land

MDPI

Article

Impacts of Farmer Differentiation and Environmental Cognition on Farmers' Willingness to Withdraw from Rural Homesteads: Evidence from Two Pilot Areas in East Hubei, China

Xiaowei Yao [1,2,*], Liqi Guo [1], Jinteng Li [3,*], Zhiyu Zhong [1], Lu Sun [4] and Ying Wang [1,2]

[1] School of Public Administration, China University of Geosciences (Wuhan), Wuhan 430074, China; guoliqi@cug.edu.cn (L.G.); zhongzhiyu@cug.edu.cn (Z.Z.); yingwang@cug.edu.cn (Y.W.)
[2] Key Laboratory of Legal Research of the Ministry of Natural Resources, Wuhan 430074, China
[3] School of Resource and Environmental Sciences, Wuhan University, Wuhan 430079, China
[4] School of International Affairs and Public Administration, Ocean University of China, Qingdao 266100, China; sldebuff02@cug.edu.cn
* Correspondence: xiaoweiyao@cug.edu.cn (X.Y.); jintengl@cug.edu.cn (J.L.)

Abstract: As a key prerequisite for the promotion of withdrawal from rural homesteads (WRH), farmers' willingness to withdraw has long attracted extensive attention. This study proposes an analytical framework for understanding rural households' WRH intentions integrating farmer differentiation and environmental cognition (EC), and identifies the influencing factors, using surveyed data of 842 rural households collected in two pilot villages in Hubei Province. Binary logistic regression was applied to explore the impact of factors and the influencing mechanism. The results show that both farmer differentiation and EC have a significant impact on their willingness to withdraw from homesteads. Most factors are positively related to villagers' preference for WRH, except the age of household head, share of agricultural income in annual household income, and satisfaction with existing rural infrastructure. The findings emphasize the combined roles of farmer differentiation and EC in shaping the willingness of WRH, providing a basis for other regions to benefit from the experiences in pilot areas and thus better implement the policy.

Keywords: withdrawal from rural homesteads; farmers' differentiation; environmental cognition; binary logistic regression

check for updates

Citation: Yao, X.; Guo, L.; Li, J.; Zhong, Z.; Sun, L.; Wang, Y. Impacts of Farmer Differentiation and Environmental Cognition on Farmers' Willingness to Withdraw from Rural Homesteads: Evidence from Two Pilot Areas in East Hubei, China. *Land* **2024**, *13*, 1201. https://doi.org/10.3390/land13081201

Academic Editors: Bangbang Zhang, Lulu Qu and Xinyuan Liang

Received: 29 June 2024
Revised: 29 July 2024
Accepted: 1 August 2024
Published: 5 August 2024

Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Rural depopulation is a prevalent occurrence amidst the worldwide shift toward urbanization [1]. Since the launch of economic reforms and the opening-up policy in the late twentieth century, China's industrialization and urbanization levels have increased at unprecedented rates, which has led to numerous farmers migrating to cities in pursuit of employment in secondary and tertiary industries [2]. However, a paradox of a decrease in rural population and an increase in rural homesteads (RHs) has emerged [3]. A large number of vacant RHs, the so-called hollowed villages [4,5], have been observed. Official statistics indicate that the amount of RHL increased by 3.46 million hectares between 2009 and 2022, while the rural population declined from 68.94 million to approximately 49.10 million during the same period [6]. Owing to the non-tradable nature of RHs as a type of collective-owned land, this anomalous phenomenon not only causes a serious waste of land resources and intense pressure on the protection of arable land, but also hampers the execution of China's rural renewal program [7]. Therefore, gradually reducing the scale of the withdrawal from unused RHs is extremely important to improve the land use efficiency and to restructure land use layout in the countryside, which is also an indispensable key link that needs to be established in promoting rural revitalization [8].

In the past, the approval of land for RHs was usually based on the allocation of planned targets. In contrast to the control of new increments of RHs, which can be simply

achieved by strict approval means, reducing the existing huge number of vacant RHs is a much more difficult bottleneck, because RHs were acquired by rural households as members of village collectives without paying compensation [9]. This leads to the fact that it is essentially significant to explore the farmers' willingness to withdraw from their RHs [10]. To overcome this dilemma, China has officially launched a pilot reform of the RH system to "explore the separation of the three rights of ownership, eligibility and use of RHL, and separate the eligibility right from the use right". Through this policy reform, the government hopes to promote part of rural residents, for example, who tend to move out of villages or have already settled in towns and cities, to strengthen their willingness to voluntarily withdraw from their idle RHs depending on the actual conditions of local policy implementations [11].

Considering that farmers are the direct parties involved, their willingness to participate in the policy of withdrawal from rural homesteads (WRH) is an indispensable prerequisite for the implementation of the new groundbreaking system, and therefore it needs to be fully discovered. Recently, research has focused on the factors that influence farmers' inclination to engage in the procedure of WRH [12,13], as the implementation of WRH is facing substantial resistance [14]. Previous studies have primarily summarized the elements affecting farmers' readiness to relinquish their homestead into two main categories: external environmental influences and internal determinants. The major considerations of external environmental influences encompass several dimensions: rural environment [15], rural social security system [16], the quantity, area, and economic conditions of the regions where the homesteads are located [17], and formal and informal institutions [18]. Internal determinants are widely recognized as being more subjective and complicated, including differentiation among farmers [19], farmers' understanding of policies [14], perception of risks [20], and intrinsic social cohesion among rural residents [12]. Throughout these studies, scholars are committed to investigating the factors affecting farmers' willingness of WRH from various perspectives. Due to the huge income gap between agricultural and non-agricultural sectors, young and middle-aged villagers gradually shift from a single agricultural occupation to non-agricultural occupations, resulting in more apparent differentiation among farming households. Thus, horizontal differentiation based on occupations and vertical differentiation mainly based on economic income are progressively formed [21]. This differentiation reflects the differences in the socioeconomic status of farming households [22], and directly contributes to heterogeneous characteristics in their willingness to withdraw RHs [23]. Differentiated farming households vary in their reliance on RHs and their perceived value, which in turn influences their willingness to withdraw [24,25]. Although previous research indicated the beneficial effects of farmer diversification on the preference to disengage RHs [26,27], the underlying patterns of how farming household differentiation affects withdrawal intentions remain unclear. Further exploration of the mechanisms of farming households' intentions toward WRH is crucial for the advancement of WRH initiatives.

It has been known that farmers' willingness to withdraw from RHs is not only influenced by their own household characteristics but also is based on their own cognitive interpretations of the environment [28]. Environmental cognition (EC) refers to individuals' level of understanding of environmental knowledge and their degree of concern for environmental issues [29]. The current studies indicate that it significantly influences human behavior [30–33]. Regarding the influence of EC on farmers' willingness to withdraw from homesteads, some scholars argue that rural residents exhibit a strong expectation of risk when it comes to homestead withdrawal [34]. The perception of a risky environment has a negative effect on farmers' willingness to withdraw from homesteads [28]. Conversely, farmers endowed with stronger livelihood capital frequently exhibit greater risk resilience, thus resulting in lower risk anticipation and a higher tendency to choose WRH [35]. Other studies have also highlighted the significant role that access to social security plays in farmers' decision-making regarding their resettlement to urban areas after rural homestead withdrawal [36,37]. If villagers who migrated to urban areas for employment cannot easily

and equally access the social security benefits associated with urban residents, such as pension, healthcare, and children's education, they would be disinclined to relinquish RHs, which can offer basic security functions [38].

Although the impact of EC on farmers' intention to withdraw rural homestead has gradually become a focus in this area, prevailing research predominantly focuses on isolated factors such as risk anticipation or social security, without holistically assessing the comprehensive influence of EC on farmers' WRH intentions or comparing the extents of the impact. Moreover, fewer studies explicitly combined the farmers' differentiation and EC comprehensively to explore the major determinants that affect villagers' willingness to withdraw from RHs. Consequently, this study proposes an analytical framework for understanding rural households' WRH intentions from the two aforementioned perspectives. Theoretically, we try to construct a path that influences the WRH from the perspectives integrating household characteristics and EC. Based on the framework, we tend to reveal the most significant determinants influencing the willingness of WRH by conducting an empirical analysis given by the diversified variables. The findings are expected to contribute to a nuanced understanding of the reasons affecting villagers' willingness to engage in WRH considering both the internal characteristics of rural households, as well as the objective external environment and the levels of subjective perceptions, thereby providing more systematic and valuable revelations for informing the formulation of WRH initiatives.

The arrangement of this paper proceeds as follows: first, we construct an analytical framework for grasping farmers' inclinations to withdraw from their RHs, and examine the main elements from the perspectives of farmer differentiation and EC. Then, we present an overview of the empirical research applied in two pilot areas in East Hubei, Central China, and describe the data and methodology for the analysis. Following this, Section 4 unveils the main results and findings from the conducted field survey. Finally, we deliberate about the discoveries, discuss the policy implications, and articulate the conclusions in the last two sections.

