

## Article

# Does Land Expropriation Experience Increase Farmers' Farmland Value Expectations? Empirical Evidence from the People's Republic of China

Zhongcheng Yan <sup>†</sup>, Feng Wei <sup>†</sup>, Xin Deng , Chuan Li and Yanbin Qi <sup>\*</sup> 

College of Economics, Sichuan Agricultural University, Chengdu 611130, China; 2019108007@stu.sicau.edu.cn (Z.Y.); weifeng@sicau.edu.cn (F.W.); dengxin@sicau.edu.cn (X.D.); 2020108003@stu.sicau.edu.cn (C.L.)

\* Correspondence: qybin@sicau.edu.cn

<sup>†</sup> These authors contributed equally to this work and should be regarded as co-first authors.

**Abstract:** Understanding the formation mechanism of farmers' farmland value expectations not only helps to evaluate farmers' land resource allocation behaviors, but also enables the government to create better policies that can effectively guide and manage farmers' land value expectations. Based on cross-sectional data from the 2015 China Household Finance Survey (CHFS) of rural residents, we used quantitative analysis models to identify the effect of farmers' land expropriation experiences on their farmland value expectations, and the mechanisms of this effect. We found that after experiencing land expropriation, farmers' farmland value expectations significantly increased; the effect was most pronounced in groups of farmers with low prior expectations. Land expropriation experience raises farmers' farmland value expectations due to land scarcity. The use of monetized compensation in the process of land expropriation will significantly increase farmers' farmland value expectations. The results suggest that land expropriation activities can directly change the land resource endowment of farmers, thereby stimulating farmers' awareness of the need to protect their land rights and economic rights.

**Keywords:** land expropriation; experience; farmers; farmland; value expectations; China



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## 1. Introduction

Land expropriation refers to legal behavior in which a state or government converts non-state-owned land to state-owned land, in accordance with the procedures and powers stipulated by the law for the public interest, and provides reasonable compensation and proper resettlement to people whose land has been expropriated (see Appendix A' 1.1). Since the promulgation of the "Land Administration Law of the People's Republic of China" on 25 June 1986, China has established state ownership of land and collective ownership of villages—that is, ownership by the whole people and collective ownership by farmers. Article 9 of the "Land Administration Law of the People's Republic of China" (revised in 2020) stipulates that land in urban areas is owned by the state, while land in rural and suburban areas, except for land that is state-owned by law, is collectively owned by farmers. The ownership of state-owned land is exercised by the State Council on behalf of the state, while village collective ownership is exercised by the village collective economic organization on behalf of the farmers. Although China has implemented a land ownership system for farmers' collectives, farmers or village collectives cannot fully enjoy the right to land transactions. In accordance with Article 4 of the Land Administration Law of the People's Republic of China, China implements a land classification and land use control system, and neither farmland nor land collectively owned by farmers can be easily changed or directly used for public infrastructure and urban commercial development. If agricultural land wants to enter the market, the collective ownership of the village must be changed to state

ownership to conduct public infrastructure, urban commercial development, and utilization transactions; that is, the government enjoys the absolute monopoly of the primary land market. Any agricultural land that wants to enter a nonagricultural market transaction must utilize the government expropriation link and convert the agricultural land into state ownership to enter a nonagricultural market transaction (see Appendix A' 1.2). Therefore, land acquisition has become a necessary link in the nonagricultural use of agricultural land.

Historically, land expropriation has been the main way for the government to meet public infrastructure construction or urban development demands. Since China's reform and opening up in 1978, industrialization and urbanization in China have entered a stage of rapid development, resulting in a large amount of farmers' farmland being expropriated for public infrastructure and urban industrial and commercial development. According to survey data from the National Development and Reform Commission, from 1978 to 2003, more than 70% of the farmland occupied by nonagricultural construction in China was acquired through expropriation [1]. Since 2002, China's urbanization development has entered a "fast track", and the scale of the corresponding farmland conversion has entered a stage of rapid growth [2]. It is speculated that if China's urbanization rate reaches 50% in 2030, the occupied farmland area will reach or exceed 36,300 km<sup>2</sup>, which is equivalent to 2.7% of the total arable land in China in 2019. By 2030, more than 78,000,000 farmers will lose at least some of their land [3]. However, at the end of 2019, the urbanization rate of China's permanent population reached 60.60% (see Appendix A' 1.3) and will reach approximately 70% by 2030 [4]. These figures show that land expropriation will continue to be an important means for the non-agriculturalization of farmland and the adjustment of the land allocation and utilization structure.

In general, land expropriation not only solves the problem of insufficient construction land during the urbanization process, but also accumulates certain construction funds for local governments, serving an important role in national economic and social development. To a certain extent, land expropriation has also accumulated primitive capital for the urbanization of farmers and created more employment opportunities. However, conflicts and corruption have often occurred in the process of expropriating rural land [5–15]. For example, some studies have pointed out that the number of petitions regarding land expropriation and land transfer consistently account for more than 50% of the total [5], and large-scale rural protests caused by land expropriation have accounted for approximately 65% of the total in China [14]. Currently, as the main reason for the many contradictions and conflicts in the process of farmland expropriation, the basic consensus reached by academia and relevant government departments is that "the compensation standard is too low"; that is, the compensation level does not meet the expectations of farmers [13,14,16–19]. To effectively overcome or solve the external uneconomic problems in the process of rural land expropriation and compensation caused by unilateral pricing by the government, some researchers have proposed the idea of "market-based contract negotiation of agricultural land acquisition compensation"; that is, let the government and farmers negotiate the compensation standard for land acquisition instead of unilaterally determining the government [19,20]. Therefore, grasping farmers' farmland value expectations and their influencing factors in advance is a prerequisite and basis for building an efficient mechanism of negotiation between the government and farmers. Simultaneously, identifying the impact of a previous land expropriation experience on farmers' subsequent farmland value expectations has important reference value for understanding the effects of land expropriation on farmers' behaviors.

Existing research on the impact of land expropriation focuses on four aspects: social management [5–8], economic development [15], farmers' rights and interests [21–24], and natural ecology [25–27]. Analyses of the influencing factors of prices focus on geographical resource endowments [28–30], the output value, subsidy policies, infrastructure [31], energy [32,33], interest rates, macroeconomic policies [34], and other factors. In addition, some studies have analyzed the impact of land expropriation on the psychological behaviors of farmers, but they have focused on analyzing conflict willingness and nonagricultural

transfer willingness [22,23,35,36]. Previous research has failed to pay attention to the relationship between land expropriation activities and farmers' farmland value expectations.

Farmland expropriation activities not only have changed the total amount of land resource elements and income structure of farmers' households, but also have sent a clear economic signal of increasing land scarcity to farmers and enriched farmers' negotiation experience in the land transfer market. Thus, do farmers who have land expropriation experience have higher farmland value expectations than those without land expropriation experience? If so, what is the mechanism of action? Furthermore, is the impact of prior land expropriation experience on farmland value expectations heterogeneous due to the differences in compensation methods in the process of land expropriation? Does land expropriation experience have different effects on farmers with different quantiles of farmland value expectations? Answering these questions will improve the land expropriation systems in various countries, provide a useful reference for developing countries in the context of major changes in the relationship between people and land, improve the mechanism of the protection of farmers' land rights, and enable an exploration of the mechanism of circulation of farmland and homestead property rights.

Accordingly, this article uses data from the 2015 China Household Finance Survey (CHFS) of rural residents to empirically study the impact of land expropriation experience on farmers' farmland value expectations. Thus, this paper investigates the operating mechanism of the land expropriation system and provides a reference for the design of the land circulation mechanism and for other researchers conducting related research in this field to promote efficient land resource allocation and utilization.

Compared with previous studies, the marginal contributions of this article are as follows: first, national-level sample survey data are used to assess the effect of land acquisition activities on farmers' farmland value expectations from a horizontal comparison perspective, which expands the analysis of the effect of land acquisition activities and expands the framework of factors influencing farmers' farmland value expectations. Second, the mechanism by which land acquisition experience affects farmers' farmland value expectations is identified; third, the impacts of different compensation methods on farmers' farmland value expectations are analyzed.

The remainder of this paper is structured as follows: in Section 2, we provide a brief literature review. In Section 3, we present our theoretical analytical framework and basic assumptions. In Section 4, we describe the data source and research methods. In Section 5, we introduce the empirical results and explain them. In Section 6, we draw conclusions and policy implications.

