their living styles change abruptly. They are shifted in space without adaptation in time, i.e., they step directly from stage one to stage two without having time to adapt to urban lifestyle. Urbanization of land-expropriated farmers requires both shift in space and adaptation in time. It should be changed from localism to urbanism. It is a process for urban and rural inhabitation developing from 'colliding' to 'blending'.

#### 3.1. Analytical Framework

Being different from farmers who are from the European Union and some other Western countries, Chinese farmers do not have the unlimited western-style ownership right to sell and use their land as they please. According to the Chinese Land Management Law, the land in urban areas is state-owned whereas the land in rural areas is owned by the rural collectives (e.g., the whole village) rather than individual farmers. An individual farmer has the right of use of farmland, although he does not have the property right. Thus, the nature of land expropriation is to transform the rural collective-owned land into state-owned land in China.

In China, land expropriation not only could cause change of the farmers' registration (from agricultural to non-agricultural HuKou), but also requires the farmers to change their employment and inhabitation (Figure 3) in order to realize true urbanization of the farmers (i.e., to settle down and

work in the city). It should be noted that some farmers might lose their land but not their homes and furthermore, they might be able to stay on as farmers. In this paper, we only analyzed the farmers who lost both their farmland and their rural homes.



**Figure 3.** Changes in farmers' employment and inhabitation before and after land expropriation.

### 3.1.1. Changes of Farmers' Employment before and after Land Expropriation

Before land expropriation, the rural land provides farmers with food and revenue. Thus, land is fundamental to the farmers not only for income but also for their social insurance. Furthermore, some farmers may go to cities for work or commercial activities, or rent out their rural houses to increase their incomes. Therefore, farmers make a living mainly on incomes obtained from farming and working outside. Only a small number of farmers could obtain operational income (e.g., retail store) and property income (e.g., leasing farmland or houses). After land expropriation, especially after farmers' houses are removed, most farmers could only rely on their skills to earn a wage income by engaging in non-agricultural work. Farmers without non-agricultural skills will probably get into trouble, thus they are unwilling to have their lands expropriated. Therefore, land-expropriated farmers have to engage in low-level jobs in the city, which makes them less happy as they would be in rural areas. Generally, in underdeveloped areas, there are more farmers, who make a living on agricultural skills. A greater dependence on farmland results in a poorer capacity to adapt to urban life [37]. Therefore, some farmers are unwilling to have their lands expropriated in these areas. Based on the analysis above, there are two main hypotheses that need to be testified: (1) Before land expropriation, a greater amount of farmland (the more income dependent on farmland) results in a lower willingness for land expropriation. It is expected that the relationship between the area of expropriated land and the willingness of land expropriated is negative. (2) After land expropriation, more non-agricultural employment opportunities for land-expropriated farmers can result in a higher willingness for land expropriation. This means that the relationship between area of expropriated land and the willingness of land expropriation is positive.

### 3.1.2. Changes of Farmers' Inhabitation before and after Land Expropriation

Before land expropriation, farmers dwell in villages with affinity and geographical relationships as the main connections. They have their own courtyard, enjoying rural scenery, and they communicate with each other based on familiarity and trust. Thus, they have a strong sense of belonging. Even after losing land, farmers still maintain their communication, for their significant relationships remain in rural areas [38]. After land expropriation, farmers have to live in high buildings of communities in the city. They are surrounded instead by municipal afforestation and public facilities. Some farmers

would continue their original lifestyle for a long time after they settled down in cities. Some even take the roads in the re-settled residential area as a sunning ground, trees as a clothes hanger, and gardens as vegetable fields [39]. As it is a long adaptive process for land-expropriated farmers to change their lifestyle, it is important to create a living environment that accommodates land-expropriated farmers. In this way, they could adapt to and blend in city life better. Furthermore, since land expropriation might cause loss of sentimental value of the land-expropriated farmers to their place of residence, especially for the aged farmers who attach themselves to the original folk tradition and customs, it is beneficial to create a humanistic environment to enhance land-expropriated farmers' willingness. Based on the analysis above, there is another main hypothesis to be tested: (3) Changes in the living environment and customs will affect the willingness of land-expropriated farmers. After land expropriation, a better living environment (surrounding scenery, air quality, etc.) results in a higher willingness for land expropriation.

