

Article

# Impact of the Household Registration System on Farmers' Rural Housing Land Use Decisions in China

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**Abstract:** By using the difference-in-difference method and introducing control variables, this study investigates the effect of the household registration system (*hukou*) on farmers' willingness to transfer rural housing land based on survey data of farmers in Chongqing and Wuhan, China. The results show that the effect of household registration system reform is significant at the 1% level, which indicates that household registration system reform significantly influences farmers' willingness to transfer rural housing land in the experimental area, leading to an increase in the share of farmers willing to transfer such land by 37%. In areas with greater efforts to reform the household registration system, farmers are more willing to transfer rural housing land. Moreover, the per capita non-farm income of rural households and compensation standard have a significantly positive correlation with farmers' willingness.

**Keywords:** rural housing land; household registration system; difference-in-difference method; China

## 1. Introduction

Given the accelerated industrialization and urbanization in China, the rural population is experiencing historic migration. According to the latest statistics, 160 million farmers now work and live in cities [1]. However, the migration of the rural population has not matched the reduction in rural housing land, thereby leading to the idleness and waste of much rural housing land in many provinces of China. The main manifestations such as empty houses, the maintenance of old houses, and the establishment and expansion of new houses [2], and the large number of redundant buildings in the countryside surrounding rural towns, which differ from the evolutionary characteristics of foreign villages [3,4]. Since the early 1970s, in order to reduce the depopulation of small rural undeveloped settlements, rural tourism has been adopted as an important strategy. This is performed by lodging clients in building units within existing houses diffused in mostly rural contexts and placing them within walking distance of a main building located in the barycentre [5]. In Italy, interpretation plans are developed to promote traditional rural buildings as heritage attractions [6]. The abandonment of the old rural houses and land may create potential threats to rural cultural and environmental characteristics [4,7,8], such as the cultural identity of the reduced population, landscape degradation and cultural value decline [4]. Today, most of the abandonment of the hold rural houses and land are not reused in China, but in other countries, including the UK, USA [9], Australia and Ireland [10] traditional rural buildings as built heritage attractions have been promoted for rural regeneration [11]. Their reuse, however, could play a part in landscape protection and restoration, and reduce the total number of new buildings required in rural areas. Their restoration could also be an opportunity to improve their integration into the landscape [4].

A legacy of the Communist past, land is segmented into urban land and rural land, with each governed by significantly different systems of property rights [12]. Formally, urban land is owned by the state while rural land is owned by rural collectives. In rural areas, every farmer can get land use rights, free of charge. However, the land use rights cannot be legally purchased or sold

on the open market [12]. As we know, free circulation is necessary for the optimal allocation of land resources [13,14]. From this perspective, the establishment of the circulation mechanism of rural housing land is thus beneficial for farmers, because income can be acquired from the property itself, which can then be used to revitalize idle assets, thereby providing the money required for settlement in urban areas.

At the national level, the establishment of the circulation mechanism of rural housing land can be rehabilitated to increase the land under cultivation. Rural housing lands can also be nationalized and converted into urban construction lands to relieve the tense situation in the cities as well as guarantee sustainable economic development [15]. However, in reality, the circulation reform of rural housing land is not ideal. The vast majority of migrant farmers do not transfer their rural housing land because it serves an important function in their life [16]. Why are Chinese farmers reluctant to transfer their rural housing land? Which is the key factor affecting their rural housing land-use decisions? These open questions indicate that studying rural housing land would contribute to Land-Use and Land-Cover Change (LUCC) research in China as well as provide some basis for formulating policies in favor of controlling rural land resources.

“The Method of the Household Registration System Reform Rural Land Exit and Utilization in Chongqing City (Trial)” promulgated on 1 August 2010 (hereinafter referred to as the Method) aimed to reform the urban and rural household registration system in Chongqing to speed up the coordinated development of the urban and rural economy and promote the effective use of rural land resources. On 15 February 2012, Former Chinese premier Wen Jiabao presided over the executive meeting of the State Council to study economic system reform. He pointed out that “deepening the land, household registration and public service reform, straightening out the relationship between city and countryside, promoting the coordinated development among industrialization, urbanization and agricultural modernization” were the key reform areas.