## 2. Literature Review

From the perspective of government fiscal accumulation and public facility construction, land expropriation activities for public infrastructure construction or local fiscal accumulation can significantly meet the demands of public infrastructure construction and local fiscal accumulation, and can effectively alleviate the government's financial difficulties. From the perspective of social governance, land expropriation activities based on an unreasonable compensation system have stimulated conflicts between the government and the people, especially increasing the occurrence of protests [10–15]. Some researchers have pointed out that land expropriation activities can promote environmental protection and significantly increase forest coverage and the development of biological populations; however, such land expropriation activities are concentrated in the construction of nature reserves that mainly protect the ecological environment [25,26]. From a microeconomic perspective, many researchers mainly analyze the impact of land expropriation on the incomes of farmers. Some researchers have applied Chinese data to prove that although land expropriation activities reduce the agricultural incomes of rural households, they increase government transfer and wage incomes. In the short term, land expropriation activities increase the income level of rural households as a whole [24,37,38]. In addition to paying attention to the effect of land requisition on farmers' income, some researchers

are also concerned about the effect of land requisition on the employment behaviors of farmers' families. Some researchers pointed out that, from the perspective of the heterogeneity of the impacts, land expropriation activities reduce family members' access to farmland, but through the creation of nonagricultural life, women's economic statuses, and nonagricultural job opportunities are improved; however, most new nonagricultural jobs are still informal and unstable [39]. Although land acquisition has reconstructed the livelihoods of rural households, many challenges regarding fairness and sustainable development exist, which are mainly reflected in income fluctuations caused by unstable employment [40,41]. Some researchers have analyzed the effect of land acquisition on the entrepreneurial behaviors of rural households. The results show that in the process of land acquisition, the early perception of land acquisition and favorable location of land can significantly promote the entrepreneurial behaviors of rural households, but the pure cash compensation policy does not effectively promote the entrepreneurial behaviors of farmers [42]. Empirical studies in many developing countries show that the government's compensation level for land-expropriated farmers is often low, which is not enough to reconstruct their livelihoods [43,44]. In addition, some researchers have shown that land expropriation for public infrastructure construction has promoted the development of the energy (oil and gas) industry. The main reason is that these land expropriation activities have greatly reduced the construction cost of energy industry infrastructure. However, unreasonable land expropriation activities have, to a certain extent, displaced many people, resulting in food insecurity, the collapse of society, and the weakening of cultural cohesion [45]. Existing studies have also analyzed the impact of land expropriation on the psychological behaviors of farmers, focusing on conflict willingness and nonagricultural transfer willingness. Studies have pointed out that unreasonable compensation, especially land expropriation activities that do not meet farmers' psychological compensation expectations, will increase farmers' willingness to engage in conflicts. To a certain extent, they will also increase farmers' willingness to engage in nonagricultural employment [22,23,35,36].

Regarding the influencing factors of farmland prices, existing research mainly analyzes the influencing factors of the actual transaction prices of farmland from the perspectives of physical geography, the social economy, and macroeconomic policies [46]. From the perspective of physical geographical conditions, farmlands with good water sources have high land quality [28,29,47], and farmlands close to markets have better environments [42] and higher farmland prices. Land prices have limited positive effects. The output value of farmland, subsidy standard of the agricultural subsidy policy, public infrastructure [31], and energy status [32,33] have significant positive impacts on the price of farmland. That is, better output value, a higher subsidy, better public infrastructure, and the availability of energy have significantly increased the price of farmland. In addition, researchers have analyzed the impact of interest rate levels, stability of property rights, and legal protection levels on farmland prices. Studies have shown that low interest rates, stable property rights, and effective legal systems that protect private property rights can significantly increase the price level of farmland [34]. In addition, some researchers have analyzed the relationship between nature reserves and the price of farmland. Their conclusions show that the establishment of nature reserves can significantly affect the price of farmland, but the magnitude and direction of the effect depends on the type of protection area, land use type, and variation by region. Although there is evidence that protected areas can affect the price of cultivated land, the standard farmland value of grassland is often positively affected, mainly in the study area [48]. Some researchers have analyzed the impact of landscape on real estate prices and concluded that landscape factors can significantly affect land prices [49].

Research on the impact of land expropriation experience on farmers' psychological behaviors indicates that the lack of land expropriation experience impacts their price expectations with regard to future farmland expropriation. On the other hand, the existing literature does not consider the psychology of farmland. From the perspective of price, we analyze the impact of land expropriation activities on the psychological price of farmers'

farmland. Therefore, this study uses cross-sectional data obtained from rural households at the national level in China to analyze the impact of land expropriation activities on farmers' farmland value expectations. In addition to exploring the impact of land expropriation activities, this paper analyzes the impact of physical geography, socioeconomic factors, and policy factors on farmers' farmland value expectations.

### 3. Theoretical Analytical Framework and Research Hypotheses

#### 3.1. Theoretical Analytical Framework

Farmers' (individuals) farmland value expectations refer to the subjective judgments made by individuals on the market value of a certain amount of farmland, in a certain period, or under certain conditions. This psychological activity is often a judgment of the current monetary value of farmland based on integrating the characteristics of the external and internal conditions of the self; that is, the discount of the income stream generated by the farmland in a certain future period of time. Currently, the expropriation of farmland in China is mainly undertaken in a unilateral manner led by the government. Based on the demand for public construction, commercial development, land use planning, and other activities, it is necessary to obtain farmland use rights from farmers. As the main trend, farmland is utilized for nonagricultural purposes involving land use change [3,5,6,18,22]. We believe that land expropriation activities impact farmers in at least four ways. First, land expropriation activities reduce the total amount of family farmland and exacerbate the scarcity of family farmland. Second, they allow farmers and their families to perceive land prices or land rights signals. Third, these activities improve the negotiation experiences of farmer households in the process of land expropriation. Fourth, they change the family asset structure or factor allocation decisions of farmer households and adjust the family income structure. Therefore, the land expropriation experience may impact farmers' farmland value expectations by exacerbating the scarcity of farmland, enhancing the price reference system, increasing income diversity, and providing rich negotiation experience. Accordingly, this article constructs a theoretical analytical framework in which land expropriation experience affects farmers' farmland value expectations. For details, see Figure 1.

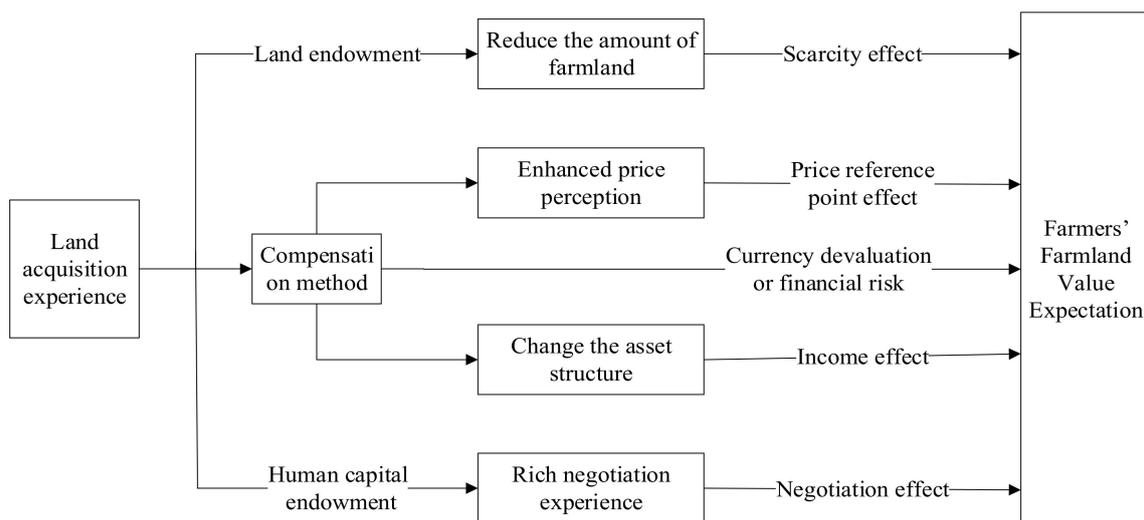


Figure 1. Theoretical analysis framework.

#### Research Hypotheses

Figure 1 shows the four possible mechanisms of the impact of land expropriation experience on farmers' farmland value expectations. The specific mechanisms and hypotheses are discussed and proposed as follows.

Mechanism 1: the scarcity effect. Land expropriation activities have the most direct impact by reducing the total amount of farmland for each farmer household, decreasing the per capita land area, and changing the farmland endowment of families. The reduction in farmland area will directly cause farmers to psychologically perceive the scarcity of farmland. This change in endowment will directly generate differences in farmers' behaviors and decision-making. According to the theory of supply and demand, when supply decreases and demand does not change, the price level will increase. Therefore, because resources that are scarce are precious, farmers will psychologically attach more importance to surplus farmland, and therefore, will increase the reserve price of farmland. Accordingly, this article proposes Hypothesis 1:

**Hypothesis 1 (H1).** *Holding all else constant, land expropriation experience will increase farmers' farmland value expectations by exacerbating the scarcity of farmland.*

Mechanism 2: the price reference point effect. Farmers will receive a certain amount of compensation after their farmland is expropriated, and the value of the compensation conveys a signal of the price of farmland to farmers. Price theory holds that price is the basic element of the effective operation of market mechanisms, having the effect of optimizing resource allocation and realizing income redistribution. Differences in price signals will create differences in people's practical and psychological behaviors [50]. The reference effect in prospect theory points out that individual behavioral decisions or value judgments will be affected by a certain reference point in the past or the present. In addition to the direct perception of prices by farmers who have land expropriation experience, the price standard for compensation provides farmers with a price reference point. Farmers who have experienced land expropriation have a better grasp of price signals and higher price reference points, making their farmland value expectations close to market prices. In contrast, farmers who have not experienced land expropriation have difficulty finding effective and accurate reference points because of asymmetric information. Therefore, farmers who have land expropriation experience have higher farmland value expectations. Accordingly, this article proposes Hypothesis 2:

**Hypothesis 2 (H2).** *Holding all else constant, land expropriation experience will allow farmers to perceive farmland price signals and form a higher reference point for the market value of farmland, increasing their farmland value expectations.*

