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# Rural homestead reform in China: unveiling urbanization dynamics and lessons for sustainable development

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The unique experience of land reform in China holds significant implications for other nations in urgent need of liberating and developing their productivity, providing valuable insights and lessons. This study conducted a micro-level analysis of land reform in China, the United States, and India, focusing on the implications for other nations. Surveys were conducted on 459 households in 12 townships in Zhejiang and Sichuan provinces, China. A random sampling approach was employed, selecting 5 sample counties (cities, districts) across Jinhua, Shaoxing, and Chengdu. Within each county (city, district), 2–3 townships were randomly selected, and 2–3 villages were chosen from each township. Subsequently, 10–20 households were randomly surveyed in each village. Statistical analysis using descriptive statistics and the Logistic model revealed robust results with  $p$  values below 0.05 for key variables. China's new urbanization strategy highlights the necessity of reforming the rural homestead system, particularly as higher urbanization rates prompt farmers to withdraw from and transfer their homesteads worldwide. Tailored homestead policies that consider regional disparities in urbanization levels are crucial. A micro-level survey underscores the impact of urbanization, household head identity, and age on farmers' decisions regarding homestead exit and transfer. Addressing external pressures, efforts should prioritize the revitalization of rural areas and the promotion of sustainable development. This includes enhancing small and medium-sized cities, fostering on-site urbanization, and creating nearby employment opportunities for farmers. However, the effectiveness of these measures varies across regions and is influenced by local levels of marketization. Internally, there is a need to bolster skill training and vocational education for farmers. In summary, the policy recommendations stemming from the micro-level survey in this study offer valuable insights for land reform strategies and sustainable development initiatives, spanning from individual farmers to national policies. They also contribute to a deeper understanding for policymakers, providing a novel analytical perspective.

## KEYWORDS

national policy, degree of urbanization, homestead exit, homestead transfer, farmer behavior

## 1 Introduction

To further liberate productivity and promote regional integrated development, land use in different regions and countries is influenced by various factors such as legal frameworks, government policies, and cultural traditions (Opie, 1994; Chen and Davis, 1998; De Janvry et al., 2001). The land use system in the United States is relatively flexible, allowing farmers to purchase associated land when acquiring residences. Individuals have the freedom to buy, own, and utilize land (Opie, 1994; De Janvry et al., 2001). In the 18th century, the Homestead Act was enacted in the U.S. to encourage migration to the Midwest, granting families willing to reside and cultivate land in the western region 160 acres of land, which could be privately owned after 5 years (Anderson, 2011). However, the free trade of land has brought about issues, including excessive land concentration, uneven resource allocation, and the elimination of small-scale agricultural operators, exacerbating societal inequality. To address these challenges, some countries are actively exploring alternative land use models. For instance, in India, the “Gram Swaraj” movement advocated by Mahatma Gandhi aims to achieve rural self-governance and economic independence (Garg and Raut, 2015). Therefore, in the context of regional integrated development, the effective coordination of national policy implementation and farmers’ agencies is crucial for land system reform.

China, with a population of 1.3 billion and the world’s second-largest economy with a diverse industrial base and abundant labor resources (Keay, 2009), faces unique challenges and opportunities. As of May 11, 2021, the seventh national census in China revealed that the rural population amounted to 509.79 million, accounting for 36.11% of the total population (Tu et al., 2022). According to data from the Ministry of Agriculture and Rural Affairs, the idle rate of rural homesteads in China is 18.1% (Tao et al., 2020). In response to this issue, the Central Committee of the Communist Party of China issued the first policy document of 2021, emphasizing the cautious promotion of the rural homestead system reform pilot, exploring effective forms of separating “ownership, qualification, and use” of homesteads (XIE, 2019). In February 2015, 15 counties (cities, districts) in China were authorized to carry out pilot tasks for rural homestead reform (Zhang et al., 2020, 2021). In November 2017, the reform of the homestead system in China expanded to all 33 pilot counties (cities, districts). By the end of 2018, these pilot areas had successfully vacated approximately 140,000 households and 84,000 acres of sporadically used and idle homesteads. On October 26, 2020, the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China proposed to promote the formation of a new type of urban–rural relationship characterized by mutual promotion between industry and agriculture, complementarity between urban and rural areas, and coordinated development for common prosperity (Thanh, 2017; Chong et al., 2021). The study of China’s land system reform holds practical guidance for other developing countries and is of great significance for the ongoing liberation and development of productivity in the future. Rural land transfer and withdrawal pose significant challenges for all three countries, particularly amidst rapid urbanization, necessitating innovative approaches to rural land utilization and management (Levien, 2012; Durst and Wegmann, 2017; Huang et al., 2018; Tian and Zheng, 2022). Tailored homestead policies that consider regional disparities in

urbanization levels are crucial (Siciliano, 2012). China’s new urbanization strategy highlights the necessity of reforming the rural homestead system, particularly as higher urbanization rates prompt farmers to withdraw from and transfer their homesteads worldwide.