For more than half a century, the household registration system (*hukou*) in China has been the foundation of China’s divisive dualistic socioeconomic structure and the country’s two classes of citizenship, which has segregated the rural and urban populations, initially in geographical terms, but more fundamentally in social, economic, and political terms [17]. Each person thus has a *hukou*, classified as rural or urban in a specific administrative unit. Lu and Chen (2009) also pointed out that “in the long run, the reform of the land and household registration system cannot only give fresh impetus to China’s economic growth, but also promote the regional balance and the harmonious development of the city” [18]. Therefore, policy suggestions about the reform of the rural housing land and household registration system should be proposed to determine and analyze the relationship between the household registration system and circulation of rural housing land. China is an interesting case for examining this relationship.

The rest of the article is organized as follows. Section 2 theorizes the household registration system and its effect on rural housing land use. Section 3 presents the methodology. Section 4 discusses the results. Section 5 concludes.

## 2. Household Registration System and Its Effect on Rural Housing Land Use

### 2.1. Household Registration System in China

As one of its procedures for solidifying administrative control on population migration, the Chinese communist government established the household registration system (*hukou*) in 1955, and this remains in place today. The implementation of this system has been regarded as unavoidable under the “forging ahead” or heavy industry-oriented development strategy of China [19]. All households are registered in the locale in which they reside as well as categorized as either agricultural or non-agricultural and as rural or urban households [20]. In the pre-reform era, residential mobility, particularly from villages to cities, had to be approved.

The *hukou* mechanism, as a central instrument of the command system established for big-push industrialization, aimed to prevent what were deemed “undesirable” rural-to-urban migratory

flows [17]. Those whose mothers have rural status must compete for urban status through limited channels. Without permanent urban registration status, a person is ineligible for most high-status urban jobs, even if he or she were born in a city or, in the reform era, moved there as a child or young adult [21].

In essence, the *hukou* system was not merely a means of limiting rural–urban population and labor mobility, as it is commonly depicted, but also a system of social control aimed at excluding the rural population from access to state-provided goods, welfare, and entitlements [21]. Since the *hukou* system links peoples' accessibility to state-provided benefits and opportunities, it significantly affects their personal life in many aspects [20]. Peoples' necessities such as food, clothing, shelter, and transportation; their birth, death, illness, and old age; and their schooling, employment, welfare, and social security are all related to their *hukou* to some extent [22].

In particular, rural *hukou* holders receive considerably fewer social welfare benefits than urban *hukou* holders [23–26]. Rural *hukou* holders are tied to land and agriculture [27], whereas urban *hukou* holders can enjoy state-provided employment and welfare. When rural residents are too elderly to farm, they can make a living by renting their land. Consequently, land serves as both social insurance and income-generating property for rural residents [12].

Therefore, the Chinese *hukou* system provides a unique case for examining how the socialist state constructed opportunities for certain social groups and blocked mobility for the rural majority [28]. Such a strong policy intervention in stratification has rarely been seen in human history; the only comparable case is South Africa under Apartheid [29]. Not surprisingly, the *hukou* system has elicited much criticism within and outside China over the past two decades.

## 2.2. Household Registration System Reform and Its Effect

The *hukou* system is integral to China's socioeconomic structure and development strategy [17]. Since China met its Lewis turning point in about 2004 and labor shortages became a limiting factor in production, demand for the *hukou* system reform has strengthened [30]. A number of recent events suggest the importance attached to *hukou* reform by China's top leadership. There have been two attempts to "improve" the *hukou* system. The first entailed the devolution of fiscal and administrative powers to lower levels of government. The second reform measure aimed to make the *hukou* system more "humane" (e.g., by offering urban *hukou* to the children or elderly parents of migrants who have already gained that status). Under an initiative proposed in the Communist Party's Central Committee Document number 1, issued in 2010, rural migrant workers should be allowed to settle permanently in small and medium-sized cities and enjoy the same public facilities and services as those with local urban *hukou*. Some neighboring rural *hukou* populations are also given urban *hukou*, with access to some welfare benefits, in exchange for giving up their rural land-use rights to allow for urban expansion. Indeed, all small Chinese towns have relaxed their *hukou* controls by significantly lowering the thresholds for residence and some medium-sized and large cities, including provincial capital cities such as Shijiazhuang of Hebei Province, have followed suit.

These adjustments, however, have done little to alter the core of the dualistic structure buttressed by the *hukou* system [17]. A dilemma thus exists in *hukou* system reform: the more social welfare benefits that are associated with *hukou* identity, the more difficult it is to push forward the reform [30]. However, without *hukou* system reform, social welfare benefits will not be detached from *hukou* status.