2. Theoretical Analysis

2.1. Analytical Framework for Farmers' Intentions to WRH

Since the economic reform from the last century's eighth decade, urbanization throughout China has gradually broken down the barriers of institutional mechanisms that restricted the flow of factors of production between urban and rural areas under the urban–rural dual structure [39]. Many rural residents have migrated to cities, which has led to increased flexibility in the dissemination of labor between urban and countryside locales, thereby resulting in the gradual differentiation of households into different types. Rural differentiation has two basic directions: horizontal differentiation, which is largely reliant on occupation, and hierarchical stratification, which is mainly based on economic income [40]. Because of the advancement of rural society and the intensification of industrialization and urbanization, many surplus rural laborers have transitioned to secondary and tertiary industries, and farmers with different skill levels and endowments have chosen different occupations, thereby leading to diversified incomes. The trend of household differentiation has gradually deepened and strengthened [41]. Diversified external environments and occupational choices have resulted in a multidimensional differentiation among households. As rational economic actors, households make decisions that maximize their interests based on their resources, family conditions, and other endowments [42]. Owing to differences in their occupations, economic conditions, and resources, such as urban housing, farmers have different perceptions and tendencies regarding homestead withdrawal policies and the provision of public services in their respective locations [43].

To maximize their own benefits, villagers compare the situation before and after withdrawing from their homestead and form different intentions [44]. This decision-making process is influenced by a myriad of social, economic, and psychological factors, with environmental cognition playing a pivotal role [45,46]. In the process of farmers' withdrawal from homesteads, their cognition may be influenced by the following two

aspects: firstly, cognition of homestead policies, primarily influenced by the degree of understanding and support for homestead policies. Farmers' understanding and grasp of homestead policies directly affect their attitudes and behaviors towards withdrawing from homesteads. Insufficient understanding or misunderstandings of homestead policies may influence their decision-making process [47]. Farmers who support homestead reform may be more willing to actively cooperate with government policies, including voluntarily withdrawing from homesteads and cooperating with land consolidation measures. They recognize the importance of reform for the rational utilization of rural land resources and improvement of farmers' living conditions, thus actively participating in promoting homestead system reform. Conversely, if farmers resist homestead reform, fearing that withdrawing from homesteads will affect their living conditions or that land resources will be occupied, they may be unwilling to cooperate voluntarily. Some farmers may hold a neutral attitude towards homestead reform, neither particularly supporting nor opposing it. These farmers may adopt a wait-and-see attitude and decide whether to withdraw from homesteads based on their own interests and government policy guidance. Secondly, the cognition of public service environment has great influence on the willingness of farmers' withdrawal from homesteads. To summarize, the impact of cognition on farmers' withdrawal from homesteads is multifaceted, influenced by both individuals' education, experience, and social environment, as well as policy and economic factors. When studying farmers' withdrawal from homesteads, it is necessary to consider these cognitive factors to provide a more constructive reference basis for the homestead withdrawal system (Figure 1).

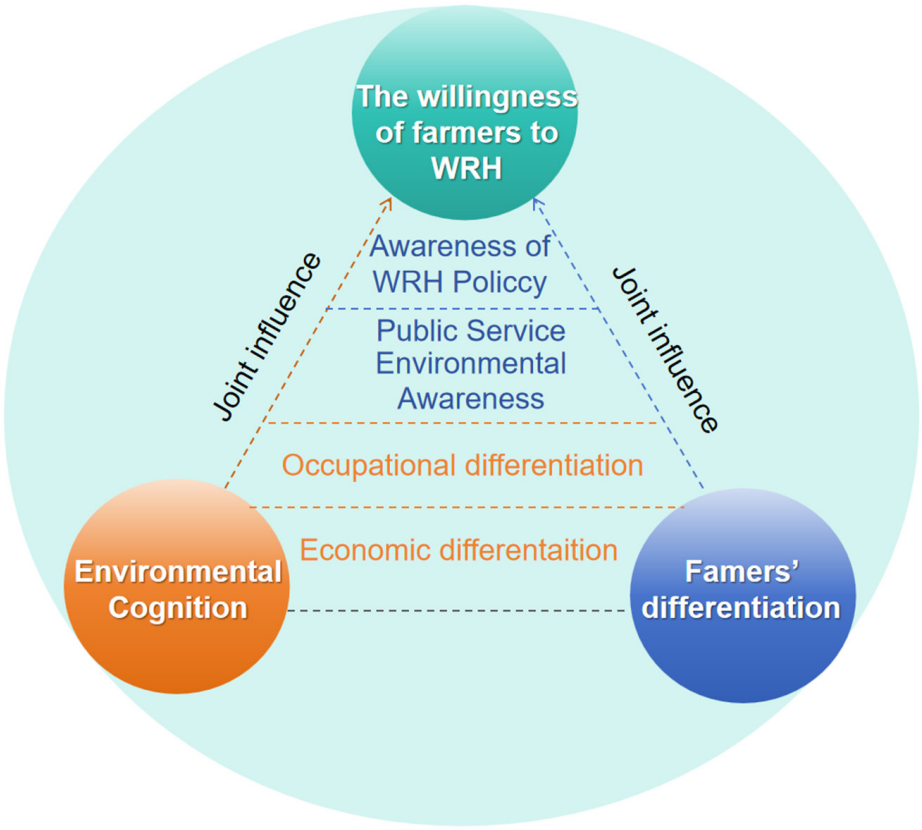


Figure 1. Analytical framework.

2.2. Analysis of Factors Influencing Farmers' Willingness to WRH

2.2.1. Household Characteristics and Homestead Utilization

RHs are peculiar assets for farmers and have significant importance and functionality. First, such land has substantial asset value. Along with its associated houses, it is the most

valuable real estate for farmers, who can increase their income by renting out their RHs [48]. In the context of increasing employment opportunities, diminishing land resources, and farmers' relatively deficient capacity to cope with economic risks, the protective function of RHs has become prominent [49]. The protective function varies according to the household type. The RH provides unemployment security for non-agricultural households, especially those who migrate to cities for work but struggle to secure stable employment. At the same time, it provides retirement security for households engaged only in agricultural production in rural areas. Moreover, the social security function extends beyond physical protection; it also includes psychological security, such as a sense of belonging and nostalgia [50]. Studies have demonstrated that farmers' educational level and age significantly influence their willingness to withdraw from their RHs [16,17]. Older farmers tend to have a stronger attachment to their land because of the concept that "falling leaves return to their roots". However, farmers with higher educational levels exhibit stronger support for policies related to withdrawing from RHs. Their higher level of education has expanded avenues for non-farming occupations, and they are more prone to withdraw from RHs [51]. Additionally, the quantity, size, and utilization of RHs also affect farmers' willingness to withdraw. Generally, the places where homesteads are owned and their willingness to withdraw are positively correlated. Excessive residential plots can lead to them being idle, and farmers are more inclined to withdraw idle RHs to increase their income [52]. Conversely, the area of the homestead exerts a detrimental impact on the readiness to withdraw. If the size of residential land exceeds the standard, the cost of withdrawing increases, which decreases farmers' willingness to withdraw [53].

2.2.2. Differentiation among Farmers

Differentiation among farmers is generally measured using the non-farming population rate and the Engel coefficient to assess horizontal and vertical differentiation, respectively [54]. However, these indicators have some limitations. Most farmers, both agricultural and non-agricultural employed populations, may have multiple occupations because of the seasonal nature of farming and large income disparities between agricultural and non-agricultural sectors. This may result in an inaccurate reflection of the level of differentiation among farmers using the aforementioned rate. The Engel coefficient indicates the share of income allocated to food expenses within aggregate individual expenditure, offering a glimpse into the economic prosperity of a nation or household to some extent. However, owing to the accelerated pace of urbanization in the past decades, the quantity of farmers engaging in "seasonal migration" has increased, and phenomena such as elders and children being left in villages have become common. Significant variations among household consumption habits lead to an unclear correlation between the Engel coefficient and household income.

Therefore, we use the proportion of agricultural income and occupation as indicators to measure horizontal differentiation, and the annual household income and availability of housing in the town to measure vertical differentiation. Theoretically, compared to households primarily engaged in non-agricultural employment, households whose main source of income is agricultural income have a higher demand for the protective function of rural residential land, thus resulting in a weaker willingness to withdraw their RHs [52]. Farmers who engage more in non-agricultural employment and derive a greater portion of their income from non-agricultural sources rely less on RHs. In contrast to those with a higher share of non-agricultural income, they prioritize the value of rural property appreciation and emotional connections to the countryside fostered through RHs. The latter places more importance on values. The substitution with urban housing weakens the survival security function of the rural homestead. Farmer households who own urban housing have less survival pressure and a stronger intention to pursue an urban life. Thus, their risk of integration into the city is lower, and naturally they are more inclined to relinquish their RHs [36].

2.2.3. Environmental Cognition

During the process of promoting WRH, the government often plays a guiding role, and the degree of government support is the most influential factor in farmers' land withdrawal decisions [55]. Positive publicity by local government can motivate farmers' withdrawal behavior, whereas farmers' correct understanding of the homestead land withdrawal policy can lead to a relatively clear understanding of expectations and post-withdrawal life, thereby enhancing their willingness to withdraw. Therefore, this study selected indicators such as farmers' understanding of and support for homestead-related policies to measure their level of policy environment identification. Meanwhile, farmers' perceptions of the public service influence their withdrawal preference. Aspects involving the living environment and quality of life are usually considered when villagers discuss the issue of withdrawing [56]. Based on the relevant literature, we introduce variables such as the satisfaction with existing basic service facilities [57], perception of risk avoidance after withdrawing from the homestead land [33], and satisfaction with existing social insurance coverage [58] to reflect farmers' perceptions of the public environment. According to the relevant research, if farmers have positive expectations for the outcome of WRH, for example, believing that it will optimize land resource allocation, promote village development, improve living environment, enhance the quality of life, and improve education and medical conditions, they will develop a positive attitude towards the WRH behavior [59]. The risks faced by farmers after WRH, such as increased housing costs, higher living expenses, and employment uncertainty, may have a negative effect on their withdrawal preference. This means that the risks faced after WRH inhibit farmers' withdrawing behavior. Regarding the impact of satisfaction with existing social insurance coverage on farmers' willingness to withdraw, one important function of RHs is livelihood security, so the existence of other continuous and stable social insurance coverage can weaken this security function of RHs. Therefore, farmers who are more satisfied with existing social insurance coverage are more inclined to WRH.