Mechanism 3: the negotiation effect. For individuals, work or life experience is often a type of experience that will enhance their cognition of an activity and efficiency or negotiation power in subsequent activities. In academia, this effect is referred to as the "learning by doing" effect [51]. In land expropriation activities, farmers often pay attention to compensation policies, compensation standards, and price negotiations with expropriators. After this series of activities is completed, farmers will have more experience negotiating land expropriation activities. Thus, in the next round of land expropriation activities that they face, farmers will have more negotiating power during these activities. Therefore, the negotiation experience brought by land expropriation experience will increase farmers' farmland value expectations. Accordingly, this article proposes Hypothesis 3:

**Hypothesis 3 (H3).** *Holding all else constant, land expropriation activities will increase farmers' farmland value expectations by enriching their experience or enhancing their negotiation power.*

Mechanism 4: the income effect. Land expropriation activities directly reduce the total amount of farmland of farmer households, which facilitates changes in the combination of farmer household assets and factor allocation or employment decisions. When farmland is reduced and the labor force remains constant, some laborers will be idle. At this time, the idle labor force will rely on other employment paths because the farmland cannot be replenished in a timely manner; that is, the reduction in farmland changes the income

structure of rural households and strengthens the diversification of the family income structure, especially the proportion of nonagricultural income. Due to income diversification, farmers will pay more attention to their land assets [52], thus increasing their farmland value expectations. Accordingly, this article proposes Hypothesis 4:

**Hypothesis 4 (H4).** *Holding all else constant, land expropriation activities enhance the asset attributes of land by promoting the diversification of family income, thereby increasing farmers' farmland value expectations.*

Heterogeneity analysis: the compensation method. In land expropriation activities, different regions may adopt different compensation methods. In practice, there is direct monetary compensation and indirect nonmonetary compensation, for example, the use of other compensation methods such as the purchase of social insurance or medical insurance, job training or work arrangements. The risks or uncertainties brought by different compensation methods are different. Monetary compensation may be affected by the risk of depreciation and financial uncertainty. In contrast, nonmonetary compensation will generally not face risks stemming from depreciation or the poor financial management capabilities of families; rather, nonmonetary compensation involves certainty risks. Compared with farmers who accept nonmonetary compensation, farmers who accept monetary compensation have higher farmland value expectations in the monetary compensation scenario due to the risk of currency depreciation or uncertainty of their financial management capabilities. Accordingly, this article proposes Hypothesis 5:

**Hypothesis 5 (H5).** *Holding all else constant, farmers who adopt monetary compensation have higher farmland value expectations.*

In addition, according to the viewpoints of expected value theory and prospect theory, an individual's expectations are mainly determined by his or her internal characteristics and the external environment. The internal factors can be attributed to the individual's information processing ability, which is mainly reflected in his or her gender, age, educational level, and psychological willingness (indicated by the individual employment paths of farmers). The external environment is composed of the institutional environment, economic environment, location environment, quality environment, and organizational environment. In addition, family environment [53,54]. In addition to exploring the impact of land expropriation experience, this article controls six characteristic variables of the individuals interviewed: their families, the property rights system, organizational characteristics, location, and factor endowments. Regional characteristics are mainly controlled by an urban dummy variable, while land endowments are controlled by a dummy variable for the quality grade of land, which can eliminate deviations in the estimation results caused by differences in the quality of land.

## 4. Data Source and Research Methods

### 4.1. Data

The data in this article were obtained from the CHFS database, which is organized and managed by Southwestern University of Finance and Economics. This database covers information on household population, assets, finance, location, production, and consumption. In view of the availability of data on the explanatory variable, i.e., farmland value expectations, and the core explanatory variable, i.e., land expropriation experience, this paper selects 2015 cross-sectional survey data for empirical research. The survey samples in 2015 covered 29 provinces (including autonomous regions and municipalities, except for Tibet, Xinjiang, Hong Kong, Macao, and Taiwan), 351 counties (including districts and county-level cities), and 1396 village (residential) committees. The sample size was 37,289 households. After deleting samples with severely missing values for the city and core variables, 5245 samples were finally retained (28.67% in Eastern China; 37.98% in Central China; and 33.35% in Western China), accounting for 14.07% of the total sample.

Of the samples retained, 417 samples had land expropriation experience (Eastern China: 37.65%; Central China: 26.86%; and Western China: 35.49%), accounting for 7.95% of the total retained sample. In the processing of variable values, there are many abnormal values in the original data. To ensure the authenticity and continuity of the data, the data cleaning process winsorized the data at the 1% level. Overall, the proportion of the sample with land expropriation experience in Eastern China is much higher than that in Central China and Western China, which shows a positive correlation between land expropriation activities and the level of economic development. Table 1 shows the distribution of the full sample and the samples with land expropriation experience in seven regions: Northeast China, North China, Central China, Eastern China, South China, Southwest China, and Northwest China. Figure 2 shows the distribution of the samples in interprovincial regions. The distribution of the samples across the country is relatively balanced, and the samples are highly representative.

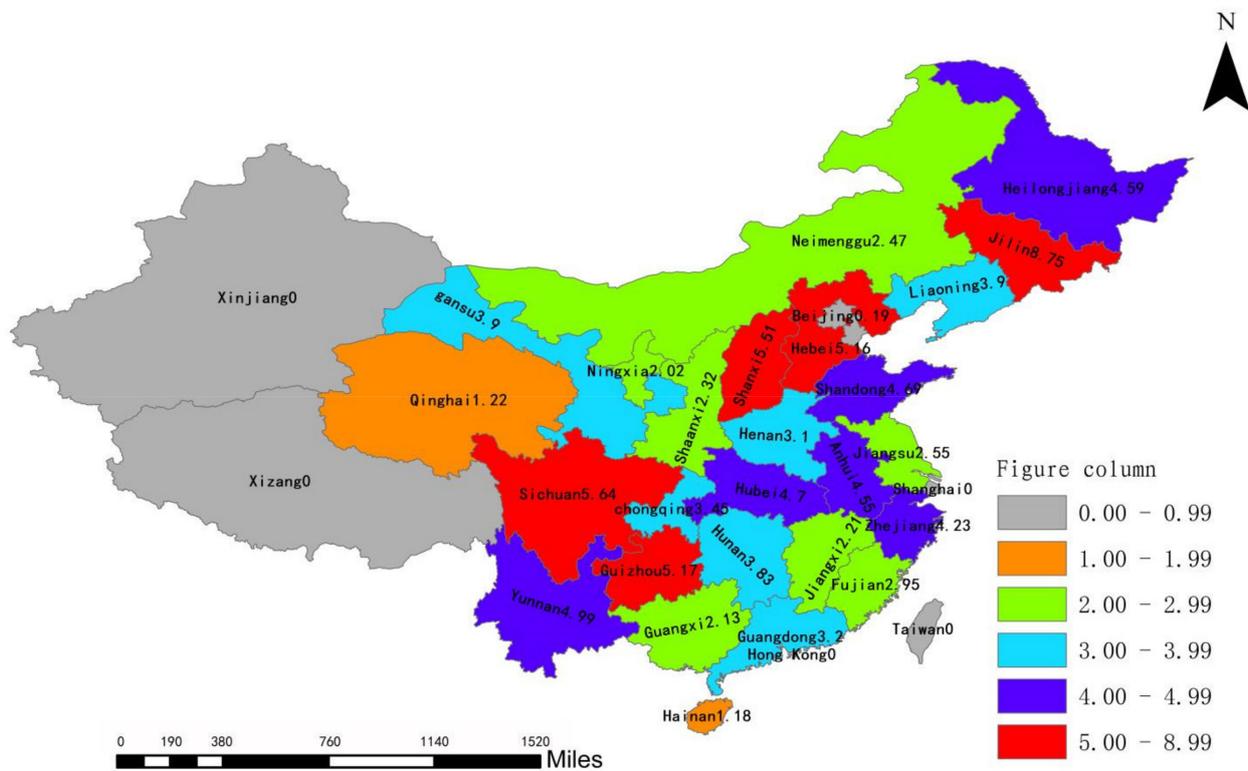


Figure 2. The distribution of samples in inter-provincial regions (%). Note: the distribution map of the sample provinces is drawn with ArcGIS 10.3 software.

4.2. Methods

4.2.1. Model Design

Since farm household survey data are cross-sectional, following previous studies, we set up a multiple linear regression model to fit the cross-sectional data and use the linear least squares method to estimate the unknown parameters in the regression model [55]. The basic regression model design is shown in Equation (1).

$$Y_i = \alpha + \beta * land_i + \sum_{k=1}^n \delta_k * control_i^k + \epsilon_i \tag{1}$$

Here,  $Y_i$  represents the logarithm of the expected farmland value of farmer  $i$ ,  $\alpha$  represents the intercept term,  $\beta$  represents the marginal effect of the core explanatory variable, i.e., land expropriation experience (land), on farmland value expectations, and  $\delta$  represents other control variables. The marginal impact on farmers' farmland value expectations represents other unobservable random disturbances.  $Control_i$  includes variables at five

levels: the individual characteristics of the interviewee, the characteristics of the property rights system, family characteristics, community characteristics, and organizational characteristics. The article also controls the urban and land quality dummies to control the estimation deviations caused by differences in land quality and cities. This article focuses on the values of  $\alpha$  and  $\delta$ .