## 2.3. The Logic of Household Registration System Reform Affecting Rural Housing Land Use

In rural areas, however, land-use rights cannot legally be purchased or sold on the open market, although a black market has been pervasive where state agencies and rural collectives are the primary violators that illegally occupy, sell, or transfer land without going through state requisition [31,32]. With strict control over arable land use, the only way in which local governments can exploit land to boost urbanization is to reclaim the plots of contracted arable land and house sites left behind by those who have migrated away and use the quota of those plots elsewhere to balance the reclamation and exploitation of land [30].

The general belief among scholars is that the compensation standard, income, non-farm labor employment, and support population in families; degree of social security; and level of regional economic development are the basic factors influencing the circulation of rural housing land [33–35]. Whether other key factors exist remains unknown. Deng and Wang (2010) reported a society management system that was established and improved under a planning economic system with various resource allocations and correct distribution systems [36]. This household registration system seriously restrains the circulation of rural land. Under the strict dual household registration system, regardless of how similar their jobs are to those held by urban workers, employees with rural hukou status are still classified as “peasant workers” and are not entitled to the many labor rights and benefits offered to employees with urban *hukou* [37].

Rural housing land has different functions in rural–urban migration. Farmers who have very little land and insufficient capital cannot transfer their rural housing land [38]. Thus, rural housing lands serve as settlement security, a house for pension, a family property reservation, and a support of sideline production [34].

Given the imperfect social security in rural areas of China at present, the circulation of rural housing land remains unpopular with farmers [39]. Scott (1977) reported in his research on the land systems in rural areas in Southeast Asia that farmers in small peasant economies with low per capita land resources first consider survival rather than maximizing income [40]. In his opinion, the “moral economy” of the farmer means that all external systems, technologies, and customs must serve the survival ethic rather than the economic “rationality.” Therefore, the current dual land system between the city and country blocks the feasibility and effectiveness of the circulation of rural housing land as a supporting system for farmers conducting business and seeking jobs in cities, thereby causing a lack of thoroughness in urbanization and low efficiency of land system reform in rural areas in China.

Over the past 30 years, the household registration system’s function of restraining the free flow and migration of the population has gradually weakened. The system has simply become a tool with which to exclude the rural population in the sharing of resources with urban residents and maintain vested interests [41]. The contradictions in reality can be illustrated as follows: the governments of small and medium-sized cities have to reduce their household threshold because of the low gold content of household registration. By contrast, large cities with a household registration of high gold content tend to raise the household threshold. The great difference between urban and rural areas in the employment and social security system prevents the independent flows of farmers and land and the monetization of the rural land’s social security function. Thus, the difficulty of household registration system reform lies in restoring the single function of the household registration system and cancelling the various additional specific systems (e.g., resource allocation and correct distribution) rather than removing the restraint of the household registration system on the free flow of the population to distinguish between the classification of citizens and a statistical tool for the government. The reform of the household registration system must be enforced, and it should be linked to the reform of the land system.

On this basis, this study proposes the following two hypotheses and performs empirical analysis and testing with the relevant models.

First of all, with the right configuration functions in the urban–rural differential in schooling, housing, and old-age security, the current household registration system in China restrains the transformation of rural housing land from social security to asset. This system is the key factor that affects the circulation of rural housing land. By contrast, in areas with greater efforts toward household registration system reform, farmers are more willing to transfer rural housing land, and the reform of the household registration system can then promote farmers’ willingness to transfer rural housing land. On this basis, the first hypothesis is proposed as follows:

**Hypothesis 1.** *The household registration system may be one of the key factors that affects farmers’ willingness to transfer rural housing land.*

Secondly, given that rural families have different resource endowments (e.g., non-farm employees, economic income level, and per capita wealth of the family), the function of rural housing land in the family security differs, and the expectation of household registration system reform differs, too. Generally, rural families with more non-farm employees, higher economic income, and more per capita wealth pay more attention to the asset function of rural housing land, which replaces their expectation of household registration system reform to some extent. On this basis, the second hypothesis is proposed:

**Hypothesis 2.** *Given that rural families have different resource endowments, the household registration system reform has different influences on families' willingness to transfer rural housing land.*

### 3. Methodology

#### 3.1. Models

To analyze the influence of the household registration system on the willingness of families to transfer rural housing land, comparisons are made from at least two perspectives. First, the difference between the same subject before and after the reform of the household registration system is determined. Second, the difference between the influence on the farmers in the experimental areas implementing household registration system reform and in the non-reform areas (the control area) is determined. These two aspects agree with the basic idea and application scope of the difference-in-difference (DID) method. Thus, the DID method is applied in this study.