3. Research Area Overview and Methods

3.1. Research Area and Data Processing

3.1.1. Overview of the Research Area

Situated in the central region of the Yangtze River, Hubei Province spans 185,900 square kilometers and experiences a subtropical monsoon climate. Amidst the backdrop of Central China's burgeoning strategy, the urbanization momentum of Hubei Province has surged over the past few years, and the coordinated development of the Wuhan Metropolitan Area has especially yielded remarkable outcomes. The two pilot areas selected for this research, Xinzhou District and Daye City, are in the close circle of the metropolitan area (Figure 2). Xinzhou District, located in the northeast of Wuhan and on the north bank of the Yangtze River, spans 1463.43 square kilometers. According to Hubei Provincial Statistical Yearbook, it owns 12 administrative streets, 1 town, 1 economic development zone, and 1 scenic area, with a population of about 929 thousand. Xinzhou District is one of the vital agricultural bases in Wuhan and serves as a significant industrial area within the region. Daye City lies in the northwest of Huangshi City, and on the south of the Yangtze River. The county-level city governs 5 administrative streets, 11 towns, and 2 administrative areas, with a population of about 999 thousand people. It has been identified as the first batch of the national resource-exhausted city transformation pilot, the third batch of the national comprehensive pilot for new urbanization, and the pilot city for the new round of national rural housing system reform. Both Xinzhou and Daye were designated as pilot areas for the "three rights separation" reform of RHs in August 2018. Since Xinzhou District and Daye City explored voluntarily compensated withdrawal from homesteads, a series of regulations and policies have been formulated regarding rural homestead planning and layout, land area standards, village appearance, cultural inheritance, environmental protection, qualification verification, and transfer of RHs, thus forming a unique mode for

WRH with a series of accomplishments being achieved. These experiences have certain reference value for Hubei Province and even the whole country.

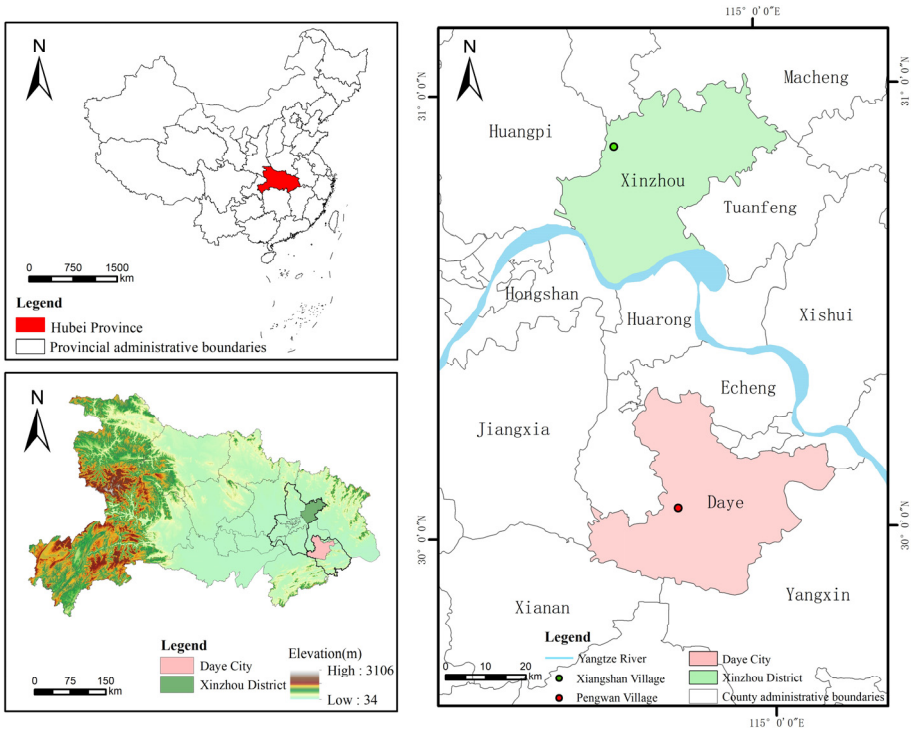


Figure 2. Geographical location of the study area.

3.1.2. Data Collection and Processing

The data used in this study can be basically categorized into two types: geographic data and field survey data. The former includes data on administrative districts, main roads and rivers, which are all from the open platform of Geospatial Data Cloud (https://www.gscloud.cn/#page2, accessed on 22 July 2024). The scope of the survey fully covered Pengwan Village in Daye and Xiangshan Village in Xinzhou District, and the research data came from the field questionnaire surveys in the two villages (Figure 2). To guarantee the authenticity and reliability of the statistics, research was performed in a variety of ways such as group discussions, questionnaire surveys, door-to-door visits, and in-depth analysis of typical cases on a household basis. Respondents were mainly heads of households or family members engaged in agricultural production. At the same time, we conducted in-depth structured interviews with typical farming families and those who were willing to cooperate to understand their real willingness to WRH. About 10% of the farming households were interviewed in structured interviews, averaging 20 min per household, focusing on their various ideas about WRH. For individuals who were not in the survey locations, the questionnaires were completed through telephone inquiries and web-based questionnaires with the assistance of village cadres. A grand total of 917 surveys were disseminated. Before formal interviewing, the farmers were asked whether they had some basic understanding of the homestead policy. If the farmers were not familiar with it, the interviewer first gave a preliminary introduction to the farmers about WRH-related policy. At the same time, we recorded the farmers' degree of knowledge of policies related to rural homesteads, and then asked whether they were willing to withdraw or not. The samples were excluded if the following situations occurred during the interview: there were inconsistent answers to the questionnaires; answers did not correspond to the questions; respondents were unable to answer the relevant questions due to the actual situation; the interviewees provided false information, or chose the same option for all questions in the survey, etc. In total, 842 valid surveys were acquired, with an effective retrieval rate

of 91.8%. The content of the survey included household and homestead characteristics, household differences, and environmental cognition.

3.2. Methods

3.2.1. Binary Logistic Regression

The binary logistic regression model is a statistical method used to analyze the relationship between multiple independent variables and a binary dependent variable. This approach is frequently used in predicting binary outcomes due to its flexibility and robustness. It does not require the assumption of a normal distribution for the data. Moreover, binary logistic regression is characterized by its strong interpretability and relatively low sample size requirements. The model can effectively demonstrate the significant relationships between the dependent variable and the independent variables, and elucidate the varying degrees of influence that multiple independent factors have on the dependent outcome. Furthermore, its extensibility further allows it to adapt to more complex classification problems.

This study focuses on examining farmers' inclination to withdraw from homesteads, assuming that there are only two possible choices: "willing to withdraw" and "not willing to withdraw", which are binary discrete variables. Therefore, we utilized a logistic regression framework to assess the association between various influencing factors and rural households' willingness to withdraw from their homestead land. The willingness to withdraw from RHs is denoted Y, with a value of 1 representing "willing to withdraw" and 0 representing "not willing to withdraw". The independent variables are denoted X_1, X_2, …, X_n. The model is expressed as follows:

$$P(Y = 1) = \frac{EXP(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n)}{1 + EXP(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n)} \quad (1)$$

The formula for calculating the odds ratio (OR value) can be derived from Equation (2):

$$\frac{P_i}{1 - P_i} = EXP(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n) \quad (2)$$

By taking the logarithm of the OR value, the linear model of the logistic regression is obtained:

$$\ln \frac{P_i}{1 - P_i} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n \quad (3)$$

Here, β_0 is the constant term, β_1, β_2, …, β_n are the coefficients of the respective independent variables, representing their corresponding influence, and exp(β) represents the probability ratio between rural households willing to withdraw from their homestead land and those not willing to withdraw.

3.2.2. Variable Selection

Based on the theoretical analysis and surveyed data collected from the questionnaire, we selected 14 factors, which may influence rural households' inclination to withdraw from homesteads, and categorize the factors into three groups of independent variables: household and homestead characteristics, farmers' differentiation, and environmental cognition. The names and meanings of each variable are shown in Table 1 below. The variance inflation factor (VIF) values of the selected variables were all less than 10, which indicates the absence of severe multicollinearity among the 14 factors.

Table 1. Selected variables based on the survey in the two pilot villages.