### 3.2. Potential Influencing Factors

Regardless of the land-expropriated farmers' personal characteristics, they all hope to lead a better life after land expropriation. Therefore, a rational farmer will comprehensively evaluate the costs and benefits brought by changes of their employment and inhabitation after land expropriation. Before land expropriation, factors that are related to farmers' production are farmland and farming skills. Farmers can obtain their farming income by cultivating farmland, earn labor income through additional business and acquire property revenue by renting out their spare houses. Therefore, factors such as the area of the expropriated lands, are all potential factors that affect their revenues before land expropriation, whether they have non-agricultural work or whether there are houses to rent before land expropriation. Factors that are related to farmers' lives are their rural houses and their surroundings, so ownership of the house sites is the focus of the farmers' life.

After land expropriation, job opportunity and work skills are related to farmers' employment. Consequently, non-agricultural job opportunities and whether they can get jobs after land expropriation become the potential factors that affect land-expropriated farmers' employment and incomes. The major factors related to land-expropriated farmers' life are public services surrounding their residence. Thus, the change in living cost ( $X_{15}$ ), change of surrounding scenery ( $X_{16}$ ), and change of folk tradition and folk customs ( $X_{18}$ ) would become the key factors that affect the willingness of land-expropriated farmers.

Based on the aforementioned analysis framework, the potential influencing factors from the perspective of living are selected in this study as shown in Table 4.

### 3.3. Ordered Logistic Regression

In this study, the variable of the land-expropriated farmers' willingness ( $Y$ ) is an ordered categorical variable (it is classified into five levels: 'very willing', 'willing', 'not sure', 'unwilling', and 'very unwilling', which are expressed as 5, 4, 3, 2, and 1, respectively in the model). Therefore, a multiple ordered logistic regression model [40–42] was employed in this paper and Eviews 6.0 which was developed by Quantitative Micro Software in the USA was used to estimate the results. The following function is used

$$F(X) = (X_{1-5}, X_{6-10}, X_{11-18}) \quad (1)$$

The model form is:

$$\ln\left(\frac{p(y \leq j)}{1 - p(y \leq j)}\right) = \alpha + \sum_{i=1}^{18} \beta_i x_i + \mu; j = 1, 2, 3, 4, 5 \quad (2)$$

where  $F(X)$  represents function relationships;  $y$  represents the dependent variable (Land expropriation willingness);  $X_{1-5}$ ,  $X_{6-10}$ ,  $X_{11-18}$  are three groups of independent variable vectors, which respectively represent the land-expropriated farmers' basic cognition, factors influencing the employment change,

and factors influencing the inhabitation change (Table 4);  $X_1, X_2, \dots, X_{18}$  are independent variables;  $\alpha$  is the constant;  $\beta$  are the regression coefficients of influencing factors; and  $p(y \leq j)$  represents the cumulative probability of category  $j$  and below  $j$ .

**Table 4.** Influencing factors of land-expropriated farmers' willingness.

Types	Variables	Definition of Variables
Dependent variable	Land expropriation willingness	Very unwilling = 1; unwilling = 2; not sure = 3; willing = 4; very willing = 5
Factors of basic recognition	<b>Basic recognition of agricultural land</b>	
	Recognition of ownership ( $X_1$ )	Not clear = 0; State = 1; village collective = 2; villager team = 3; oneself = 4
	Recognition of importance of farmland ( $X_2$ )	Not important = 1; average importance = 2; important = 3; very important = 4
	<b>Basic recognition of land expropriation</b>	
	Who expropriates the farmers' land? ( $X_3$ )	Land user = 0; village = 1; towns or community = 2; people's government above county = 3; state = 4
	Whether to hold land expropriation hearing? ( $X_4$ )	No = 1; unknown = 2; yes = 3
	Knowledge of land expropriation ( $X_5$ )	Nothing = 1; a little = 2; most = 3; fully = 4
Factors of employment	<b>Before land expropriation</b>	
	Area of expropriated lands ( $X_6$ )	Survey the original data. Unit: mu (1mu = 1/15 ha)
	Are there houses for rent? ( $X_7$ )	No = 0; yes = 1
	Get a non-agricultural job? ( $X_8$ )	No = 0; yes = 1
	<b>After land expropriation</b>	
Is there job employment after land expropriation? ( $X_9$ )	No = 0; yes = 1	
	Change of non-agricultural employment opportunity ( $X_{10}$ )	Worse obviously = 1; worse, but not obviously = 2; no change = 3; better = 4; better obviously = 5
Factors of inhabitation	<b>Before land expropriation</b>	
	Ownership of homestead ( $X_{11}$ )	Not clear = 0; state = 1; collective = 2; oneself = 3
	Floor area of self-built houses per capital ( $X_{12}$ )	Survey the original data. Unit: m <sup>2</sup> /person
	<b>After land expropriation</b>	
	Whether enjoy the same rights as citizens? <sup>1</sup> ( $X_{13}$ )	No = 1; not clear = 2; some = 3; the same = 4
	Average living space per person ( $X_{14}$ )	Survey the original data. Unit: m <sup>2</sup> /person
	Change of living cost ( $X_{15}$ )	Decrease obviously = 1; decrease a little = 2; the same = 3; increase slightly = 4; increase obviously = 5
	Change of surrounding scenery ( $X_{16}$ )	Worse obviously = 1; worse, but not obviously = 2; no change = 3; better = 4; better obviously = 5
Change of air quality ( $X_{17}$ )	Worse obviously = 1; worse, but not obviously = 2; no change = 3; better = 4; better obviously = 5	
	Change of folk tradition and folk customs ( $X_{18}$ )	Intact basically = 1; some disappear = 2; most disappear = 3; disappear completely = 4