**Table 1.** Distribution of samples in seven regions of China.

Area Type	Sample Size	Percent (%)
Northeast area	905	17.25 (national sample)
Among them: have land acquisition experience	37	4.09 (sample in the province)
North China	731	13.94
Among them: have land acquisition experience	44	6.02
Central China	648	12.34
Among them: have land acquisition experience	56	8.64
East China	1034	19.71
Among them: have land acquisition experience	92	8.90
South China	342	6.52
Among them: have land acquisition experience	24	7.02
Southwest Region	1010	19.26
Among them: have land acquisition experience	91	9.01
Northwest region	575	10.98
Among them: have land acquisition experience	73	12.70

#### 4.2.2. Variable Design

##### Explained Variable

To explore the impact of land expropriation experience on farmers' farmland value expectations, this paper chooses cultivated land (referring to land mainly used for the production of grain, oil, fruits and vegetables) as the representative farmland. We make this choice for two reasons: first, most land expropriation activities in China involve the expropriation of cultivated land; second, cultivated land occupies a dominant position in the agricultural income of most rural households and is an important guarantee of survival. Regarding awareness of value, the explained variable is the respondent's subjective estimate of the monetary value of cultivated land based on the current market price. The questionnaire asks about the respondent's expectations of the monetary value of a one-time transfer of cultivated land owned by the family based on the current market price. This article carries out the average treatment of the unit area and converts it into the market price evaluation per mu of arable land. Simultaneously, to characterize the nonlinear impact of land expropriation experience on farmland value expectations, the empirical model logarithmically transforms the explained variables.

##### Core Explanatory Variables

The core explanatory variable is whether the rural household has had land expropriation experience since 2000 (1 = yes; 0 = no). The original questionnaire asked about the number of farmland expropriations that the family has experienced since 2000. To effectively classify samples into the expropriated land group and the non-expropriated land group, this article sets the independent variables as having experienced land expropriation (number of times is greater than 0) and not having experienced land expropriation (number of times is 0). Land expropriation compensation methods are divided into monetary compensation and nonmonetary compensation. Nonmonetary compensation mainly includes the purchase of social security (11.36%), grain compensation (4.55%), land compensation (7.95%), and other nonmonetary compensation (method not specified, 64.14%).

### Control Variables

The control variables in this article are divided into six categories [53,54]. First, the individual characteristics of the interviewee, including his or her gender, age, educational level, and willingness to engage in business. Second, the characteristics of the property rights system, including whether the land is confirmed and certified. Third, family characteristics, including the annual per capita income level, social security level, farmland dependence (food and income dependence), social capital (whether the family includes village officials or members of the Communist Party of China), health level, land area per capita, and household debt level. Fourth, the quality of cultivated land (controlled in the form of a dummy variable). Fifth, community characteristics, including whether the community provides relevant policy publicity services. Sixth, the characteristics of the farmer's business organization. Furthermore, the article controls the urban and land quality dummy variables. The specific definitions, assignments, and calculation methods of the variables are shown below in Table 2.

**Table 2.** Variable meaning.

Variable Type	Variable Name	Variable Definitions	
Explained variable	Logarithm of the expected value of cultivated land value (Y)	The expected value of cultivated land value per unit area takes the logarithm	
Core explanatory variable	Whether there is a dummy variable of land acquisition experience since 2000	1 = yes; 0 = no	
Property rights system	Whether to confirm the right to issue a certificate	1 = yes; 0 = no	
Control variable	Annual income per capita of the family	Total income/total population (USD)	
	Family social security coverage rate	Number of people purchasing social insurance/total household population (%)	
	Degree of food dependence on farmland	Value of self-produced food/total value of household food consumption (%)	
	Farmland income dependence	Source of income from farmland (agricultural subsidy)/total household income (%)	
	Does the family have village officials or party members	1 = yes; 0 = no	
	Overall family health	Health status is good/relatively good and average as a percentage of the household population (%)	
	Cultivated land area per household	Total cultivated land area/total population (km <sup>2</sup> )	
	Household debt level	Total current debt/annual household income (%)	
	Cultivated land quality	Cultivated land quality grade	1 = very good; 2 = good; 3 = fair; 4 = bad; 5 = very bad
	Personal characteristics variables	Gender	1 = Male 0 = Female
Age		Actual age	
Personal characteristics variables	Education	1 = illiterate; 2 = primary school; 3 = junior high school; 4 = high school; 5 = secondary school; 6 = junior college;	
		7 = undergraduate; 8 = master's degree; 9 = doctoral degree	

Table 2. Cont.

Variable Type	Variable Name	Variable Definitions
	Willingness to do business	1 = yes; 0 = no
community service	Whether the community provides policy services	1 = yes; 0 = no
Organizational characteristics	Organizational level	1 = enterprise; 2 = cooperative; 3 = family farm; 4 = large household; 5 = ordinary farmer

## 5. Results

Stata software shows strong analytical capabilities and convenient processing methods in statistical data analysis [56]. All empirical results in our paper are implemented using the Stata15 (64-bit) version of statistical software.

### 5.1. Descriptive Statistical Analysis

In the analysis of the descriptive statistical results, we not only presented the basic statistical results of all variables but also conducted a grouped mean T test according to whether they experienced land acquisition. Table 3 reports the descriptive statistical results of the main variables. The results show that the average value of farmland expected by farmers is 23,650.20 USD/km<sup>2</sup>; the minimum is 229.20 USD/km<sup>2</sup>; and the maximum is 91,709.40 USD/km<sup>2</sup> (at the 2014 price level). By introducing interest rates and inflation rates to calculate equivalent prices, based on the 2020 price level, the average current expected value is 31,454.85 USD/km<sup>2</sup>. In addition, in 2015, 46.4% of the sampled farmer households had completed farmland certification; the households' income dependence on farmland was 24.2%; and the food dependence level was 32.6%. These results show that in the context of China's industrialization, farmland still occupies a very important position for farmers. The statistics of the other variables are shown below in Table 3.

Table 3. Descriptive statistics of main variables.

Variable Name	Sample Size	Mean	Standard Deviation	Minimum	Maximum
Y (USD)	5245	23,650.2	32,328.64	229.2	91,709.4
Whether there is a dummy variable of land acquisition experience since 2000	5245	0.08	0.271	0	1
Whether to confirm the right to issue a certificate	5245	0.464	0.499	0	1
Annual income per capita of the family (USD)	5245	1212.29	3169.49	0	152,849.1
Family social security coverage rate	5245	76.755	31.733	0	100
Degree of food dependence on farmland	5245	0.326	0.516	0	1
Farmland income dependence	5245	0.242	0.365	0	1
Cultivated land area per household (km <sup>2</sup> )	5245	0.19	0.677	0.0006	33.33
Household debt level	5245	5.14	28.58	0	238.71
Does the family have village officials or party members	5245	0.057	0.232	0	1
Gender	5136	0.66	0.47	0	1
age	5136	58.767	12.656	9	97

Table 3. Cont.

Variable Name	Sample Size	Mean	Standard Deviation	Minimum	Maximum
Education	5114	2.474	1.023	1	7
Willingness to do business	5244	0.103	0.304	0	1
Whether the community provides policy services	5245	0.133	0.34	0	1
Cultivated land quality grade	5242	2.659	0.993	1	5
Organizational level	5245	4.984	0.185	1	5

Table 4 reports the mean differences in the characteristics of farmers with and without land expropriation experience. The statistical results show that farmers who have land expropriation experience have higher farmland value expectations, weaker dependence on farmland for food, a higher educational level, a higher level of household debt, and a greater willingness to engage in business. These results show that land expropriation experience changes the family asset structure to a certain extent, thereby affecting families' food source structure (Land acquisition reduces the amount of farmland for farm households, which leads to the proportion of farm households that directly obtain food from the land) and employment paths. However, there were no obvious differences in other individual, family, location, or land quality characteristics. The specific results are shown below in Table 4.

Table 4. Grouped mean T test.

Variable Name	G1(No)	Mean 1	G2 (Yes)	Mean 2	Mean Difference
Y (USD)	4828	1496.54	417	2504.54	−1008.0022 ***
Whether to confirm the right to issue a certificate	4828	0.463	417	0.487	−0.024
Annual income per capita of the family (USD)	4828	1212.29	417	1312.627	−111.7523
Family social security coverage rate	4828	76.654	417	77.927	−1.272
Degree of food dependence on farmland	4828	0.329	417	0.284	0.045 *
Farmland income dependence	4828	0.243	417	0.225	0.018
Cultivated land area per household (km <sup>2</sup> )	4828	0.198	417	0.142	0.055
Household debt level	4828	4.94	417	7.451	−2.511 *
Does the family have village officials or party members	4828	0.057	417	0.065	−0.008
Gender	4726	0.659	410	0.67	−0.011
Age	4726	58.812	410	58.246	0.566
Education	4704	2.459	410	2.641	−0.182 ***
Willingness to do business	4827	0.098	417	0.163	−0.065 ***
Cultivated land quality grade	4826	2.661	416	2.632	0.029

Note: "\*\*\*\*" and "\*\*\*" mean that the difference in the mean is significant at the 1% and 10% significance levels.

## 5.2. Empirical Results

### 5.2.1. Basic Regression Analysis

Table 5 reports the empirical results of the basic linear model. From the estimation results of the regression model, the goodness of fit ( $R^2$ ) is 0.297 (significant at the 0.000 level), and the robustness of the results is ensured by gradually adding variables. The results show that the model's explanatory power is robust; that is, the variables included in the model explain 29.7% of farmers' farmland value expectations.

Table 5. Basic linear regression results.