Types	Name of Variables	Simplified Variable Names
Household and rural homestead characteristics	Age of head of household	X_1
	Educational level	X_2
	Places of home-stead owned	X_3
	Homestead area	X_4
	Is the homestead vacant or not	X_5
Farmers' differentiation	Type of employment of the head of household	X_6
	Share of agricultural income in annual household income	X_7
	Annual household income	X_8
	Availability of housing in the town	X_9
Environmental cognition	Knowledge of policies related to rural homestead	X_{10}
	Attitudes toward the reform of the homestead policy	X_{11}
	Satisfaction level with existing rural infrastructure service	X_{12}
	Perception of risk avoidance after withdrawing from the rural homestead	X_{13}
	Satisfaction level with existing social insurance	X_{14}
Dependent variables	Farmers' willingness to withdraw their homesteads	Y

3.2.3. Robustness Test

The application of the binary logistic regression model has the advantage of being clear and intuitive, but conducting a robustness test is an essential and effective way to test the reliably of the fitting results, and thereby helps to test the accuracy of the model result. In this research, we used two different methods to conduct the robustness test. Firstly, we chose the probit model. Unlike the binary logistic model, the probit model is based on a normal distribution. When there are data characteristics that deviate from the assumptions, the use of a probit model to conduct a robustness test can reveal the consistency of the results of the model settings. If the coefficients, directions, and significances between the two models differ little, the simulation can be considered robust. The probit formula is as follows:

$$P(Y = 1) = F(X) \tag{4}$$

$$F(X) = \Phi(X)\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{X} e^{-\frac{t^2}{2}}dt \tag{5}$$

Further, we can test the robustness of modeling using the method of partial sample exclusion and resampling. After randomly excluding part of the samples and then running the regression again, if the results are still significant, it shows that the regression results are not determined by a particular group of sampling, but rather demonstrate the characteristics of the overall sample.

4. Results and Analysis

4.1. Summary Statistics

According to the survey conducted in the two sample pilot areas, we summarize the detailed descriptions and statistical results of dependent variable and independent variables in Table 2. It can be seen that the majority of rural households are willing to withdraw from their RHs, reaching over 61%. As for the independent variables, significant variations are obviously observed. The characteristics of household and homestead utilization indicate that most of the heads of rural households in the study area are aged between 45 and 60, accounting for 52.64% of the total, showing a trend towards the middle-aged and elderly demographic. About 21.99% of the total sample obtained polytechnic or high school diplomas, and 48.63% of the sample were enrolled in college or university, indicating that they possess basic literacy and knowledge, which is conducive to understanding and

accepting new rural homestead policies compared to the previous generation. The average number of places of homestead owned is 1.14, with 93.23% of the households owning only one homestead. The areas of the homesteads typically range from 140 to 200 square meters, and approximately 74.42% of households own homesteads larger than 200 square meters. This far exceeds the standard of no more than 140 square meters per household stipulated in the Implementation Measures for Land Management in Hubei Province. This suggests that a significant portion of households in the study have homesteads that exceed the maximum allowed homestead area. Regarding the presence of unused rural homesteads, 89.64% of the sample of RHs are vacant, revealing that the vacancy rate is rather high in the surveyed area. The data on household differentiation show that most of the households in the study area are not solely engaged in agriculture; they generally engage in both agriculture and non-agricultural activities. About 80% of the interviewed household earned no more than 50% of their total income from agriculture, and almost half of the surveyed rural household have an annual income over 100,000 yuan, but the average annual income of surveyed villagers is between 80,000 yuan and 100,000 yuan. Meanwhile, most rural households investigated in the two villages do not possess their own housing in urban areas. The data on environmental cognition indicate that households have limited understanding of homestead-related policies, with most attitudes towards homestead policy reform being neutral or supportive. Regarding environmental perceptions, over 60% of interviewed villagers are not satisfied with existing rural infrastructure services. The majority of the sampled farmers believe that the risk of withdrawing from the homestead can be perceived, but there is still a significant proportion who believe that the risk is uncertain. Most sampled farmers believe that the existing social insurance is still basically adequate but needs to be improved.

Table 2. Model variables and descriptions.

Category of Variables		Variable Name	Variable Meaning and Assignments	Percentage (%)	Average Values	SD	Expected Direction of Impact
Dependent Variable	Y	Farmers' willingness to withdraw their homesteads	Willing = 1 Unwilling = 0	61.31% 38.69%	0.61	0.488	
Independent Variable	X1	Age of head of the household	18–22 years old = 1 23–45 years old = 2 45–60 years old = 3 Over 60 = 4	0.85% 25.37% 52.64% 21.14%	2.94	0.705	-
	X2	Educational level	Elementary school and below = 1 Junior high school = 2; Polytechnic or high school = 3 College or university = 4 Bachelor's degree or higher = 5	4.86% 17.76% 21.99% 48.63% 6.76%	3.03	1.005	+
	X3	Places of homestead owned	1 2 3 and more	93.23% 6.13% 0.63%	1.14	0.285	+
	X4	Homestead area	Smaller than 140 m^2 = 1 140–200 m^2 = 2 Over 200 m^2 = 3	19.24% 6.34% 74.42%	2.55	0.796	-
	X5	Is the homestead vacant or not	Always occupied = 1 Seasonal vacant = 2 Partially vacant = 3 Completely vacant = 4	2.33% 4.44% 3.59% 89.64%	3.81	0.912	+

Table 2. *Cont.*

Category of Variables	Variable Name	Variable Meaning and Assignments	Percentage (%)	Average Values	SD	Expected Direction of Impact
Independent Variable	X6	Type of employment of the head of household	Engaged entirely in agriculture = 1	6.40%	2.3	1.039	+
			Predominantly agriculture with part-time non-agricultural jobs = 2	23.10%			
			Mainly non-agricultural employment with seasonal agricultural activities = 3	39.38%			
			Fully engaged in non-agricultural employment = 4	31.12%			
	X7	Share of agricultural income in annual household income	0% = 1	9.03%	2.42	1.223	-
			1–25% = 2	42.34%			
			26–50% = 3	28.12%			
			51–75% = 4	9.09%			
			Over 75% = 5	11.42%			
	X8	Annual household income	10,000 RMB or lower = 1	3.59%	5.44	1.934	-
			10,001–20,000 RMB = 2	8.67%			
			20,001–40,000 RMB = 3	9.09%			
			40,001–60,000 RMB = 4	9.09%			
			60,001–80,000 RMB = 5	7.61%			
			80,001–100,000 RMB = 6	12.05%			
			Over 100,000 RMB = 7	49.90%			
	X9	Availability of housing in the town	No = 1	67.65%	1.43	0.78	+
			Rented = 2	21.14%			
			Yes = 3	11.21%			
	X10	Knowledge of policies related to rural homesteads	Not known at all = 1	5.50%	2.62	0.872	+
			Don't know much = 2	47.36%			
			Understood = 3	26.43%			
			Well known = 4	20.71%			
	X11	Attitudes toward the reform of the homestead policy	I don't support = 1	15.22%	2.42	0.429	+
			Indifferent = 2	4.02%			
			I support = 3	80.76%			
	X12	Satisfaction level with existing rural infrastructure services	Very dissatisfied = 1	36.58%	2.15	0.516	-
			Less satisfied = 2	25.37%			
			Generally satisfied = 3	27.48%			
			More satisfied = 4	7.19%			
			Very satisfied = 5	3.38%			
	X13	Perception of risk avoidance after withdrawing from the rural homestead	I can't perceive = 1	11.63%	2.45	1.27	-
			Uncertain = 2	31.29%			
			I can perceive= 3	57.08%			
	X14	Satisfaction level with existing social insurance	Very dissatisfied = 1	33.40%	2.58	0.494	+
			Less satisfied= 2	15.86%			
			Generally satisfied = 3	20.93%			
			More satisfied = 4	18.82%			
			Very satisfied = 5	10.99%			

4.2. Influence of Household Characteristics and Homestead Utilization on the Willingness to WRH

In this study, we performed binary logistic regression on the survey data by means of the statistical analysis software SPSS 26.0. To deeply explore the associations between the independent variables, we ran the model with the inclusion of quadratic and interaction term variables for nonlinear modeling. The findings showed that the pseudo-R-squared coefficient was 0.72, and the model had a correct prediction rate of 94.27%. We display the dependent results of regression model of influencing factors on farmers' intention on WRH in Table 3. The age of the household head has a notably adverse effect on the willingness of rural household to engage in WRH, and the older the farmer, the stronger the reluctance to withdraw from the rural homestead. Older residents are less eager to withdraw from the homestead because of their conservative mindset and a sense of nostalgia, greater emphasis on the retirement function of RHs, and stronger attachment to rural roots. They tended to retain their RHs to preserve their ancestral property and heritage. Conversely, the number of homesteads owned has a significant positive influence on rural households' willingness to withdraw. Excessive homestead land tenure often leads to land being vacant, which means a waste of resources and assets. Therefore, farmers with multiple homesteads are inclined to obtain economic benefits by withdrawing from some of their RHs. Furthermore, the area of RHs has a positive impact on rural households' willingness to withdraw, which is contrary to the results of previous studies in non-pilot areas [53]. This is because the surveyed villages are pilot areas with clear regulations on homestead land withdrawal compensation; thus, households who WRH can receive certain amount of restitution, especially those with larger RHs. Therefore, if the household owns a larger homestead, it has a considerable positive impact on the willingness of rural households to withdraw. The quantity of owned idle homestead land also exerts a notably favorable influence on the willingness to participate in WRH. As the status of the number of unused homesteads increases, farmers become less reliant on their RHs, thus displaying a greater inclination to relinquish them.

Table 3. Results of regression model of influencing factors on farmers' intention on WRH.