The following basic regression form of the DID method is used:

$$Y = \beta_0 + \beta_1 \times T + \beta_2 \times SH + \beta_3 \times (T\_SH) + e \quad (1)$$

where  $T$  represents the time dummy variable ( $T = 0$  before the reform and  $T = 1$  after the reform),  $SH$  represents the area dummy variable ( $SH = 1$  in the experimental area and  $SH = 0$  in the control area),  $T\_SH$  represents the cross term of time and area,  $\beta_3$  is the coefficient of the cross term, which represents the net value of the influence of the reform on the experimental area (or the reform effect), and  $Y$  represents families' willingness to transfer rural housing land (5 = "very willing," 1 = "very unwilling").

However, the DID method is generally based on a basic assumption: the research object and control have the same properties except for the difference in the event happening. The research object and reference object in the project are families from two areas. Their different properties and changing nature will thus influence their willingness to transfer rural housing land. To measure the influence of household registration system reform accurately, the influence of these properties on the observed variables should therefore be controlled for. Thus, the DID method with the introduction of control variables is used in our research to survey the data from the families.

The regression equation is as follows:

$$Y = \beta_0 + \beta_1 \times T + \beta_2 \times SH + \beta_3 \times (T\_SH) + \gamma \times X + e \quad (2)$$

where  $\gamma$  is the influential coefficient vector and  $X$  is the added control variable vector (i.e., the other factors affecting the willingness to transfer rural housing land). With reference to the literature,  $X$  mainly includes family endowment, non-farm labor employment, economic income, support population status and social security of the family, and compensation for demolition.

By adding control variables, the regression of the survey data is conducted by using Equation (2), which not only has the advantages of the DID method, but can also control for the interference of other possible factors, thereby separating the influence of household registration system reform as an external event on the willingness to transfer rural housing land. Moreover, Equation (2) can also determine the other factors that may affect the willingness to transfer rural housing land.

### 3.2. Study Area

The selection of the empirical study area is the most important aspect of this study. According to the requirement of the DID method with the introduction of control variables, an area in which household registration system reform is implemented (the experimental area) and an area in which the reform is not (the control area) should be selected.

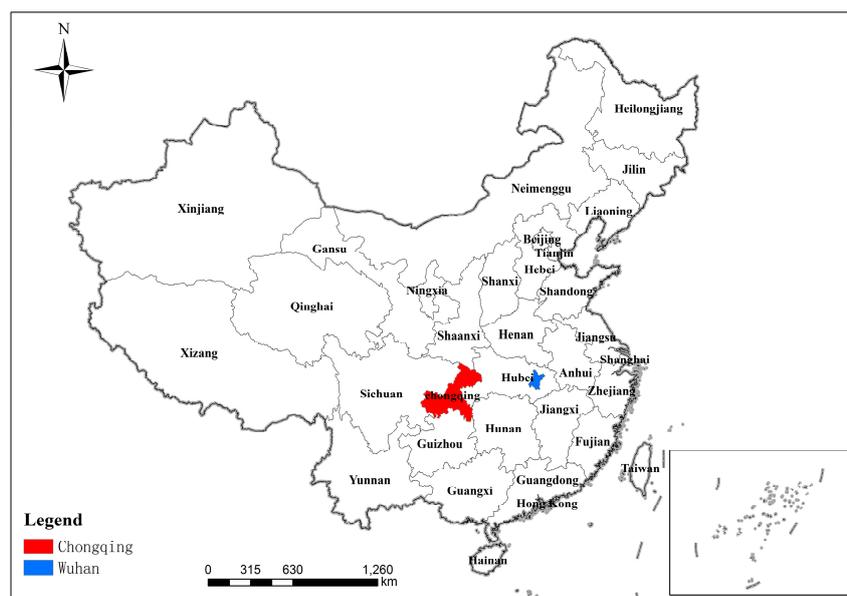
The experimental area should be highly representative. Chongqing is a provincial-level municipality located in south-west China. After being approved to set up the national piloting comprehensive reform for coordinated and balanced urban–rural development, Chongqing has been actively encouraging the urban and rural land system and household registration system reform to vigorously promote urban and rural population migration and land flow in the countryside. The local governments in urban areas have also made great efforts to provide affordable public rental apartments to those who have newly migrated to urban areas from the rural areas of the jurisdiction [42]. In particular, after issuing and implementing the Method on 1 August 2010, the urban and rural land system and household registration system reform was comprehensively promoted in Chongqing. Such intensive reform with wide coverage is highly representative.