Variables	Explained Variable: Logarithm of Expected Value of Farmland Value per km <sup>2</sup>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Whether experienced land acquisition	0.800 *** (8.13)	0.422 *** (4.65)	0.421 *** (4.64)	0.418 *** (4.61)	0.371 *** (4.09)	0.371 *** (4.09)	0.370 *** (4.08)
Whether to confirm the right to issue a certificate			0.098 * (1.92)	0.089 * (1.74)	0.085 * (1.66)	0.085 * (1.66)	0.085 (1.64)
Annual income per capita of the family				0.000 *** (2.82)	0.000 *** (3.64)	0.000 *** (3.65)	0.000 *** (3.63)
Family social security coverage rate				0.001 (1.15)	0.001 (1.00)	0.001 (0.96)	0.001 (1.01)
Degree of food dependence on farmland				0.010 (0.21)	0.032 (0.67)	0.031 (0.65)	0.032 (0.68)
Farmland income dependence				−0.083 (−1.29)	−0.146 ** (−2.25)	−0.145 ** (−2.23)	−0.071 (−0.84)
Cultivated land area per household (km <sup>2</sup> )				−0.012 *** (−4.23)	−0.012 *** (−3.88)	−0.012 *** (−3.88)	−0.012 *** (−3.97)
Does the family have village officials or party members				0.120 (1.23)	0.074 (0.74)	0.064 (0.64)	0.067 (0.67)
Gender					0.209 *** (4.08)	0.206 *** (4.01)	0.207 *** (4.02)
Age					−0.010 *** (−4.87)	−0.010 *** (−4.90)	−0.011 *** (−4.93)
Education					0.107 *** (4.16)	0.106 *** (4.10)	0.103 *** (4.00)
Willingness to do business					0.138 * (1.71)	0.140 * (1.74)	0.138 * (1.71)
Overall family health					0.001 (1.22)	0.001 (1.20)	0.001 (1.18)
Whether the community provides policy services						0.105 (1.52)	0.104 (1.50)
Household debt level							−0.001 (−0.91)
Organizational level							−0.123 (−0.91)
Constant	7.757 ***	8.332 ***	8.303 ***	8.219 ***	8.477 ***	8.474 ***	9.021 ***
Cultivated land quality dummy variable	No	No	No	No	Yes	Yes	Yes
City dummy variable	N0	Yes	Yes	Yes	Yes	Yes	Yes
N	5245	5245	5245	5245	5245	5113	5113
Adjust R <sup>2</sup>	0.013	0.272	0.272	0.278	0.286	0.297	0.297

Notes: “\*\*\*”, “\*\*” and “\*” mean significant at the significance level of 1%, 5%, and 10%, respectively. In addition, the values in parentheses are standard errors.

The impact of land expropriation experience. In Table 5, from columns (1) to (7), the robustness of the results is ensured by gradually adding control variables, such as the land confirmation status, family characteristics, the individual characteristics of the respondent, community characteristics, debt characteristics, and organizational characteristics. In Table 4, the average value of farmland expected by farmers without land expropriation experience is USD 1496.96/km<sup>2</sup>. A 37.1% increase means that once farmers with the same characteristics experience land expropriation, their farmland value expectations will increase to USD 2052.32/km<sup>2</sup>, for an average increase of approximately USD 555.30/km<sup>2</sup>. This increase is obvious. These marginal effect results from columns (5) to (7) are similar, indicating that the article's estimation results are robust. Therefore, land expropriation experience will significantly increase farmers' farmland value expectations; that is, farmers who have land expropriation experience will have a higher expected value than those who do not.

The influence of other variables. The issuance of farmland rights, the per capita income level, respondents' educational level, and the willingness to engage in business have a significant positive impact on farmers' farmland value expectations; that is, the certification of rights, a higher level of family income, a higher level of education, and a higher level of willingness to engage in business cause farmers to have higher farmland value expectations. The confirmation of rights gives farmers exclusive rights to land and increases their monopoly power over land, and the asset specificity of farmland enhances this "monopoly" effect. Thus, farmers' expectations will be raised, which explains why these rights are confirmed. The rent on land whose rights have been confirmed will be higher [57]; the quality of land represents the ability to produce; the level of education represents human capital and the ability to negotiate; and the willingness to engage in business may be due to the desire to accumulate capital through land. Qiu Tongwei et al. (2019) pointed out that for-profit incentives significantly increase farmland rent [58]. In addition, age and the per capita arable land area of a household (scarcity of farmland) have a significant negative impact on farmers' farmland value expectations; that is, farmers with smaller per capita arable land areas have higher farmland value expectations. In contrast, older farmers have lower farmland value expectations. Regarding gender, male farmers show higher farmland value expectations. Household debt, social security, farmland dependence, social capital, and community and organizational characteristics have no significant impact on farmers' farmland value expectations. The specific empirical results are shown in Table 5.

### 5.2.2. Heterogeneity Analysis

To further test the heterogeneous impacts that land expropriation experience may have on farmers with different percentiles of farmland value expectations, we use a quantile regression model to estimate empirical Equation (1). Table 6 lists the quantile regression results of the impact of land expropriation experience on farmers' farmland value expectations. The quantile regression results show that, compared with farmers with a higher expected value of farmland, farmers whose expected value of farmland is in a lower percentile have a more significant increase in their farmland value expectations after experiencing land expropriation activities. For example, holding all else constant, compared with farmers who have not experienced land expropriation, farmers who have experienced expropriation and whose expected value of farmland is in the 90th percentile have a significantly higher expected value of farmland by, on average, 7.05%. Additionally, farmers who have experienced expropriation and whose expected value of farmland is in the 10th percentile, 20th percentile, and 25th percentile have a significantly higher expected value of farmland by 38.6%, 43%, and 43.9%, respectively. We test whether the estimated coefficients of land expropriation experience in the 90th percentile and 10th percentile estimates are equal and find that the *p*-value is equal to 0.0107, which shows that the 90th percentile and 10th percentile estimates are significant at the 5% level. There were significant differences in the estimated coefficients of land expropriation experience in the quantile regression. In response to the empirical findings, the effect of land expropriation

activities on the expected value of farmland is more obvious for farmers with a lower expected value of farmland. Two possible explanations are that the information held by farmers with a lower expected value of farmland is relatively narrow and that farmers have relatively small social capital, which causes a relative lack of farmland market information, a relatively low awareness of land policies, and a relatively weak awareness of the need to protect their land rights. Once farmers have experienced land expropriation activities, they make comparisons with the farmland market information that they originally held, develop a strong awareness of the need to protect their land rights, and conduct a reasonable evaluation of the estimated value of their farmland. They pay more attention to land policies and more actively obtain land market information due to land expropriation activities. Therefore, their awareness of the need to protect their land rights and interests increases significantly at the margin, corresponding to a more obvious increase in the land value evaluation in the subsequent period. This conclusion is confirmed by Lu S H et al. (2020), who conducted big data analysis of the keywords of farmers whose land was expropriated in the message mailbox of local leaders. They concluded that land expropriation experience promotes farmers' awareness of their rights [59].

**Table 6.** The impact of land acquisition experience on farmers' farmland value expectation: quantile regression.

Variables	Explained Variable: Logarithm of Expected Value of Farmland Value per km <sup>2</sup>						
	OLS	10th	20th	25th	75th	80th	90th
Whether experienced land acquisition	0.370 *** (0.091)	0.386 ** (0.138)	0.430 *** (0.110)	0.439 *** (0.112)	0.391 *** (0.066)	0.349 *** (0.059)	0.0705 ** (0.027)
Control variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummy Variables of agricultural management organization	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City dummy variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5113	5113	5113	5113	5113	5113	5113
adj. R <sup>2</sup>	0.297						
pseudo R <sup>2</sup>		0.038	0.039	0.039	0.067	0.054	0.017

Notes: the standard errors in brackets are robust standard errors. The standard error of 500 times in the quantile regression is the standard error calculated by the bootstrapping method. Among the regional dummy variables, the city-level dummy variables are controlled in the ordinary least squares (OLS) regression, and the city-level dummy variables are controlled in the quantile regression. Controlled dummy variables in the eastern, central, and western regions; other control variables are consistent with the previous benchmark regression model (including weight confirmation characteristics, family characteristics, individual characteristics of interviewees, community characteristics, debt characteristics, and organizational characteristics); \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

To further understand whether different compensation methods will differently affect the value of farmland expected by farmers in the process of land expropriation, this article estimates the impact of different compensation methods on farmers' farmland value expectations. We divide the compensation methods into monetary compensation (assignment value of 1) and nonmonetary compensation (assignment value of 0) and use the moderating effect model to estimate the impact of land acquisition compensation methods on farmers' farmland value expectations. In the land expropriation samples, 333 samples take monetary compensation, and 83 samples take nonmonetary compensation, including the purchase of social security, employment, and land compensation. The total number of samples in this estimation is 416, accounting for 7.93% of the total sample. The specific linear estimation model (Equation (2)) is expressed as follows:

$$Y_i = \alpha + \lambda * way_i + \sum_{k=1}^n \delta_k * control_i^k + \varepsilon_i \quad (2)$$

The regression results are shown in Table 7. The results show that farmers who take monetary compensation have a higher expectation of the value of farmland than farmers who take nonmonetary compensation, with a coefficient of 0.507, which is significant at the 10% level. Regressions (6) and (7) show completely consistent results, indicating that the model estimation results are robust.