Variables	Coefficients	Standard Errors	Significance	Co-Linear Statistics	
				Tolerances	VIF
X_1	−0.157 **	0.189	0.034	0.901	1.110
X_2	0.151	0.139	0.275	0.696	1.437
X_3	0.491 **	0.438	0.026	0.939	1.065
X_4	0.493 *	0.243	0.078	0.404	2.475
X_5	0.038 **	0.157	0.019	0.807	1.239
X_6	0.032 **	0.138	0.024	0.670	1.493
X_7	−0.246 **	0.108	0.017	0.338	2.959
X_8	0.247 ***	0.141	0.008	0.658	1.520
X_9	0.175 ***	0.130	0.007	0.534	1.873
X_{10}	0.088 ***	0.114	0.004	0.725	1.379
X_{11}	0.065 **	0.189	0.011	0.487	2.053
X_{12}	−0.023 *	0.071	0.056	0.781	1.280
X_{13}	0.314 *	0.063	0.071	0.459	2.179
X_{14}	0.286 *	0.084	0.070	0.534	1.873
X_1#X_1	0.717 ***	0.234	0.002	0.944	1.059
X_{14}#X_{14}	0.197 **	0.173	0.025	0.639	1.565
X_2#X_7	0.023 *	0.069	0.074	0.429	2.331
X_2#X_{11}	0.388 **	0.157	0.013	0.615	1.626
X_4#X_6	0.315 **	0.142	0.012	0.625	1.600
X_8#X_9	0.027 *	0.128	0.083	0.932	1.073
X_9#X_{11}	0.383 ***	0.133	0.007	0.555	1.802
Constant	3.138	1.477	0.034		

Notes: 1. ***, **, and * represent the significance levels of 1%, 5%, and 10%, respectively. 2. Due to the large number of variables in the quadratic and interaction terms, only the significant results are displayed.

4.3. Impact of Differentiation among Farmers on the Willingness to Withdraw from RHs

As shown in the results in Table 3, the occupation of the household head has a significant positive influence on farmers' willingness to withdraw from their RHs. The less the occupation is related to agriculture, the less farmers need to use the homestead to assist in productive agricultural work. Therefore, a lower residential demand for homesteads leads to a stronger aspiration among farmers to withdraw. Conversely, the proportion of agricultural income in the household's annual income has a negative impact on farmers' willingness to withdraw. For farmers whose agricultural income constitutes a large portion of their annual income, agriculture is their livelihood, and the homestead provides security for their life and agricultural activities. Hence, farmers with a higher proportion of agricultural income are less inclined to withdraw from their RHs. The annual household income has a significant positive influence on farmers' willingness to withdraw, which contradicts the findings in non-pilot areas [32]. This discrepancy may be attributed to the more diverse withdraw and compensation methods for homesteads in the pilot areas. For instance, Daye has implemented new forms of WRH, such as pricing the homestead and contributing funds or participating in equity operations. These alternative withdrawal methods are more appealing to higher-income households as they offer greater economic benefits. In addition, the results indicate that there is a positive interaction between families' affluence and the ownership of urban housing in their willingness to withdraw from rural homesteads. For these two types of rural families, they will not be satisfied with their current quality of life in the countryside. In contrast, the infrastructure and public services in towns and cities are more complete and better able to meet their high-level needs. Therefore, they are more inclined to invest their capital and resources in towns and cities by withdrawing from their homesteads to obtain better living conditions and more development opportunities. Moreover, better-off families and households with urban housing tend to rely not only on agricultural income, but also have a higher share of income from non-agricultural work in the cities. This diversification of income sources makes them less dependent on rural homesteads and more likely to make the decision to withdraw from the RHs. In particular, the financial compensation for withdrawing from the homestead further increases their intention.

4.4. Impact of Environmental Cognition on the Willingness to WRH

As shown in the results of Table 3, knowledge of homestead policies and the level of support for homestead reform have a significant positive impact on farmers' willingness to withdraw from their RHs. This is because knowledge of and support for the homestead reform policy is a prerequisite for their behavior in WRH. Farmers with a higher level of knowledge and support level of WRH policy demonstrated greater policy acceptance, and they were more likely to respond to reform policies by withdrawing from RHs. Moreover, satisfaction with existing social insurance has a significant positive influence on farmers' willingness to withdraw. Stable social insurance serves as a motivating factor for farmers since it partially alleviates the reliance on the security functions provided by RHs, complementing them with the enhanced security offered by social insurance. Diversified and stable types of social insurances help to reduce the unperceived risk of households and provides greater incentives for them to settle in urban areas. Consequently, farmers with higher levels of satisfaction with social insurance are more inclined to withdraw from their homesteads. However, the satisfaction with existing rural basic service facilities negatively influences farmers' willingness to withdraw. Farmers who are more satisfied with their current basic service facilities tend to have a higher level of happiness in their current living situation, thus making them less inclined to sacrifice their current living environment. The perception of risk avoidance after homestead withdrawal positively impacts farmers' willingness to withdraw. Strong confidence in the ability to cope with the risks associated with WRH, as well as a reduction in worries about livelihoods after withdrawing, contribute to a stronger willingness to WRH.

4.5. Robustness Test

We conducted the robustness test in two different ways. As shown in Table 4, the direction of coefficients and significance of the probit model are basically consistent with the results of the logistic regression model, which is displayed in Table 3, demonstrating that the logistic modeling results are highly credible.

Table 4. Robustness checklist from probit model.

Variables	Coefficients	Standard Errors	Significance	[95% Conf. Interval]	
X_1	−0.246 **	0.179	0.029	−0.091	0.042
X_2	0.076	0.081	0.169	0.014	0.138
X_3	0.354 **	0.262	0.017	−0.087	0.159
X_4	0.208 *	0.308	0.061	−0.162	0.414
X_5	0.152 **	0.093	0.013	−0.031	0.335
X_6	0.499 **	0.199	0.012	−0.089	0.109
X_7	−0.202 **	0.138	0.043	−0.068	0.472
X_8	0.193 ***	0.169	0.008	−0.238	0.424
X_9	0.176 ***	0.077	0.004	−0.328	0.284
X_{10}	0.433 ***	0.071	0.002	−0.181	0.094
X_{11}	0.251 **	0.374	0.042	−0.282	0.148
X_{12}	−0.026 *	0.107	0.069	−0.336	0.082
X_{13}	0.047 *	0.483	0.062	−0.047	0.141
X_{14}	0.351 *	0.194	0.081	−0.131	0.288
X_1#X_1	0.4077 ***	0.134	0.003	−0.176	0.143
X_{14}#X_{14}	0.122 **	0.095	0.019	−0.039	0.164
X_2#X_7	0.011 *	0.039	0.077	−0.087	0.065
X_2#X_{11}	0.211 **	0.088	0.016	−0.084	0.028
X_4#X_6	0.208 **	0.080	0.019	−0.051	0.365
X_8#X_9	0.264 *	0.073	0.078	−0.117	0.169
X_9#X_{11}	0.247 ***	0.074	0.009	−0.145	0.146
Constant	2.342	1.955	0.231	−1.675	1.489

Note: ***, **, and * represent the significance levels of 1%, 5%, and 10%, respectively.

To make the results more reliable, we performed the binary logistic regression again after randomly excluding 20% of the sample and then compared the results from the two sets of models. As shown in Table 5, the coefficients and the significance level of the re-sampled results are not significantly different from the regression results of the overall sample. The only factor with a non-significant effect is the educational level, which is also the same as in the initial model and probit model, indicating that the original logistic regression results are robust.

Table 5. Binary logistic regression results after random sample exclusion.

Variables	Coefficients	Standard Errors	Significance	Co-Linear Statistics	
				Tolerances	VIF
X_1	−0.075 **	0.245	0.048	0.874	1.144
X_2	0.181	0.117	0.124	0.715	1.399
X_3	0.381 **	0.509	0.016	0.856	1.168
X_4	0.284 *	0.326	0.082	0.405	2.469
X_5	0.061 **	0.235	0.048	0.687	1.456
X_6	0.013 **	0.189	0.042	0.617	1.621
X_7	0.357 **	0.143	0.045	0.354	2.825
X_8	0.169 ***	0.186	0.003	0.615	1.626
X_9	0.221 ***	0.183	0.002	0.496	2.016
X_{10}	0.045 ***	0.156	0.006	0.704	1.420

Table 5. *Cont.*

Variables	Coefficients	Standard Errors	Significance	Co-Linear Statistics	
				Tolerances	VIF
X_{11}	0.094 **	0.233	0.017	0.494	2.024
X_{12}	−0.014 *	0.028	0.068	0.698	1.433
X_{13}	0.528 *	0.338	0.054	0.753	1.328
X_{14}	0.185 *	0.194	0.630	0.493	2.028
X_1#X_1	0.526 ***	0.047	0.008	0.852	1.174
X_{14}#X_{14}	0.167 **	0.107	0.047	0.642	1.558
X_2#X_7	0.049 *	0.154	0.097	0.524	1.908
X_2#X_{11}	0.527 **	0.303	0.048	0.513	1.949
X_4#X_6	0.523 **	0.299	0.032	0.712	1.404
X_8#X_9	0.056 *	0.257	0.074	0.875	1.143
X_9#X_{11}	0.422 ***	0.271	0.008	0.614	1.629
Constant	1.918	1.351	0.045		

Note: ***, **, and * represent the significance levels of 1%, 5%, and 10%, respectively.