Note: <sup>1</sup> What we would like to express here is their own feelings of land-expropriated farmers.

#### 4. Results and Discussion

The data described in Section 2 are used to estimate the influencing factors of land-expropriated farmers' willingness from the perspective of employment and/or inhabitation. Table 5 presents the results of the estimation models.

**Table 5.** Estimated result of influencing factors.

Variables	Model	Model (1)	Model (2)	Model (3)	Model (4)
<b>Basic recognition of land-expropriated farmers</b>					
Recognition of ownership ( $X_1$ )		−0.285 *** (0.084)	−0.264 *** (0.088)	−0.136 ※ (0.098)	−0.159 ※ (0.102)
Recognition of importance of farmland ( $X_2$ )		−0.556 *** (0.175)	−0.498 *** (0.179)	−0.343 * (0.189)	−0.352 * (0.194)
Who expropriates the famers' land? ( $X_3$ )		0.189 ** (0.076)	0.144 ** (0.078)	0.242 *** (0.082)	0.202 ** (0.083)
Whether to hold land expropriation hearing? ( $X_4$ )		0.220 * (0.114)	0.104 (0.119)	0.136 (0.124)	0.055 (0.127)
Knowledge of land expropriation ( $X_5$ )		0.431 *** (0.117)	0.290 ** (0.125)	0.133 (0.128)	0.001 (0.137)
<b>Factors of employment changes</b>					
Area of expropriated lands ( $X_6$ )		-	−0.074 *** (0.027)	-	−0.048 ** (0.022)
Are there houses for rent? ( $X_7$ )		-	1.038 *** (0.227)	-	0.631 ** (0.248)
Get a non-agricultural job? ( $X_8$ )		-	−0.151 (0.256)	-	0.064 (0.277)
Is there job employment after land expropriation? ( $X_9$ )		-	0.153 (0.251)	-	0.480 * (0.263)
Change of non-agricultural employment opportunity ( $X_{10}$ )		-	0.557 *** (0.104)	-	0.297 ** (0.119)
<b>Factors of inhabitation changes</b>					
Ownership of homestead ( $X_{11}$ )		-	-	−0.229 * (0.122)	−0.178 ※ (0.125)
Floor area of self-built houses per capital ( $X_{12}$ )		-	-	0.003(0.002)	0.002 (0.002)
Whether enjoy the same rights as citizens? ( $X_{13}$ )		-	-	0.496 *** (0.119)	0.479 *** (0.123)
Average living space per person ( $X_{14}$ )		-	-	0.008 *(0.004)	0.008 * (0.004)
Change of living cost ( $X_{15}$ )		-	-	0.244 ** (0.097)	0.221 ** (0.099)
Change of surrounding scenery ( $X_{16}$ )		-	-	0.236 ** (0.110)	0.200 * (0.118)
Change of air quality ( $X_{17}$ )		-	-	0.452 *** (0.110)	0.398 *** (0.116)
Change of folk tradition and folk customs ( $X_{18}$ )		-	-	−0.697 *** (0.127)	−0.641 *** (0.133)
Pseudo R-squared		0.066	0.128	0.201	0.226
LR statistic		67.661	131.529	204.915	229.826
Prob. (LR statistic)		0.000	0.000	0.000	0.000
Sample size		336	336	336	336

Note: ※  $p < 0.2$ , \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The values in the parentheses stand for the standard error.