In addition, the error of statistical analysis should be reduced. To minimize the influence of other properties on the observed variables in the two areas, in addition to the control variables, the selected area should be adjacent and equal in size and economic strength. Thus, Wuhan City is selected as the control area. Located in central China, Wuhan, the capital of Hubei Province, serves as the political, economic, and cultural center of the province. With an area of 8594 km<sup>2</sup> and a population of 10.2 million, Wuhan administers 13 districts and three states.

Table 1 lists the per capita income level and biophysical indicators of the two cities. Figure 1 shows the location and geographical features of the surveyed areas, including the locations of the two cities.

**Table 1.** General features of the two surveyed cities.

	Area (km <sup>2</sup> )	GDP p.c. (RMB Yuan)	Net Income per Farmer (RMB Yuan)	Housing Area per Farmer (m <sup>2</sup> )	Cropland p.c. (ha)
Wuhan	8594	88,546	12,713	47.82	0.11
Chongqing	82,402	42,795	8332	41.6	0.09



**Figure 1.** Location of the study areas.

### 3.3. Independent Variables

**Family endowment** includes family size, the share of the labor population in the family (%), highest education in the family (years), whether a government staff member is in the family or not, per capita housing area (m<sup>2</sup> per person), and house structure (house made of earth and wood = 1, house made of brick and concrete = 2, house of made steel and concrete = 3). Moreover, the status of the village in which the target families are located should also be considered including being a well-to-do village or not (dummy variable) and being located in the suburbs or not (dummy variable).

**Non-farm labor employment in the family** includes the share of the non-farm employment population in the family (%) and per capita non-farm employment income in the family (yuan per person).

**The economic income of the family** is expressed by the per capita wealth in the family (yuan per person). Wealth is defined as the monetary value of all assets in the family including cash, deposits, foreign investment, foreign borrowing, and the original value of fixed assets minus the borrowings.

**Support population in the family** is expressed by the support rate (the share of people over 65 years in the working-age population (14–64 years)).

**The social security of the family** includes the rate of participation in the new rural cooperative medical care (%) and rate of participation in the new rural endowment insurance.

**Compensation for demolition** includes the compensation standard appeal (current standard = 1, the same as the city demolition standard = 2, negotiation between two sides = 3) and compensation mode appeal = 1 (monetary compensation = 1, property right replacement or others = 0).

### 3.4. Data Collection

Given that Chongqing (the experimental area) implemented the household registration system and rural land exit reform on 1 August 2010, the data in 2009 before the reform and in 2012 after the reform are selected for the comparison. The research group traveled to Jiangjin District, Yongchuan District, Yubei District and Chengkou County in Chongqing and Jiangnan District, Qingshan District, Jiangxia District, and Huangpi District in December 2009 and December 2012. A total of 560 families in 56 administrative villages in these eight districts participated in the survey with 525 and 512 completed questionnaires, respectively. Note that the selected families did not transfer rural housing land because the present circulation of rural housing land is rare. Moreover, among the families that had transferred rural housing land, most were forced to do so in the process of balancing urban and rural development and rural land renovation implemented by the government. Table 2 presents the results of the statistical analysis.

According to Table 2, the average value of the willingness to transfer rural housing land in Chongqing and Wuhan increased from 2.988 and 2.853 in 2009 to 3.545 and 3.491 in 2012, respectively. The average values of Chongqing were thus higher than those of Wuhan, which indicates that families in areas with greater effort placed on household registration system reform are more willing to transfer rural housing land. Further, from the comparison of the results of the 16 independent variables in Chongqing and Wuhan, the difference among the variables is small, which indicates that selecting Wuhan as the control area is reasonable.

**Table 2.** Results of the statistical analysis.

Variable	Chongqing				Wuhan			
	2009		2012		2009		2012	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Farmers' willingness to transfer rural housing land	2.988	1.345	3.545	1.108	2.853	1.412	3.491	1.234
Family size	3.105	1.568	3.121	1.607	3.720	1.864	3.700	1.787
Share of the labor population in the family (%)	53.310	5.078	56.631	5.004	54.875	5.071	54.650	5.066
Highest education in the family (years)	9.317	2.633	10.954	2.685	10.987	2.341	11.214	2.452

Table 2. Cont.