5. Discussion

The empirical study showed that among the selected factors, evolving household factors and the environmental cognition of villages, the annual household income, whether there is urban housing, and the level of understanding of WRH policies have the most significant positive impact on a farmers' willingness to withdraw from RHs. The age of the household head, the number of RH holdings, whether it is vacant, the occupation of the household head, the proportion of agricultural income in the total household income, and the attitude towards homestead policies also impact the preference to WRH. The size of the rural homestead, satisfaction with infrastructure, risk cognition after WRH, and satisfaction with social insurance have the least impact.

5.1. The Influence of Characteristics of Household Homestead Utilization on Farmers' Willingness to WRH

The survey conducted in the two pilot villages found that the basic household characteristic obviously impacts the farmers' willingness to WRH. When they get older, they may feel disconnected with rapid urban development and are bound by emotional ties, such as difficulty in leaving their homeland, leading them to not intend to withdraw. In this case, this article suggests that it is appropriate to provide more humanistic care to rural households when implementing WRH policies. Persuading older villagers to withdraw from homesteads should be facilitated through human-centered measures, for instance, taking advantage of peer effects on farmers' responses [60]. That is to say, targeting influential figures within the rural community at the beginning who have the authority and influence to speak, such as local leaders, village committee members, and village chiefs, could be an effective strategy. By convincing these influential individuals to withdraw from homesteads first and then exerting their influence to persuade fellow villagers to follow suit, particularly by addressing their emotional ties to their RHs, could be beneficial. The quantity, area, and extent of vacancy of rural homestead have significant positive impacts on farmers' withdrawal preference, echoing the findings of Ying Chen et al. [61]. The reasons for this may be that the vacant rural homesteads do not bring extra profits even though the farmers in the surveyed area own multiple homesteads. The rental income is not considerable since the location of the village is relatively far from the county center, especially in the eyes of households who are engaging in non-agriculture work.

5.2. The Influence of Farm Household Differentiation on the Willingness to WRH

Engaging in non-agricultural work significantly enhances farmers' willingness to WRH. Governments can focus on populations engaged in non-agricultural occupations and try to change their mindsets regarding land withdrawal. For example, in Yujiang District,

Jiangxi Province, with CPR members, village officials, and respected individuals playing a leading role by voluntarily withdrawing from excessive RHs, those engaged in non-agricultural professions were actively encouraged to withdraw from their rural homesteads. Furthermore, non-agricultural work also has a positive influence on the area of RHs, which plays a remarkable role in the willingness to WRH. Considering that the proportion of agricultural income to total household income negatively impacts farmers' willingness to withdraw, the government granted more privileges to RHs during the reform process. This included allowing the land-use rights of RHs and houses to be priced and used as assets and capital, and permitting shareholding, mortgage loans, and leasing, among other measures, to actively promote farmers' voluntary revitalization and withdrawal from residential land.

Family annual income plays a crucial positive role in farmers' withdrawal from homesteads. On one hand, richer family can also gain additional income or compensation from other sources through homestead withdrawal. The higher the family annual income, the more farmers can adapt to the production and lifestyle changes after withdrawing from homesteads due to their own abilities and capital advantages. If higher-income farmers have larger homesteads, their willingness to withdraw will increase accordingly. On the other hand, for farmers with lower annual incomes, the security and survival functions of homesteads are more prominent. The changes in production and life after withdrawing from homesteads are difficult for them to bear and anticipate, so they are unwilling to withdraw. Faced with this situation, the government needs to consider the situation of low-income families after withdrawing from homesteads and provide a full set of supporting security mechanisms; for example, providing guarantees in education, medical insurance, skills training, and economic subsidies to ensure that the living standards and quality of life of this group are not lower than before WRH, and they do not fall into poverty.

The population with urban housing can be targeted for the implementation of WRH policies. For some urban residents, they may consider WRH to obtain a substantial economic benefit. These gains can be used to improve living conditions, purchase property, or for other purposes; this also enhances the positive effect of higher income on the willingness to withdraw from the rural homestead. The fact that urban residents with housing choose to withdraw from vacant rural homesteads and move to urban areas indicates their preference for urban living and seeking better education, healthcare, employment, and lifestyle convenience. Therefore, giving up rural homesteads can lead to better urban living standards and various welfare benefits, and is highly tempting for urban residents with housing. Even migrant workers and their families may perceive better development opportunities and income in the city, and are thus willing to abandon their rural homesteads. As urbanization progresses, the social environment, cultural atmosphere, and lifestyle of cities may influence rural residents living in urban areas. Some rural residents may prefer the urban lifestyle or wish to integrate into urban society, and thus be willing to give up RHs.

5.3. The Influence of Environmental Cognition on the Willingness to WRH

According to the investigation, farmers are likely to be more willing to cooperate with local governments to consider WRH if they understand the importance and purpose of the policies. They can realize the economic and social impacts of the changes in policy and accordingly adjust their behavior. Farmers who have a higher level of understanding of WRH policies are more likely to be aware of the specific details of policy promotion, procedures of WRH, and benefits like economic compensation. Access to this information can help them make wiser decisions and increase their willingness to WRH. Moreover, farmers with a higher level of understanding of WRH policies have a great likelihood of participation in decision-making and negotiation processes with local government related to WRH. It is believed that they can have more comprehensive understanding of the WRH policy, and voice their opinions and suggestions, thereby better protecting their interests [62].

From the interactive analysis of potential influencing factors, the higher the villagers' level of education, they more they are supportive of policies about WRH. If rural house-

holders support the program, they may be more inclined to relocate voluntarily. This may also stem from an understanding of the policy's objectives, such as its potential to improve living conditions or enhance social status. In such cases, householders may actively respond to the policy and prefer to relocate from their homesteads. Conversely, if rural householders oppose WRH policies, they may resist or refuse to relocate. This opposite opinion could result from dissatisfaction with the policy's objectives or implementation methods, such as perceived unfairness, irrationality, or potential economic losses. Some other rural householders may adopt a neutral stance towards the homestead relocation policy, neither fully supporting nor fully opposing it. These householders may decide whether to withdraw RHs based on their own interests.

Another interaction link that should not be overlooked is the effect of urban housing accessibility on the attitude towards the policy of WRH. Obviously, this group of rural residents is better able to be more supportive of the State's policy of adjusting the land use structure. So, increasing the income of the rural household and promoting their purchase of houses in cities or towns are very beneficial to improve the willingness of WRH. In summary, the level of understanding and attitudes of rural householders towards the homestead relocation policy significantly influence whether they choose to relocate from their homesteads. The fairness, rationality, and alignment with householders' interests of the policy can all affect householders' attitudes and behaviors.

6. Conclusions, Policy Recommendations and Limitations

In conclusion, this study constructed a multi-dimensional and dual-perspective analytical framework aimed at gaining a deeper understanding of rural households' intentions to participate in WRH. This framework not only integrates household characteristics, but also introduces the dimension of farmers' environmental cognition (EC). We theoretically outlined the complex pathway of rural households' willingness to engage in WRH. Through empirical analysis conducted in two pilot villages in East Hubei Province, we uncovered the diverse factors underlying WRH willingness and identified the most crucial determinants among them. Our findings emphasize the combined roles of rural household differentiation and environmental cognition in shaping WRH willingness, revealing a complex interplay and mutual influence between the two angles.

In terms of variables reflecting household characteristics and farmers' differentiation, factors including the numbers and the area of owned RHs, the share of agricultural income in annual household income, and annual household income displayed a notable influence on farmers' inclination to withdraw from RHs, whereas the age of the head of household has an inhibitory effect on farmers' willingness. The other factors' positive influence is significant, such as the vacancy or not of RHs, the employment type of the household, and the availability of housing in the town, which has been supported by earlier literature [52,61–65]. All the factors in terms of farmers' differentiation and EC were found to be significant, confirming that the two perspectives are extremely important aspects of influence that cannot be ignored in discussing the villagers' preference to WRH, some of which displayed a remarkable positive influence. However, the positive effect of the perception of risk avoidance after WRH found in this study differs from earlier research findings [43]. We attribute this to the regional diversifications of economic conditions and future development prospects. The only unsignificant factor in this empirical study is the educational level of a rural household, which is quite different from previous research [66]. We conclude that this is because Daye and Xinzhou, where the surveyed villages are located, were included in the pilot areas. Extensive policy promotion was conducted among the villagers before the field survey, thereby weakening the influence of educational level of the farmer household.

Based on the above findings, this study proposes the following policy recommendations. Firstly, it is essential to establish a sound and localized set of advocacy mechanisms to mobilize the villagers' participation in WRH. As shown in this study and previous findings, elderly farmers tend to be reluctant to withdraw from homesteads due to their

strong local ties and their social networks been based in countryside [28]. Therefore, the government should take this situation into account and discuss with them by leveraging the kinship network structure to formulate relevant policies [10]. Secondly, it is suggested that improvements in corresponding supportive measures for the post-withdrawal villagers are clearly expected and guaranteed, due to the considerable functionalities of economic assurance, social security, and local emotions of RHs, especially for the elders. Possible compensations for the WRH, introduction to non-agricultural employment opportunities, and resettlement in centralized housing offered by government after withdrawal are all the concerns of the involved villagers and will be quite conducive to promoting the implementation WRH. Thirdly, experiences gained in pilot areas are a very important reference for districts that have not yet undertaken the plan. Pilot areas are able to experiment with a variety of new options for WRH, such as developing new industries and businesses in the countryside by conditionally introducing business entities. This is beneficial for eliminating the concerns and misunderstandings of farmers regarding the WRH, attracting more farmers to participate in the program, and gradually expanding the radiation effect of the newly implemented WRH in pilot areas.