#### 4.1. Basic Recognition of Farmland and Land Expropriation

It used to be the case that farmers cannot challenge an expropriation decision in the court but have to accept the conditions in China. However, this might be changing as well [10]. Holding a land expropriation hearing is a good method to gain public understanding. The result of the pure land expropriation model (Column 1 in Table 5) shows that, without introducing any control variable, the three variables (i.e., whether to hold land expropriation hearing ( $X_4$ ), who expropriates the farmers' land ( $X_3$ ) and the farmer's knowledge of land expropriation ( $X_5$ )) of land expropriation are all positive and significant, which means a positive correlation with the farmers' willingness. This indicates that, in terms of land expropriation systems, specification of land expropriation procedures (holding a hearing in advance) in addition to making information open and transparent can help enhance the farmers' willingness level. The satisfaction of the farmers who had attended the hearing was obviously higher than that of others (Table 6). Furthermore, those who were better-informed and given notice were more satisfied (Table 7).

**Table 6.** Relationship between “farmers’ satisfaction” and “whether hold a hearing or not”.

Options	Yes		Do Not Know		No	
	Quantity	Rate (%)	Quantity	Rate (%)	Quantity	Rate (%)
Very satisfied	23	15.33	1	2.13	2	1.44
Satisfied	35	23.33	5	10.64	11	7.91
Not sure	16	10.67	9	19.15	18	12.95
Not satisfied	76	50.67	32	68.08	108	77.70
Total	150	100.00	47	100.00	139	100.00

**Table 7.** Relationship between “farmers’ satisfaction” and “knowledge of land expropriation”.

Options	Fully		Most		A Little		Nothing	
	Quantity	Rate (%)						
Very satisfied	5	20.83	13	20.31	4	3.03	4	3.45
Satisfied	10	41.67	13	20.31	15	11.36	13	11.21
Not sure	5	20.83	12	18.75	20	15.15	6	5.17
Not satisfied	4	16.67	26	40.63	93	70.45	93	80.17
Total	24	100.00	64	100.00	132	100.00	116	100.00

Therefore, the local government should improve the land expropriation procedure and enhance information openness in addition to constructing information sharing and feedback mechanisms. The results of the pure land expropriation model suggested that the legal land expropriation procedure and a perfect information openness system are significant factors that affected the farmers' willingness. Therefore, a land expropriation and notice system should be pursued. Meanwhile, information sharing and a feedback mechanism should also be constructed in order to make land expropriation information available to everyone concerned, to transmit the farmers' real demands and to increase their participation rights. The whole process of land expropriation should be open, transparent, and fair in order to realize transformation of compulsory land expropriation to voluntary land requisition and demolition.

Moreover, when land-expropriated farmers thought that the level of the land-expropriating government was higher, they would be much more willing to have their land expropriated, because a government of a higher level is more recognized by the public. The survey results showed that when the farmers believed the subject of land expropriation was the town or street, the government above the county level and the state, their willingness (including 'very willing') was 7.84%, 22.37% and 48.54% respectively, which continued increasing obviously.

#### 4.2. Employment Aspects

The results of the models with factors of employment and the comprehensive model (Column 2 and Column 4 in Table 5) show that the subject of land expropriation is also important. A higher level of the land expropriation government results in more willingness for farmers to have their land expropriated. Being different from the result of the models with inhabitation factors, the variable of farmers' knowledge of land expropriation ( $X_5$ ) passed the 5% significance test in the model with employment factors. This is mainly because employment is highly related to land expropriation in the whole process of land expropriation compensation and resettlement. Variables related to farmland (i.e., area of the expropriated lands) showed negative correlations with the farmers' willingness, thus indicating that the farmers are dependent on the farmland. When the farmers losing land thought the lands belonged to them or the farmlands were becoming more and more important to them, they would be more reluctant to have their lands expropriated. Meanwhile, farmers with larger land areas would be more reluctant to have their lands lost and those with more agricultural land are less likely to migrate from rural to urban areas [43]. This can be attributed to their incomes mainly coming from farmlands. Households that depend more on farmlands have less possibility to acquire non-agricultural skills. If their lands were expropriated, it would be hard for them to find a new job or new means for living, which may lead to poverty. Thus, they were unwilling or even against having their lands expropriated [44].