**Table 7.** The analysis of heterogeneity of compensation methods.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Land acquisition compensation method	1.115 *** (4.93)	0.604 ** (1.99)	0.608 ** (1.98)	0.558 * (1.88)	0.505 * (1.67)	0.507 * (1.67)	0.507 * (1.68)
Whether to confirm the right to issue a certificate			0.046 (0.21)	0.032 (0.15)	0.015 (0.07)	0.016 (0.07)	0.059 (0.27)
Annual income per capita of the family				0.000 (0.89)	0.000 (0.39)	0.000 (0.41)	0.000 (0.38)
Family social security coverage rate				0.003 (0.96)	0.003 (0.89)	0.003 (0.89)	0.004 (1.08)
Degree of food dependence on farmland				0.632 *** (3.60)	0.584 *** (3.24)	0.586 *** (3.23)	0.595 *** (3.27)
Farmland income dependence				−0.038 (−0.12)	−0.041 (−0.13)	−0.047 (−0.15)	−0.059 (−0.19)
Cultivated land area per household (km <sup>2</sup> )				−0.094 ** (−2.07)	−0.084 * (−1.84)	−0.083 * (−1.80)	−0.083 * (−1.80)
Does the family have village officials or party members				−0.001 (−0.50)	−0.002 (−0.77)	−0.002 (−0.77)	−0.002 (−0.82)
Gender				−0.361 (−1.13)	−0.469 (−1.41)	−0.467 (−1.39)	−0.508 (−1.49)
Age					0.152 (0.72)	0.153 (0.72)	0.140 (0.66)
Education					−0.016 ** (−1.98)	−0.016 ** (−1.98)	−0.015 * (−1.85)
Willingness to do business					0.031 (0.29)	0.029 (0.27)	0.028 (0.26)
Overall family health					0.174 (0.53)	0.175 (0.54)	0.237 (0.71)
Whether the community provides policy services					0.002 (0.56)	0.002 (0.56)	0.002 (0.52)
Household debt level						0.073 (0.28)	0.083 (0.32)
Organizational level							−0.216 (−0.88)
Constant term	7.66 ***	7.57 ***	7.54 ***	7.45 ***	7.63 ***	7.62 ***	8.76 ***
N	416	416	416	416	410	410	409
adj. R <sup>2</sup>	0.051	0.306	0.304	0.342	0.346	0.344	0.350

Notes: “\*\*\*”, “\*\*” and “\*” mean significant at the significance level of 1%, 5% and 10%, respectively. In addition, the values in parentheses are standard errors.

### 5.2.3. Mechanism Analysis

In the theoretical analysis, the changes to farmers' families resulting from land expropriation activities are analyzed. These changes mainly include changing the scarcity of farmers' farmland, enhancing the price reference effect, enriching farmers' negotiation experience and promoting their income diversification. In this paper, the per capita arable land area of the family represents the scarcity of farmland; the level of family income diversification represents income diversification (referred to as the Herfindahl index); the unit area compensation standard represents the price signal; and the number of land expropriations represents the strength of farmers' negotiation experience. Since an interaction term can well evaluate the joint effect of two dependent variables on the explained variable [56], this article establishes the interaction terms among land expropriation experience and per capita arable land area, the land compensation level, the land expropriation frequency, and income diversification. In this way, we can evaluate how the land expropriation experience affects farmers' farmland value expectations. The estimated model design is shown in Equation (3):

$$Y_i = \alpha + \delta_1 * land_i + \delta_2 land_i * Mech\&index_i + \sum_{k=1}^n \beta_k * control_i^k + \varepsilon_i \quad (3)$$

First, we make the following inferences: (1) if land expropriation experience increases a farmer's farmland value expectations by increasing the scarcity of his or her family's farmland, then it can be inferred that farmer households with less farmland per capita after land expropriation will be affected by the scarcity effect. Farmers will psychologically pay more attention to their remaining farmland, and the expected increase in the value of farmland in the subsequent period will be more obvious. The estimated coefficient of "land acquisition experience \* per capita arable land area" will be significantly negative. (2) If the price signal or basic reference point of farmers can increase their farmland value expectations, then it can be inferred that farmers with higher compensation standards after land expropriation experience will be affected by the reference point effect, which will psychologically raise the farmland value benchmark point. The expected increase in the value of farmland in the subsequent period will be more obvious. The estimated coefficient of "land expropriation experience \* compensation standard" will be significantly positive. (3) If land expropriation experience increases farmers' farmland value expectations by improving their negotiation experiences, then it can be inferred that the greater the number of expropriation experiences is, the more experienced the farmers, the stronger their negotiation power, and the more obvious the expected increase in the value of farmland in the subsequent period will be. The estimated coefficient of "land expropriation experience \* number of land expropriation experiences" will be significantly positive. (4) If land expropriation experience promotes the diversification of household income, then it can be inferred that the level of income diversification of rural households after such an experience will increase. The stronger the asset allocation is, the more obvious the expected increase in the value of farmland in the subsequent period. The estimated coefficient of "land expropriation experience \* income diversification" will be significantly positive.

Columns (1), (2), (3), and (4) in Table 8 report the verification results of the four mechanisms, i.e., scarcity effect, income effect, negotiation effect, and price reference point effect, respectively. The results show that only the scarcity effect is significant; the other three mechanisms of action are not significant. These results show that land expropriation activities mainly affect farmers' farmland value expectations by changing the scarcity of farmland for farmers' families. Land expropriation activities will make the area of farmland for farmers' families scarcer due to the "scarceness of things" effect. With the scarcity effect, farmers' farmland value expectations will increase. The price reference effect, negotiation effect, and income effect are not significant. Among them, the income effect and negotiation effect are negative.

**Table 8.** Verification results of mechanism of action.

	Y <sub>xique</sub> (1)	Y <sub>shouru</sub> (2)	Y <sub>num</sub> (3)	Y <sub>biaozhun</sub> (4)
Land acquisition experience	0.329 *** (3.55)	0.364 *** (3.93)	0.577 *** (3.19)	0.000 (.)
Land acquisition experience * Area per capita	−0.041 ** (−2.30)			
Income diversification		−0.097 (−0.73)		
Land acquisition experience * Income diversification		(3.93)		
		0.515		
Land acquisition experience * Number of land acquisition experience			(−1.25)	
			0.000	
Land acquisition experience * Compensation standard per unit area				0.000 (0.88)
Control variable	Yes	Yes	Yes	Yes
N	4775	4778	5113	305
r <sup>2</sup> <sub>a</sub>	0.301	0.30	0.297	0.302

Notes: “\*\*\*”, and “\*\*” mean significant at the significance level of 1%, and 5%, respectively. In addition, the values in parentheses are standard errors. Due to the length of the article, this table only presents the regression results of the interactive items.

Why do the price reference effect, negotiation effect, and income effect fail? We explain this result as follows: first, in most land expropriation activities, the government takes the lead in formulating land expropriation compensation standards, and the compensation standards and price information after compensation are often publicly available in the compensation area and not private information. Based on the statistical results, the average value of compensation for expropriated land is USD 58,441.24/km<sup>2</sup>, while the average value expected by farmers who have experienced land expropriation is USD 37,576.80/km<sup>2</sup>, and the average value expected by farmers who have not experienced land expropriation is USD 51,443.57/km<sup>2</sup>. The expected value of farmers who have experienced land expropriation is significantly lower. Based on the previous compensation standards, this result shows that the role of the price reference is not obvious. Second, in addition to the government’s leadership in land expropriation activities, land expropriation activities in rural areas are largely represented by village collective organizations in negotiations over land expropriation. Therefore, due to the existence of negotiation agents, the negotiation effect is not obvious. Third, to a certain extent, income diversification may also reduce farmers’ dependence on farmland. Therefore, the estimated coefficient is negative, which means that land expropriation experience does not increase farmers’ farmland value expectations through the income effect.

## 6. Conclusions and Enlightenment

### 6.1. Conclusions

Based on the abovementioned statistical and empirical analyses, the following conclusions are drawn:

First, from the T test of the mean value of land acquisition and no land acquisition, farmers who have experienced land acquisition are expected to have a higher value of farmland by USD 1008/km<sup>2</sup>, which is significant at the 1% significance level. The regression results obtained by controlling other influencing factors show that the coefficient of the effect of land acquisition experience on farmers’ farmland value expectations is 0.371, and it is significant at the level of 1%. Farmers’ expectations for farmland value will increase by 37.1% after land acquisition. This result shows that after experiencing land acquisition, farmers’ expectations for the value of farmland can be significantly improved.

Second, the results of the heterogeneity analysis show that, on average, farmland value expectations in the 90th percentile are significantly higher by 7.05% than those who did not experience land acquisition. The expected land value of farmers in the 10th percentile, 20th percentile, and 25th percentile is significantly higher than 38.6%, 43%, and 43.9%, respectively. This finding shows that the effect of land acquisition experience on the expected value of agricultural land is most obvious for farmers with a low expected value of agricultural land. The results of the heterogeneity of compensation methods show that the expected impact coefficient of monetary compensation on the value of farmers' farmland is 0.507, which is significant at the 10% significance level. This result shows that farmers who fully accept monetary compensation in the process of land acquisition have a higher expectation of the value of farmland than farmers who use nonmonetary compensation.