Variable	Chongqing				Wuhan			
	2009		2012		2009		2012	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Whether a government staff member is in the family or not	0.261	0.027	0.261	0.028	0.134	0.022	0.146	0.024
Per capita housing area (m <sup>2</sup> per person)	50.304	11.327	51.16	11.412	60.131	13.042	61.325	12.998
House structure	1.835	0.764	1.900	0.760	2.201	0.569	2.215	0.566
Being a well-to-do village or not	0.132	0.019	0.132	0.019	0.195	0.025	0.195	0.025
Being located in the suburbs or not	0.256	0.077	0.256	0.077	0.230	0.072	0.230	0.072
Share of non-farm employment in the family (%)	41.850	8.324	42.176	8.596	47.953	9.012	49.942	9.134
Per capita non-farm employment income in the family (yuan per person)	3136.5	38.894	3501.8	39.056	3198.4	39.908	3521.6	40.112
Per capita wealth in the family (yuan per person)	31,020	51.368	31,895	53.016	31,094	51.005	31,997	50.542
Support rate (%)	0.264	0.003	0.266	0.002	0.249	0.007	0.256	0.004
Rate of participation in the new rural cooperative medical care (%)	94.530	1.915	95.167	1.995	92.075	1.993	95.034	1.905
Rate of participation in the new rural endowment insurance (%)	30.050	2.310	33.254	2.367	31.921	2.451	33.324	2.314
Compensation standard appeal	2.115	0.350	2.168	0.355	2.243	0.300	2.421	0.330
Compensation method appeal	0.310	0.160	0.295	0.168	0.301	0.180	0.290	0.172

#### 4. Results

Regression analysis is next performed on the model by using the 16 independent variables to examine the extent to which household registration system reform influences the willingness of farmers to transfer rural housing land.

According to Table 3, the estimates of most of the variables are highly significant and the coefficient signs agree with the theoretical expectations, indicating that the estimates are valid. First, the time dummy variable is not significant, indicating that the willingness of farmers to transfer rural housing land does not change significantly before and after the reform. This result may be because the Method of Chongqing was issued in August 2010, but we selected 2012 as the period after the reform. This finding suggests that the effect of the Method has not yet been noted during this short time span. Second, the area dummy variable is significant at the 5% level, indicating a significant difference in farmers' willingness to transfer rural housing land between the experimental area (Chongqing) and control area (Wuhan). The former is 1.29 times more than the latter. Further, the cross term of the time dummy variable and area dummy variable (i.e., the reform effect) is significant at the 1% level, which shows that household registration system reform exerts a significant effect on farmers' willingness to transfer rural housing land, leading to an increase in the share of farmers willing to transfer rural housing land by 37%. Thus, Hypothesis 1 is verified.

The influence of the other control variables on the willingness of farmers to transfer rural housing land can be summarized into the following four points. First, per capita housing area is negatively correlated with farmers' willingness, which indicates that the larger the housing area, the more satisfied farmers are with their houses and the less willing they are to transfer their rural housing land.

Second, being a well-to-do village and being located in the suburbs are negatively correlated with farmers' willingness. Because well-to-do villages have high per capita income and a more comfortable living environment, people are more willing to stay. Farmers living in the suburbs have more chances to rent their houses to obtain long-term and stable property income from their rural housing land. Before normal prices form in the rural housing land market, the long-term and stable rental income of rural housing land is far greater than the circulation income, meaning that farmers are unwilling to transfer their rural housing land and houses.

Third, the per capita employment income of the family is positively correlated with farmers' willingness, which may be caused by two factors. First, the high non-farm employment income indicates long working hours in the city. Thus, farmers can easily integrate into and accept urban life. Second, with a high non-farm employment income, farmers are more capable of bearing the costs for relocation and those of urban life. They can also enjoy the cleanliness and convenience of cities.

Finally, the compensation standard is positively correlated with farmers' willingness. The compensation standard of land expropriation in the countryside has always been the focus of farmers and the core issue in the resulting conflicts. With a higher compensation standard, farmers are more willing to transfer their rural housing land. A good example is that farmers in the areas adjoining towns and suburbs in economically developed places prefer land expropriation so that they can obtain high compensation and urban houses. Thus, Hypothesis 2 is verified.