A greater chance to have non-agricultural jobs results in farmers being more willing to have their lands expropriated. The variable of "change of non-agricultural employment opportunity ( $X_{10}$ )" passed the 1% significance test in the model with employment influencing factors. However, the relationship between "get a non-agricultural job ( $X_8$ )" and the willingness of land-expropriated farmers was not significant, thus indicating that the farmers' willingness was subject to whether the government could give them more job opportunities or not. Farmers care about whether the government could serve the people (i.e., provide jobs to land-expropriated farmers) instead whether they could have a job. Therefore, the government's behavior selection and expression have an influence on land-expropriated farmers' willingness.

#### 4.3. Inhabitation Aspects

The results of the inhabitation factors model and comprehensive model (Column 3 and Column 4 in Table 5) show that when inhabitation-influencing variables are introduced, the significance of whether to hold a land expropriation hearing ( $X_4$ ) and the farmers' knowledge of land expropriation ( $X_5$ ) decreased. Moreover, it did not pass the 10% significance test. This indicates that, compared with land expropriation procedures, land-expropriated farmers are concerned more about their future life. When the farmers' rights were safeguarded, it would be less important whether land expropriation procedures are legal or not. This can be attributed to the farmers being concerned more about the results, rather than the land expropriation procedures. For example, the variables of the changes of scenery, air quality, and others were positively correlated with the farmers' willingness at the significance of 5%, which reflect the changes in the farmers' living standards after land expropriation. Therefore, improving the farmers' living conditions is beneficial in enhancing their willingness level. Meanwhile, allowing the residents whose lands are to be expropriated see the real benefits could also promote land expropriation. Furthermore, if land-expropriated farmers thought the rights they enjoyed were the same as the original urban citizens, they would have high identification with this citizenship and believe land expropriation could bring them benefits. Thus, they would be more willing to have their lands expropriated.

Therefore, it is an effective method for local governments to improve the natural and cultural environment surrounding the land-expropriated farmers' resettlement area in order to enhance its attraction and cohesion. The model with inhabitation factors showed that the improvement of the natural environment of the resettlement area played an important role in enhancing the farmers' willingness. Therefore, the government should be concerned with and manage the resettled

communities continuously. Steady community management teams should be trained and established and if necessary, the natural environment and housing conditions of the resettlement area should be optimized. This not only could enhance the attraction of the resettlement place but also could set a good example for future land expropriation. Meanwhile, the government should also promote the spiritual and cultural life of land-expropriated farmers in the resettled area in order to avoid unhealthy emotions brought about by a decrease in the original folk tradition and folk customs. Furthermore, actions should be taken in order to increase their chances to communicate with the original citizens, enhance their sense of personal identification and strengthen their capacity to blend into city life.

Being different from the expectation, the increase in the living cost ( $X_{15}$ ) did not reduce the willingness of land-expropriated farmers to have their lands expropriated. This may be attributed to two reasons. First, Nanjing is located in the eastern part of China. In this study area, the proportion of the cropping revenue in the farmers' average pure income dropped from 35% in 1996 to 30% in 2000, 19% in 2004, and 10% in 2010, respectively. A low proportion of cropping revenue weakened the negative effects of land expropriation on farmers' revenue. Even so, some of the farmers' revenue increased instead of decreasing and the increase in their revenues could compensate for the increase in their living cost. Results also showed that a greater disappearance of folk tradition and folk customs results in a lower willingness of farmers to have their lands expropriated. This indicates that the land-expropriated farmers were reluctant to leave their original lifestyle in the countryside, which could not change in a short time. The effect of the variable of the belongings of the house site was obviously negative under a 1% significance level. This indicated that when land-expropriated farmers thought they had more rights to the house site, they would be more unwilling to have their houses removed. This can be attributed to the farmers' inclination for self-interest.

#### 4.4. Variation of the Influencing Factors at Different Stages

Generally, the factors that significantly influence land-expropriated farmers' willingness varied with different stages (Table 8). This indicates that the concerns and appeals of land-expropriated farmers at different stages were changing. Guaranteeing the consistency of land expropriation policies and the appeals to farmers was key in allowing local governments to increase land-expropriated farmers' willingness and to reduce land expropriation conflicts.