Third, in the analysis of the mechanism of action, the interaction term between the land acquisition experience and the family's cultivated land area has an impact coefficient of  $-0.041$  on the farmer's farmland value expectations and is significant at the 5% level of significance, while other interaction terms pass the significance test. This result shows that the farmer households that have experienced land acquisition have less cultivated land and higher expectations of the value of the farmland. The land acquisition mainly increases the scarcity of farmland of farmer households, thereby increasing farmers' farmland value expectations.

In summary, our core conclusion is that the land acquisition experience raises farmers' expectations for the value of farmland by increasing the scarcity of farmland for farmers' families. The effect of land acquisition experience on the expected value of farmland is more significant for farmers with lower expected farmland value, and monetized land acquisition compensation methods will also significantly increase farmers' expectations of the value of farmland.

In addition, the impact coefficients of the certification of rights, per capita income level, education level, and willingness to engage in business on agricultural land value expectations are 0.085, 0.000, 0.103, and 0.138, respectively, at significance levels of 10%, 1%, 10%, and 1%, respectively. These results show that the greater the clarity of the right to farmland is, the higher the family income level, the higher the education level, and the stronger the willingness to engage in business can significantly improve farmers' awareness of rights and interests in farmland.

## 6.2. Enlightenment

This article draws the following implications: for governmental departments, land expropriation activities have strengthened farmers' awareness of land rights, changed the allocation of agricultural land resources among farmers' families and, thus, changed farmers' behaviors. In addition, land rights claims will be strengthened by the confirmation of rights. Moreover, farmland is important capital accumulated in the process of the non-agricultural transfer of rural households. For this reason, to improve the land expropriation system, optimize the allocation of agricultural land resources, and increase the efficiency of land use, the government should effectively improve the protection of farmers' land rights through land policy publicity, the transmission of land market transaction information, and the confirmation and certification of land rights. The government should raise the awareness of farmers, especially farmers who have not experienced land expropriation. The policy implications are as follows: first, the government should improve the land expropriation system and increase the distribution ratio of farmers' land value-added income to ensure that farmers can adjust their survival strategies and to improve protection and accumulation in the process of resource supplementation or nonagricultural employment. Second, farmers' land rights and interests should be improved, and farmers' awareness of the need to protect their land rights should be stimulated. In particular, according to the law, it is necessary to ensure farmers' independent negotiation rights and interests to enhance their awareness of rights and interests [43,60]. In addition, there is a serious asymmetry of information among stakeholders in land acquisition [61]. Through timely

publicity of policies and legal norms, the rights and interests of farmers will be protected. Third, the government should build a land property rights trading market, reduce the scale of land expropriation led by the government, and increase the proportion of the market allocation of land elements. Furthermore, to address conflicts in the land acquisition process, governments at all levels should also establish an effective evaluation support mechanism and supervision mechanism [62]. Fourth, the government should deepen the reform of the three rights separation of agricultural land, build an efficient farmland property rights trading platform, optimize the relative balance of the allocation of farmland resources, and resolve the negative externalities caused by the unbalanced allocation of farmland after land expropriation.

Farmers are often at a disadvantage compared to government organizations in land acquisition. Therefore, if farmers want to protect their legal rights and interests in the process of land expropriation, they must use the following two core channels to ensure their economic rights and interests in the process of agricultural land expropriation. First, farmers should expand their information channels. Farmers should be familiar with key information, such as land acquisition laws, policy trends, and land market prices, via the Internet, friends, neighbors, and policy consulting units in a timely manner to improve the awareness of their rights and interests. Second, they actively rely on village collective economic organizations or independent alliances to identify negotiating agents in the process of land requisition and use group power to improve bargaining power in the process of land requisition and protect their land rights.

### 6.3. Research Outlook

Although the theoretical framework and empirical test of this article explain the mechanism of the impact of land expropriation experience on farmers' farmland value expectations, we further analyze the differences in the effects of farmers with different quantiles of farmland value expectations and those of different compensation methods. This article uses cross-sectional data to make horizontal comparisons and explores the impact of land expropriation experience on farmers' farmland value expectations. Due to data limitations, the longitudinal effects or actual prices are not compared, and farmers or compensation methods are not subdivided. It is necessary to further verify that the compensation methods affect farmers and the role of their farmland value expectations. In the future, we will continue to expand the mechanism of the impact of land acquisition experience on farmers' expectations of farmland value. In addition, we will conduct an in-depth analysis of the impact of land acquisition activities on farmers' farmland investment behavior through micro-surveys.

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## Appendix A

**Table A1.** Notes and information reference source.

Numbering	Reference Source
1.1	<a href="https://baike.so.com/doc/5383835-5620237.html">https://baike.so.com/doc/5383835-5620237.html</a> (4 May 2021)
1.2	<a href="http://zrzyghj.anyang.gov.cn/sitesources/aygtj/page_pc/zwgk/zcfg/tdglflfg/article457e8da6246347dfa1891f501380aac7.html">http://zrzyghj.anyang.gov.cn/sitesources/aygtj/page_pc/zwgk/zcfg/tdglflfg/article457e8da6246347dfa1891f501380aac7.html</a>
1.3	Poverty Alleviation Office of the State Council <a href="http://xinwen.shangdu.com/guonei/2019/0618/061814261.html">http://xinwen.shangdu.com/guonei/2019/0618/061814261.html</a>

## References

- Research Group of the Institute of Macroeconomics of the National Development and Reform Commission. Ways to solve the problems of my country's food security and agriculture, rural areas and farmers during the "Eleventh Five-Year Plan" period. *Mac. Econ. Res.* **2005**, *10*, 22–28.
- Yuan, C. Research on non-agriculturalization of agricultural land in the process of urban-rural integration. *Issues Agric. Econ.* **2011**, *32*, 31–35, 111.
- Han, J. The collective ownership of land by farmers is defined as a shareholding system. *China Econ. Times* **2003**, *11*, 11.
- Pan, J.H.; Wei, H.H. *Urban Blue Book-China Urban Development Report No. 8*; Social Sciences Academic Press: Beijing, China, 2015; pp. 8–12.
- Qian, Z.H. Land Expropriation: Equilibrium and Disequilibrium—An Economic Analysis of the Current Chinese Land Expropriation System. *Manag. World* **2004**, *12*, 50–59.
- Zhang, X.L.; Lu, H.Y.; Mi, H. Research on Poverty Risk and Resettlement Measures of Land-expropriated Farmers. *China Land Sci.* **2006**, *1*, 2–6.
- Qian, Z.H.; Xu, M.Y. Research on Lack of Feasibility and Reconstruction of Landless Farmers in my country. *Acad. Res.* **2008**, *12*, 69–74.
- Pu, S.G.; Chen, G. Thoughts on solving the problem of urban land acquisition and demolition. *Econ. Res. Ref.* **2009**, *71*, 60–66.
- Tan, S.K.; Qi, R. Land acquisition conflict in rapid urban expansion. *China Land Sci.* **2011**, *25*, 26–30.
- Zhang, C.Y. Research on fair compensation for land acquisition under the condition of incomplete property rights. *Issues Agric. Econ.* **2011**, *32*, 58–64, 111.
- Wang, P. The predicament and solution of my country's rural land expropriation—Based on the perspective of food security and choice value. *Theory Mon.* **2013**, *7*, 176–180.
- Ma, H.S.; Zhao, Q.; Gao, J.X. Discussion on land acquisition compensation distribution based on agricultural land development rights. *J. Eng. Manag.* **2016**, *30*, 44–48.
- Li, Z.L.; Hu, Z.H. On the contractual solution of the dispute over the compensation standard for the expropriation of agricultural land. *J. China Univ. Geosci. (Soc. Sci. Ed.)* **2018**, *18*, 168–177.
- Cai, L.W. The evolution, current situation and prospects of China's land expropriation compensation system. *Polit. Law Forum* **2017**, *35*, 96–108.
- Ding, C. Policy and praxis of land acquisition in China. *Land Use Policy* **2007**, *24*, 1–13. [[CrossRef](#)]
- Huang, D.D. The Legislative Choice of Fair Compensation—Questioning the Market Price Standard of Agricultural Land Compensation. *China Land Sci.* **2013**, *27*, 36–41.
- Liu, X.H. Discussion on the nature of compensation standards for land requisition—Also on the measurement method of market-oriented land requisition compensation prices. *Product. Res.* **2014**, *9*, 103–106.
- Liu, L.H. The reform of the interaction between the farmland property rights system and the land acquisition compensation system. *J. Northwest Sci-Tech Univ. Agric. For. (Soc. Sci. Ed.)* **2018**, *18*, 27–33.
- Xu, J.Y.; Xu, N.; Huang, T.Z. The logical starting point and system integration of market-based compensation for the expropriation of agricultural land in my country. *Rural Econ.* **2014**, *7*, 33–37.
- Xu, J.Y.; Huang, T.Z. The market value evaluation model and application of agricultural land in land acquisition compensation in my country. *J. South China Agric. Univ. (Soc. Sci. Ed.)* **2014**, *13*, 62–69.
- Liu, Y.; Feng, J.; Sun, N. Development characteristics and mechanisms of the urban-rural fringe under the background of rapid urbanization: A case study of Haidian District, Beijing. *Geogr. Res.* **2009**, *28*, 499–512.
- Bao, H.J.; Fang, Y.; Lei, P. Conflict of interest in land acquisition: Behavioral selection mechanism and empirical evidence of local governments and land-losing farmers. *China Land Sci.* **2016**, *30*, 21–27, 37.
- Zou, X.Q.; Zhong, X.Y. Research on the influencing factors of psychological perception in the formation of conflict willingness of land-lost farmers. *Resour. Sci.* **2013**, *35*, 2418–2425.
- Li, X.; Lu, S.G.; Wang, H. Research on the Impact of Land Acquisition on Farmers' Income and Its Spatial Differentiation—Based on the Analysis of the Difference Method of CHFS Data. *China Land Sci.* **2019**, *33*, 102–110.