There are some limitations to this paper. Firstly, we surveyed rural households in just two pilot areas on the outskirts of the Wuhan Metropolis. The central plain areas and western hilly regions of Hubei and other provinces were not included in this study, which leads to the fact that the results may, to some extent, not be fully representative of the willingness of farmers in different regions. In the future, expanding the samples to increase the diversity of farm households is an essential way to reveal villagers' willingness with different economic and social backgrounds. Secondly, in recent years, different forms of strategies and systematic measurements have been carried out according to local conditions in some other pilot areas, including countryside revitalization, reutilization of RHs, and the introduction of integration of commercial industries. In the future, research should focus more on the effectiveness of the implementation of reforms and explore major driving mechanisms and obstacles to the different measurements of reforms in different types of regions.

Author Contributions: Conceptualization, X.Y.; Software, Z.Z.; Validation, Y.W.; Formal analysis, L.G., J.L. and L.S.; Investigation, X.Y. and J.L.; Resources, Y.W.; Writing—original draft, L.G. and J.L.; Writing—review & editing, X.Y. and L.G.; Visualization, Z.Z. and Y.W.; Funding acquisition, X.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Youth Fund for Humanities and Social Sciences Research Project of the Ministry of Education of China (grant number: 19YJCZH224) and National Natural Science Foundation of China (grant number: 42001231).

Data Availability Statement: The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Rodríguez-Soler, R.; Uribe-Toril, J.; Valenciano, J.D.P. Worldwide trends in the scientific production on rural depopulation, a bibliometric analysis using bibliometrix R-tool. *Land Use Policy* **2020**, *97*, 104787. [CrossRef]
2. Zhang, R.; Jiang, G.; Zhang, Q. Does urbanization always lead to rural hollowing? Assessing the spatio-temporal variations in this relationship at the county level in China 2000–2015. *J. Clean. Prod.* **2019**, *220*, 9–22. [CrossRef]
3. Liu, J.; Guo, Q. A spatial panel statistical analysis on cultivated land conversion and Chinese economic growth. *Ecol. Indic.* **2015**, *51*, 20–24. [CrossRef]
4. Kong, X.; Liu, Y.; Jiang, P.; Tian, Y.; Zou, Y. A novel framework for rural homestead land transfer under collective ownership in China. *Land Use Policy* **2018**, *78*, 138–146. [CrossRef]
5. Wang, W.; Luo, G.; Gong, X. Association between Hometown Landholdings and Housing Quality of Rural Migrants in Urban Areas: Evidence from China. *Buildings* **2024**, *14*, 1027. [CrossRef]
6. Bulletin on the Main Data of the Third National Land Survey. Available online: https://www.mnr.gov.cn/dt/ywbb/202108/t20210826_2678340.html (accessed on 21 July 2024).

7. Lu, M.; Guo, B.; Chen, G.; Yuan, L.; Xing, R.; Huang, Y. A Study on the Factors Influencing Farmers' Intention to Revitalize Idle Homesteads Based on Improved TPB Framework—Analysis of the Moderating Effect of Farmer Differentiation. *Sustainability* **2022**, *14*, 15759. [CrossRef]
8. Li, G.; Zhang, X. The Spatial–Temporal Characteristics and Driving Forces of the Coupled and Coordinated De-velopment between New Urbanization and Rural Revitalization. *Sustainability* **2023**, *15*, 16487. [CrossRef]
9. Wei, L.; Duan, W.; Dong, S. Research on Leased Space of Urban Villages in Large Cities Based on Fuzzy Kano Model Evaluation and Building Performance Simulation: A Case Study of Laojuntang Village, Chaoyang District, Beijing. *Buildings* **2024**, *14*, 120. [CrossRef]
10. Luo, Y.; Li, Y.; Li, C.; Wu, Q. Influence of the Kinship Networks on Farmers' Willingness to Revitalize Idle Houses. *Sustainability* **2023**, *15*, 10285. [CrossRef]
11. Xia, T.; Carayannis, E.G.; Sindakis, S.; Showkat, S.; Kanellos, N. Technology transfer for sustainable rural development: Evidence from homestead withdrawal with com-pensation in Chengdu–Chongqing. *J. Technol. Transf.* **2024**, *49*, 303–333. [CrossRef]
12. Yang, C.; Chen, R.; Zhong, S.; Liu, W.; Xin, G. How social solidarity affects the outcomes of rural residential land consolidation: Evidence from Yujiang County, South China. *Land Use Policy* **2023**, *130*, 106662. [CrossRef]
13. Wang, X.; Kang, J. Decision Making and Influencing Factors in Withdrawal of Rural Residential Land-Use Rights in Suzhou, Anhui Province, China. *Land* **2023**, *12*, 479. [CrossRef]
14. Shi, R.; Hou, L.; Jia, B.; Jin, Y.; Zheng, W.; Wang, X.; Hou, X. Effect of Policy Cognition on the Intention of Villagers' Withdrawal from Rural Homesteads. *Land* **2022**, *11*, 1356. [CrossRef]
15. Wang, Y.; Zhu, Y.; Yu, M. Evaluation and determinants of satisfaction with rural livability in China's less-developed eastern areas: A case study of Xianju County in Zhejiang Province. *Ecol. Indic.* **2019**, *104*, 711–722. [CrossRef]
16. Su, Y.; Hu, M.; Wu, Y. Rural Land Transfer and Urban Settlement Intentions of Rural Migrants: Evidence from a Rural Land System Reform in China. *Int. J. Environ. Res. Public Health* **2023**, *20*, 2817. [CrossRef]
17. Gao, P.; Shen, S.; Yang, Z.; Ji, Z. Study on the impact of hometown resource endowment on farmers' rural-urban migration decisions against the background of "dual carbon". *Front. Environ. Sci.* **2024**, *12*, 1346840. [CrossRef]
18. Wang, J.; Zhao, K.; Cui, Y.; Cao, H. Formal and Informal Institutions in Farmers' Withdrawal from Rural Homesteads in China: Heteroge-neity Analysis Based on the Village Location. *Land* **2022**, *11*, 1844. [CrossRef]
19. Liu, R.; Yu, C.; Jiang, J.; Huang, Z.; Jiang, Y. Farmer differentiation, generational differences and farmers' behaviors to withdraw from rural homesteads: Evidence from chengdu, China. *Habitat Int.* **2020**, *103*, 102231. [CrossRef]
20. Ma, W.; Wei, F.; Yang, L.; Ran, X. Research on the Measurement, Evaluation and Compensation of Traditional Village Residents' Emotional Perception: A Case of 14 Traditional Villages in Guanzhong Region. *Sustainability* **2024**, *16*, 2546. [CrossRef]
21. Zhang, S.; Xie, X. Asset Specificity on the Intention of Farmers to Continue Land Recuperation: Based on the Per-spective of Farmer Differentiation. *Land* **2021**, *10*, 603. [CrossRef]
22. Wang, C.; Wang, L.; Jiang, F.; Lu, Z. Differentiation of rural households' consciousness in land use activities: A case from Bailin Village, Shapingba District of Chongqing Municipality, China. *Chin. Geogr. Sci.* **2015**, *25*, 124–136. [CrossRef]
23. Zhang, S.; Xie, X.; Luo, Y.; Liu, X.; Zhao, M. The influence of asset specificity on farmers' willingness to participate in fallow from the perspective of farmer differentiation. *Front. Environ. Sci.* **2023**, *11*, 1107545. [CrossRef]
24. Dufty-Jones, R. Governmentalities of mobility: The role of housing in the governance of Australian rural mobilities. *J. Rural. Stud.* **2015**, *42*, 63–78. [CrossRef]
25. Holtslag-Broekhof, S.M.; Beunen, R.; van Marwijk, R.; Wiskerke, J.S.C. "Let's try to get the best out of it" understanding land transactions during land use change. *Land Use Policy* **2014**, *41*, 561–570. [CrossRef]
26. Jia, X.; Jiang, Y. Family Endowment, Personal Characteristics, and Farmer's Livelihood Differentiation—Based on an empirical study of 199 rural households in Sichuan Province. *IOP Conf. Ser. Earth Environ. Sci.* **2021**, *692*, 042126. [CrossRef]
27. Hengzhou, X.; Tong, C. Impact of farmers' differentiation on farmland-use efficiency: Evidence from household survey data in rural China. *Agric. Econ.* **2013**, *59*, 227–234. [CrossRef]
28. Kipato, N.; Dorward, P.; Clarkson, G. A Lower Threat than I Thought: How the Analysis of the Interdependence between Risks Influences Smallholder Farmers' Perceptions. *Sustainability* **2023**, *15*, 14467. [CrossRef]
29. Zhang, Y.-L.; Zhang, J.; Zhang, H.-L.; Cheng, S.-W.; Guo, Y.-R.; Ma, J.-H.; Sun, J.-R. The impact of the cognition of landscape experience on tourist environmental conservation behaviors. *J. Mt. Sci.* **2015**, *12*, 501–517. [CrossRef]
30. Neander, K. The Function of Cognition: Godfrey-Smith's Environmental Complexity Thesis. *Biol. Philos.* **1997**, *12*, 567–580. [CrossRef]
31. Kotchen, M.J.; Reiling, S.D. Environmental attitudes, motivations, and contingent valuation of nonuse values: A case study involving endangered species. *Ecol. Econ.* **2000**, *32*, 93–107. [CrossRef]
32. Denzau, A.T.; North, D.C. Shared Mental Models: Ideologies and Institutions. *Kyklos* **1994**, *47*, 3–31. [CrossRef]
33. Wang, Y.; Wang, J.; Wang, X.; Li, Q. Does policy cognition affect livestock farmers' investment in manure recycling facilities? Evidence from China. *Sci. Total. Environ.* **2021**, *795*, 148836. [CrossRef]
34. Wang, T.; Liu, J.; Zhu, H.; Jiang, Y. The Impact of Risk Aversion and Migrant Work Experience on Farmers' Entrepreneurship: Evidence from China. *Agriculture* **2024**, *14*, 209. [CrossRef]
35. Wang, W.; Lan, Y.; Wang, X. Impact of livelihood capital endowment on poverty alleviation of households under rural land consolidation. *Land Use Policy* **2021**, *109*, 105608. [CrossRef]