In terms of the employment factors, the results from the sample model of the land expropriation compensation policy in the No. 131 document (Column 1 in Table 8) showed that the significance of the farmers' willingness related to employment aspects were higher than the factors related to inhabitation ones. This indicates that land-expropriated farmers in 1990s had intense interest for non-agricultural jobs. To work in the city was the dream of most farmers and the land expropriation policy became the way to realize that dream. At that time, the non-agricultural household was important and some farmers even wanted to buy a non-agricultural HuKou. If land-expropriated farmers had non-agricultural jobs arranged in the city, their willingness increased significantly. Therefore, having jobs and changes to non-agricultural job opportunities at the stage of the No. 131 document showed obvious positive relations with the farmers' willingness. However, the significance of the arrangement of non-agricultural jobs decreased after 2000. This is due to even college and technical secondary school graduates not being allocated jobs at that time. They had to try to find jobs by themselves. Nowadays, the agricultural proportion of the population in the investigated area has dropped to below 20% as most land-expropriated farmers already have non-agricultural jobs. Therefore, the regression coefficient and the significance of the variable of non-agricultural employment opportunity ( $X_{10}$ ) decreased with time gradually. Even this variable showed negative correlation (although it did not pass the 10% significance test) at the stage from 2011 until now. Thus, since 2000, Nanjing has not arranged jobs for land-expropriated farmers. Instead, they provided career training to the farmers whose lands were to be expropriated in order to improve their interest.

**Table 8.** Influencing factors at different land expropriation policy stages.

Variables	Model	1996–2000 (No. 131)	2000–2004 (No. 86)	2004–2010 (No. 93)	2011–Now (No. 264)
<b>Basic recognition of land-expropriated farmers</b>					
Recognition of ownership ( $X_1$ )		−1.036 *** (0.400)	−0.090 (0.272)	−0.135 (0.255)	0.112 (0.229)
Recognition of importance of farmland ( $X_2$ )		−0.847 (0.932)	−0.528 * (0.407)	−0.451 (0.482)	−1.167 ** (0.564)
Who expropriates the farmers' land? ( $X_3$ )		1.148 *** (0.378)	0.817 *** (0.245)	0.044 (0.209)	0.026 (0.169)
Whether to hold land expropriation hearing? ( $X_4$ )		−0.595 (0.475)	0.038 (0.313)	0.554 * (0.379)	−0.091 (0.291)
Knowledge of land expropriation ( $X_5$ )		0.185 (0.514)	1.240 *** (0.412)	−0.075 (0.203)	−0.645 ** (0.321)
<b>Factors of employment changes</b>					
Area of expropriated lands ( $X_6$ )		−0.052 (0.040)	−0.109 (0.096)	0.029 (0.114)	−0.437 ** (0.194)
Are there houses for rent? ( $X_7$ )		2.799 *** (0.954)	−2.053 ** (0.968)	1.609 ** (0.670)	0.487 (0.682)
Get a non-agricultural job? ( $X_8$ )		−0.894 (1.035)	0.143 (0.685)	0.227 (0.681)	0.412 (0.624)
Is there job employment after land expropriation? ( $X_9$ )		2.147 ** (0.941)	0.403 (0.606)	0.335 (0.605)	0.393 (0.635)
Change of non-agricultural employment opportunity ( $X_{10}$ )		1.176 *** (0.437)	0.785 *** (0.267)	0.385 * (0.232)	−0.518 (0.364)
<b>Factors of inhabitation changes</b>					
Ownership of homestead ( $X_{11}$ )		−0.803 (0.662)	−0.378 (0.288)	−0.344 (0.298)	−0.090 (0.270)
Floor area of self-built houses per capital ( $X_{12}$ )		0.010 (0.014)	0.0146 *** (0.004)	−0.021 * (0.013)	−0.004 (0.006)
Whether enjoy the same rights as citizens? ( $X_{13}$ )		0.151 (0.470)	0.697 ** (0.315)	0.380 * (0.288)	0.650 ** (0.312)
Average living space per person ( $X_{14}$ )		0.012 (0.041)	0.000 (0.008)	0.017 (0.015)	0.005 (0.009)
Change of living cost ( $X_{15}$ )		0.376 (0.360)	0.320 (0.238)	0.232 (0.272)	0.433 ** (0.219)
Change of surrounding scenery ( $X_{16}$ )		−0.126 (0.485)	−0.126 (0.261)	0.265 (0.326)	1.083 *** (0.417)
Change of air quality ( $X_{17}$ )		0.050 (0.380)	0.512 ** (0.216)	0.224 (0.246)	−0.104 (0.259)
Change of folk tradition and folk customs ( $X_{18}$ )		−3.298 *** (0.748)	−0.420 (0.284)	0.251 (0.320)	−0.860 ** (0.388)
Pseudo R-squared		0.520	0.323	0.193	0.263
LR statistic		105.835	85.915	44.087	58.215
Probability (LR statistic)		0.000	0.000	0.000	0.000
Sample size		79	90	78	89