**Table 3.** Estimates of the difference-in-difference (DID) regression equation.

	Farmers' Willingness to Transfer Rural Housing Land
Time dummy variable	0.11 (1.13)
Area dummy variable	1.29 (2.31) **
Cross term of time and area (reform effect)	1.37 (3.85) ***
Family size	−0.86 (−0.92)
Share of the labor population in the family (%)	2.68 (0.37)
Highest education in the family (years)	0.02 (0.51)
Whether a government staff member is in the family or not	0.96 (1.05)
Per capita housing area (m <sup>2</sup> per person)	−0.01 (−1.62) *
House structure	−0.81 (−0.66)
Being a well-to-do village or not	−0.12 (−1.80) *
Being located in the suburbs or not	−0.33 (−2.58) **
Share of non-farm employment in the family (%)	0.14 (0.11)
Per capita non-farm employment income in the family (yuan per person)	0.00 (1.88) *
Per capita wealth in the family (yuan per person)	0.00 (1.03)
Support rate (%)	−0.02 (−0.96)
Rate of participation in the new rural cooperative medical care (%)	0.18 (0.20)
Rate of participation in the new rural endowment insurance (%)	1.03 (1.22)
Compensation standard appeal	2.04 (4.68) ***
Compensation method appeal	0.71 (0.83)
Constant term	−5 438.42 (−1.16)
Number of samples	1 037
R-squared	0.72

Notes: the value in brackets is the estimate of t; \*, \*\*, and \*\*\* represent the 10%, 5%, and 1% significance levels, respectively.

## 5. Conclusions

This study proposes two hypotheses based on the theoretical analysis and applies the DID method with the introduction of control variables for the quantitative analysis to empirically investigate the influence of the household registration system on farmers' willingness to transfer rural housing land, using survey data on farmers in Chongqing (the experimental area) and Wuhan (the control area). The research finds that the cross term of the time and area dummy variables (i.e., the household registration system reform effect) is significant at the 1% level. This result indicates that the reform has a significant influence on farmers' willingness to transfer rural housing land in the experimental area, thereby leading to an increase in the share of farmers willing to transfer rural housing land by 37%. In areas with greater efforts to reform the household registration system, farmers are more willing to transfer their rural housing land. Moreover, the per capita housing area, being a well-to-do village, and being a village located in the suburbs has a significantly negative correlation with farmers' willingness, whereas the per capita non-farm income of rural households and compensation standard have a significantly positive correlation. The results that the household registration system has simply

become a tool with which to exclude the rural population in the sharing of resources with urban residents and maintain vested interests [41]. Under the dual track household registration system and welfare structure, land provides rural residents with a source of income and social insurance [12]. Knowing that land is a last resort to generate income, rural residents dare to migrate to cities for higher-income jobs, thereby promoting rural labor mobility in China [43].

The above conclusions suggest the following policy implications. Under the current household registration system in China, farmers do not enjoy the same employment, housing, and schooling rights as urban residents. Rural housing land serves as a type of social security, which greatly restricts farmers' willingness to transfer such land and eventually affects their behavior. To promote the circulation of rural housing land, revitalize rural land assets, improve the intensive utilization level of rural land, and optimize the allocation of rural land resources, household registration system reform is thus necessary.

First, we should intensify the reform of the household registration system, remove hukou-based social exclusion [44], reconstruct the system to allocate functions to the reform, establish a link and transformation mechanism between the exit of the rural population from the rural housing land and settlement in cities with the enjoyment of the public services there, and coordinate the joint development of the household registration system and social security system.

Second, we should vigorously promote the integration of urban and rural public services and establish a unified social security system with a combination of fiscal transfer payments related to basic life needs, medical care, education, unemployment, and pensions. Regions with different levels of economic development should aim to promote such a system gradually, whereas economically developed areas can take the lead in establishing a unified public service system. In other words, capable areas are encouraged to carry out experimental reform to include all rural residents within the scope of the basic urban public service provision.

Third, we should develop circulation procedures and a compensation standard as well as regulate circulation behavior to safeguard the use, earning potential, and disposal income of farmers' rural housing land.

Fourth, we should design a policy framework for the reclamation, recovery, reservation, market supply, and supervised use of rural housing land as well as ensure the effective use of circulated rural housing land to improve the intensive utilization of rural land and provide land protection to ensure sustainable economic and social development.

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