36. Schimmel, J. Development as Happiness: The Subjective Perception of Happiness and UNDP's Analysis of Poverty, Wealth and Development. *J. Happiness Stud.* **2009**, *10*, 93–111. [CrossRef]
37. Zidanšek, A. Sustainable development and happiness in nations. *Energy* **2007**, *32*, 891–897. [CrossRef]
38. Guo, H.; Li, J.; Li, X. Enhancing capabilities and promoting empowerment: How do follow-up support measures affect urban resettled household integration in China? *Habitat Int.* **2023**, *140*, 102905. [CrossRef]
39. Wu, X. Globalisation and the Rurality of Everyday Life: Cases Study of Guangdong, China. Ph.D. Thesis, University of Exeter, Exeter, UK, 2019; p. 302.
40. Ma, Z.; Ran, R.; Xu, D. The Effect of Peasants Differentiation on Peasants' Willingness and Behavior Transformation of Land Transfer: Evidence from Sichuan Province, China. *Land* **2023**, *12*, 338. [CrossRef]
41. Chen, S.; Yu, D.; Lei, M.; Sun, J.; Wang, X. Evaluation on the willingness of migrants and native farmers to transfer farmland in resettlement areas and their coupled coordination relationships: Perspectives for environmental and social sustainability. *Front. Environ. Sci.* **2024**, *12*, 1297682. [CrossRef]
42. Novisma, A.; Iskandar, E. The study of millennial farmers behavior in agricultural production. *IOP Conf. Ser. Earth Environ. Sci.* **2023**, *1183*, 012112. [CrossRef]
43. He, R.; Dai, Y.; Sun, G. How risk perception and loss aversion affect farmers' willingness to withdraw from rural homesteads: Mediating role of policy identity. *Heliyon* **2023**, *9*, e20918. [CrossRef] [PubMed]
44. Cheng, L. Investigating the Impacts of Poverty Alleviation Resettlement on Farmers' Income: An Empirical Study from Hubei Province, China. In *China's Poverty Alleviation Resettlement and Rural Transformation*; Springer Nature: Singapore, 2023; pp. 145–164.
45. Fan, W.; Zhang, L. Does cognition matter? Applying the push-pull-mooring model to Chinese farmers' willingness to withdraw from rural homesteads. *Pap. Reg. Sci.* **2019**, *98*, 2355–2370. [CrossRef]
46. Huang, W.; Su, S.; Sun, X. Social cognition, socioeconomic status and subjective well-being of Chinese migrant workers. *Sci. Rep.* **2024**, *14*, 6550. [CrossRef] [PubMed]
47. Xie, Y.; Ke, S.; Li, X. Psychological resilience and farmers' homestead withdrawal: Evidence from traditional ag-ricultural regions in China. *Agriculture* **2023**, *13*, 1044. [CrossRef]
48. Xu, L.; Du, X. Land certification, rental market participation, and household welfare in rural China. *Agric. Econ.* **2022**, *53*, 52–71. [CrossRef]
49. Wang, Q.; Li, F.; Heerink, N.; Yu, J.; Fleskens, L.; Ritsema, C.J. Land Rental Markets, Specialization, and Rural Household Income: Evidence from the North China Plain. *J. Agric. Resour. Econ.* **2023**, *48*, 540–559.
50. Zhang, C.; Zhou, Z.; Zhu, C.; Chen, Q.; Feng, Q.; Zhu, M.; Tang, F.; Wu, X.; Zou, Y.; Zhang, F.; et al. Analysis of the Evolvement of Livelihood Patterns of Farm Households Relocated for Poverty Alle-viation Programs in Ethnic Minority Areas of China. *Agriculture* **2024**, *14*, 94. [CrossRef]
51. Zhang, Z.; Song, J.; Yan, C.; Xu, D.; Wang, W. Rural Household Differentiation and Poverty Vulnerability: An Empirical Analysis Based on the Field Survey in Hubei, China. *Int. J. Environ. Res. Public Health* **2022**, *19*, 4878. [CrossRef] [PubMed]
52. Chang, X.; Liu, L. Characterizing Rural Household Differentiation from the Perspective of Farmland Transfer in Eastern China Using an Agent Based Model. *Hum. Ecol.* **2018**, *46*, 875–886. [CrossRef]
53. Zhang, Y.; Westlund, H.; Klaesson, J. Report from a Chinese Village 2019: Rural Homestead Transfer and Rural Vitalization. *Sustainability* **2020**, *12*, 8635. [CrossRef]
54. Chen, Y.; Cai, M.; Zhang, Z.; Li, M. The Impact of Land Transfer-In on Crop Planting Structure and Its Heterogeneity among Farmers: Evidence from China. *Land* **2024**, *13*, 87. [CrossRef]
55. Gu, H.; He, Y.; Wang, B.; Qian, F.; Wu, Y. The Influence of Aging Population in Rural Families on Farmers' Willingness to Withdraw from Homesteads in Shenyang, Liaoning Province, China. *Land* **2023**, *12*, 1716. [CrossRef]
56. He, Y.; Tang, P. Understanding the Role(s) of Social Networks in the Transition from Farmers' Willingness to Behavior Regarding Withdrawal from Rural Homesteads: A Research Study Based on Typical Regions of Sichuan Province. *Land* **2023**, *12*, 1505. [CrossRef]
57. Hong, B.; Ren, P.; Huang, R.; Xiao, J.; Yuan, Q. Research on Welfare Changes of Farmers with Different Livelihood Assets after Rural Residential Land Exit in the Context of "Tripartite Entitlement System": A Case Study of Fuhong Town in Qingbaijiang District, Chengdu, China. *Sustainability* **2023**, *15*, 6034. [CrossRef]
58. Smith, M.; Lal, P.; Vedwan, N. Motivations underlying farmers' management decisions and willingness to adopt sustainable practices: A case study of the northeastern United States. *J. Rural. Stud.* **2023**, *103*, 103138. [CrossRef]
59. Fentahun, G.; Amsalu, T.; Birhanie, Z. Farmers' perceptions about the influence of land fragmentation and land quality on sustainable land management in the upper lake Tana Basin: Evidence from Dera District. *Cogent Econ. Financ.* **2023**, *11*, 2160132. [CrossRef]
60. Ma, J.; Zhou, W.; Guo, S.; Deng, X.; Song, J.; Xu, D. The influence of peer effects on farmers' response to climate change: Evidence from Sichuan Province, China. *Clim. Chang.* **2022**, *175*, 9. [CrossRef]
61. Chen, Y.; Ni, X.; Liang, Y. The Influence of External Environment Factors on Farmers' Willingness to Withdraw from Rural Homesteads: Evidence from Wuhan and Suizhou City in Central China. *Land* **2022**, *11*, 1602. [CrossRef]
62. Cheng, F.; Liu, Y.; Liu, B. The Effectiveness of Administrative Power on Farmers' Attitude in Land Acquisition Negotiation: Mediating Role of Perceived Fairness. *Land* **2024**, *13*, 896. [CrossRef]

63. Gao, J.; Cai, Y.; Wen, Q.; Liu, Y.; Chen, J. Future matters: Unpacking villagers' willingness to withdraw from rural homesteads in China. *Appl. Geogr.* **2023**, *158*, 103049. [CrossRef]
64. Zhu, D.; Wang, Y.; Niu, Q.; Wu, Z.; Wu, L. Bilateral matching decision-making for rural homesteads withdrawal patterns and types of peasant households' welfare needs: Evidence from China in the context of land spatial planning regulation. *Heliyon* **2024**, *10*, e30587. [CrossRef] [PubMed]
65. Chen, M.Q.; Kuang, F.Y.; Lu, Y.F. Livelihood Capital Differentiation and Farmers' Willingness to Homestead Circulation: Based on Empirical Analysis of Jiangxi Province. *Agric. For. Econ. Manag.* **2018**, *17*, 82–90.
66. Zhang, R.; Jiang, P.; Kong, X. Reconstructing Rural Settlements Based on Investigation of Consolidation Potential: Mechanisms and Paths. *Land* **2024**, *13*, 354. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.