Note: \*  $p < 0.2$ , \*  $p < 0.1$ , \*\*  $p < 0.05$  and \*\*\*  $p < 0.01$ . The values in the parentheses stand for the standard error.

In terms of the inhabitation factors, the ability to enjoy the same rights as original city inhabitants showed significant positive relations in different models of all land compensation policies. This indicates that the land-expropriated farmers' psychological identification was important. Meanwhile, the significant negative correlations between the reduction in folk customs and land expropriation willingness also indicate that living factors significantly affected the farmers' willingness. The estimation results of the variables of scenery changes suggested that before 2010, land-expropriated farmers did not care about the scenery (the regression coefficient is not significant). Even during the stage of the No. 131 document and the No. 86 document, the regression coefficient was negative. This indicates that the land-expropriated farmers did not care about their living environment and they only hoped to have more non-agricultural job chances to increase their income. However, during the stage of the No. 264 document, the environmental variable and the farmers' willingness showed significant positive correlations, which indicates that the external environment had become one of the farmers' interests in addition to concerns with regards to compensation. Thus, subsequent management of the resettlement environment will be more and more important.

## 5. Conclusions

This paper constructed a unique framework, which collectively addresses employment and inhabitation change of land-expropriated farmers. This framework aims to explain the living changes of farmers after land expropriation. Based on the framework, we explored the living impacts of land expropriation on land-expropriated farmers. A household survey conducted in Nanjing was used for this empirical study. The empirical research of this paper (Model (1)) emphasizes that the specification of land expropriation procedures (holding hearings in advance) in addition to making information open and transparent can help enhancing the farmers' willingness.

Generally, the willingness of land-expropriated farmers is affected not only by factors related with employment, but also by those related to inhabitation. Establishment and improvement of the employment and housing safeguard system are necessary to provide land-expropriated farmers with expectations of better and multiple guarantees. Compared with land expropriation, land-expropriated farmers are concerned more about the consequences of their employment and inhabitation. Therefore, a good expectation should be given to farmers. As land-expropriated farmers have contributed their precious employment and inhabitation sources (farming land and house sites), the government should not only improve the land expropriation system, but also lay emphasis on reform and perfection of the relevant system. This will involve establishing a better safeguard system for land-expropriated farmers in employment and housing, establishing multiple land-expropriation safeguard mechanisms, enhancing land-expropriated farmers' sustainable capacity in employment and inhabitation in addition to providing the farmers with good prospects.

Nanjing has experienced four land expropriation stages since 1996. In different policy stages, the influencing factors affecting the farmers' willingness changed from employment aspects (1996–2000) to residence aspects (2011–now). Therefore, to increase land-expropriated farmers' willingness, it is necessary to understand the changes of appeals to farmers as well as to adjust compensation and resettlement policies in a timely manner. To some extent, this indicates that the governments in different areas should understand the changing interests of land-expropriated farmers', with the compensation and resettlement policies needing to be adjusted according to local conditions (i.e., income structure of farmers). For China and/or some developing country with a similar land expropriation system to China, underdeveloped areas should pay more attention to employment and provide more jobs for land-expropriated farmers, while developed areas should be concerned more about farmers' inhabitation in addition to focusing on improving the farmers' housing conditions and environment.

Although this paper analyzed the determinants of land-expropriated farmers' willingness from a perspective of employment and inhabitation change, it does not mean to deny the expropriation compensation effect on the willingness of land-expropriated farmers. In fact, the change in employment and inhabitation is affected by the land expropriation compensation policy.

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