25. Debonne, N.; van Vliet, J.; Verburg, P. Future governance options for large-scale land acquisition in Cambodia: Impacts on tree cover and tiger landscapes. *Environ. Sci. Policy* **2019**, *94*, 9–19. [[CrossRef](#)]
26. Chen, B.; Kennedy, C.M.; Xu, B. Effective moratoria on land acquisitions reduce tropical deforestation: Evidence from Indonesia. *Environ. Res. Lett.* **2019**, *14*, 044009. [[CrossRef](#)]
27. Castro-Arce, K.; Vanclay, F. Community-Led Green Land Acquisition: Social Innovative Initiatives for Forest Protection and Regional Development. *Land* **2020**, *9*, 109. [[CrossRef](#)]
28. Sekáč, P.; Šálek, M.; Wranová, A.; Kumble, P.; Sklenička, P. Effect of water features proximity on farmland prices in a landlocked country: The consequences for planning. *Soil Water Res.* **2017**, *12*, 18–28. [[CrossRef](#)]
29. Plantinga, A.J.; Miller, D.J. Agricultural Land Values and the Value of Rights to Future Land Development. *Land Econ.* **2001**, *77*, 56–67. [[CrossRef](#)]
30. Sklenicka, P.; Molnarová, K.J.; Salek, M.; Simova, P.; Vlasak, J.; Sekac, P.; Janovska, V. Owner or tenant: Who adopts better soil conservation practices? *Land Use Policy* **2015**, *47*, 253–261. [[CrossRef](#)]
31. Czyzewski, B.; Trojanek, R.; Matuszczak, A. The effects of use values, amenities and payments for public goods on farmland prices: Evidence from Poland. *Acta Oecon.* **2018**, *68*, 135–158. [[CrossRef](#)]
32. DeMartini, E.; Gaviglio, A.; Gelati, M.; Cavicchioli, D. The Effect of Biogas Production on Farmland Rental Prices: Empirical Evidences from Northern Italy. *Energies* **2016**, *9*, 965. [[CrossRef](#)]
33. Myrna, O.; Odening, M.; Ritter, M. The Influence of Wind Energy and Biogas on Farmland Prices. *Land* **2019**, *8*, 19. [[CrossRef](#)]
34. Seeman, T.; Šrédľ, K.; Prášilová, M.; Svoboda, R. The Price of Farmland as a Factor in the Sustainable Development of Czech Agriculture (A Case Study). *Sustainability* **2020**, *12*, 5622. [[CrossRef](#)]
35. Ma, R.; Zhou, W.; Huang, B.H. A Study on the Perception of the Value of Non-agricultural Conversion of Agricultural Land in the Urban-Rural Fringe: A Case Study of Rural Households in the Suburbs of Xining City. *Resour. Sci.* **2016**, *38*, 2392–2405.
36. Atkinson, J.W. Motivational determinants of risk-taking behavior. *Psychol. Rev.* **1957**, *64*, 359–372. [[CrossRef](#)] [[PubMed](#)]
37. Ding, S.J.; Yang, J.; Zhang, K.J.; Zhou, J. Land requisition and changes in the income structure of rural households: An analysis of rural household data in Jiujiang and Xiangyang. *J. Huazhong Agric. Univ. (Soc. Sci. Ed.)* **2015**, *5*, 1–8.
38. Cui, B.Y.; Xie, Y.; Xu, Y.T. The income effect of farmers in land acquisition: Counterfactual estimation based on propensity score matching (PSM). *China Popul. Resour. Environ.* **2016**, *2*, 111–118.
39. Thi, N.P.; Kappas, M.; Wyss, D. Benefits and Constraints of the Agricultural Land Acquisition for Urbanization for Household Gender Equality in Affected Rural Communes: A Case Study in Huong Thuy Town, Thua Thien Hue Province, Vietnam. *Land* **2020**, *9*, 249. [[CrossRef](#)]
40. Nguyen, T.T.; Hegedűs, G.; Nguyen, T.L. Effect of Land Acquisition and Compensation on the Livelihoods of People in Quang Ninh District, Quang Binh Province: Labor and Income. *Land* **2019**, *8*, 91. [[CrossRef](#)]
41. Ogwang, T.; Vanclay, F. Social Impacts of Land Acquisition for Oil and Gas Development in Uganda. *Land* **2019**, *8*, 109. [[CrossRef](#)]
42. Bao, H.; Peng, Y. Effect of land expropriation on land-lost farmers' entrepreneurial action: A case study of Zhejiang Province. *Habitat Int.* **2016**, *53*, 342–349. [[CrossRef](#)]
43. Tagliarino, N.K. The Status of National Legal Frameworks for Valuing Compensation for Expropriated Land: An Analysis of Whether National Laws in 50 Countries/Regions across Asia, Africa, and Latin America Comply with International Standards on Compensation Valuation. *Land* **2017**, *6*, 37. [[CrossRef](#)]
44. Tagliarino, N.K.; Bununu, Y.A.; Micheal, M.O.; De Maria, M.; Olusanmi, A. Compensation for Expropriated Community Farmland in Nigeria: An In-Depth Analysis of the Laws and Practices Related to Land Expropriation for the Lekki Free Trade Zone in Lagos. *Land* **2018**, *7*, 23. [[CrossRef](#)]
45. Wineman, A.; Jayne, T.S. Land Prices Heading Skyward? An Analysis of Farmland Values across Tanzania. *Appl. Econ. Perspect. Policy* **2018**, *40*, 187–214. [[CrossRef](#)]
46. Takáč, I.; Lazíková, J.; Rumanovská, L.; Bandlerová, A.; Lazíková, Z. The Factors Affecting Farmland Rental Prices in Slovakia. *Land* **2020**, *9*, 96. [[CrossRef](#)]
47. Tomal, M.; Gumieniak, A. Agricultural Land Price Convergence: Evidence from Polish Provinces. *Agriculture* **2020**, *10*, 183. [[CrossRef](#)]
48. Lehn, F.; Bahrs, E. Land-Use Competition or Compatibility between Nature Conservation and Agriculture? The Impact of Protected Areas on German Standard Farmland Values. *Sustainability* **2018**, *10*, 1198. [[CrossRef](#)]
49. Lee, S.-H.; Kim, J.-H.; Huh, J.-H. Land Price Forecasting Research by Macro and Micro Factors and Real Estate Market Utilization Plan Research by Landscape Factors: Big Data Analysis Approach. *Symmetry* **2021**, *13*, 616. [[CrossRef](#)]
50. Zhang, W.C. *Economic Explanation*; CITIC Publishing House: Beijing, China, 2019.
51. Yang, X.K.; Huang, Y.G. *Specialization and Economic Organization: A New Classical Microeconomics Framework*; Economic Science Press: Beijing, China, 1999.
52. Wang, C.W.; Gu, H.Y. Urban housing, farmland dependence and the withdrawal of rural households' contract rights. *Manag. World* **2016**, *9*, 55–69, 187–188.
53. Kahneman, D.; Tversky, A. Prospect Theory: An Analysis of Decision under Risk. *Econometrica* **1979**, *47*, 263–291. [[CrossRef](#)]
54. Wigfield, A. Expectancy-value theory of achievement motivation: A developmental perspective. *Educ. Psychol. Rev.* **1994**, *6*, 49–78. [[CrossRef](#)]
55. Jeffrey, M. *Wooldridge. Introductory Econometrics a Modern Approach*, 5th ed.; Renmin University Press: Beijing, China, 2015.

56. Chen, Q. *Econometrics and Stata Application*; Higher Education Press: Beijing, China, 2015.
57. Zhou, Q.R. Farmland property rights and land acquisition system: A major choice facing China's urbanization. *Economics* **2004**, *4*, 193–210.
58. Qiu, T.W.; Luo, B.L.; He, Q.Y. The transformation of agricultural land transfer market: Theory and evidence-based on the analysis of the relationship between agricultural land transfer objects and agricultural land rent. *China Rural Obs.* **2019**, *4*, 128–144.
59. Lu, S.H.; Yao, Y.T.; Wang, H. Farmers' demands in land expropriation: Big data analysis based on "local leaders' message board". *Issues Agric. Econ.* **2020**, *7*, 58–68.
60. Hong, K.; Zou, Y.; Zhu, M.; Zhang, Y. A Game Analysis of Farmland Expropriation Conflict in China under Multi-Dimensional Preference: Cooperation or Resistance? *Land* **2021**, *10*, 124. [[CrossRef](#)]
61. Li, Q.; Bao, H.; Peng, Y.; Wang, H.; Zhang, X. The Collective Strategies of Major Stakeholders in Land Expropriation: A Tripartite Game Analysis of Central Government, Local Governments, and Land-Lost Farmers. *Sustainability* **2017**, *9*, 648. [[CrossRef](#)]
62. Li, C.; Xi, Z. Social Stability Risk Assessment of Land Expropriation: Lessons from the Chinese Case. *Int. J. Environ. Res. Public Health* **2019**, *16*, 3952. [[CrossRef](#)]