## 2 Literature review

### 2.1 Overview of land reform policies in different countries

In the context of regional integrated development, the effective coordination between the implementation of national policies and the agency of farmers is crucial for land system reform. Unlike the mature market for land-free trade in the United States and the exploratory stage of land reform in India, China has made initial achievements in rural homestead reform (Table 1). China continually explores and practices, enacting laws and regulations at the national level, prioritizing the rights and interests of the people (Zhang, 1997; Chen and Davis, 1998). A significant number of farmers are continually migrating to urban areas, enabling the activation of more rural land resources and providing cities with a substantial labor force, thereby promoting regional development (Deng and Huang, 2004). However, migrant workers in cities not only seek urban resident status and corresponding welfare benefits but also need to align with urban residents in terms of social rights, production and lifestyle, and values. We define this phenomenon as the degree of urbanization (Araghi, 1995; Friedmann, 2005). The degree of urbanization is influenced by national policies, cultural heritage, and other factors, and it further affects the awareness and behavior of farmers in land reform. China’s homestead reform is closely related to economic, social, and individual family factors, and these factors mutually influence each other (Zhang, 1997; Keay, 2009; Zhang et al., 2020). Under the national policy emphasizing people-centered development, the acceleration of the degree of urbanization has further expedited homestead reform.

### 2.2 Relationship between urbanization and homestead reform

As the process of urbanization accelerates, there is a gradual transformation in farmers’ occupational identities and residential spaces (Sun et al., 2011; Liu et al., 2022). The increased stability of farmers in urban life and work reduces their dependence on homesteads, leading to phenomena such as single households owning multiple homesteads and the emergence of “hollow villages.” Moreover, urbanization alters farmers’ income structures, with increased non-agricultural employment income (Sun et al., 2011; Li, 2017). As income levels rise, there is an improvement in the welfare of household members. The income effects of urbanization to some extent weaken the survival security provided by homesteads, further promoting farmers’ withdrawal and transfer of homesteads. Due to variations in economic and social development levels, the relationship between the government and the market, the development of non-state-owned economies, and the degree of openness to the outside world, there are significant differences in the degree of marketization across regions (Fan et al., 2011; Chen et al., 2021). In regions with higher marketization, homestead property rights are

TABLE 1 Comparison of land system reform policies in different countries.

United States: land policies timeline	India: land policies timeline	China: land policies timeline
1862: Homestead Act Time: 1862 Policy Bill and Content: The Homestead Act allowed any U.S. citizen over the age of 21 to acquire ownership of 160 acres of land by residing on and cultivating the land.	1950s: Land Reforms Time: 1950s Policy Bill and Content: In the early years of Indian independence, various states implemented their own land reform measures. Some states passed laws redistributing land from large landowners to alleviate the burden on farmers and enhance agricultural productivity.	Early 1950s: Land Reform Time: Early 1950s Policy Bill and Content: Implemented collective land ownership by confiscating land from landlords and redistributing it to farmers. The land reform policies during this period aimed to eliminate feudal landlord systems and promote farmers' land ownership.
Mid-19th Century: Land Grant Acts Time: 19th Century (mid) Policy Bill and Content: The Land Grant Acts provided federal land to states for the establishment of agricultural and mechanical colleges. These acts aimed to enhance agricultural and industrial technological levels, promoting sustainable land utilization.	1953: First Nationwide Land Reforms Time: 1953 Policy Bill and Content: The Indian central government enacted a series of land reform laws, including reforms to the feudal land system and the redistribution of agricultural land. However, the implementation of these policies varied across states.	After 1978: Household Responsibility System Time: After 1978 Policy Bill and Content: Following economic reforms and opening up, China gradually introduced the Household Responsibility System, allowing farmers to contract and manage land independently, taking responsibility for profits and losses.
1934: Indian Reorganization Act Time: 1934 Policy Bill and Content: The Indian Reorganization Act aimed to end the system of allotting land to Native Americans, supporting tribal self-management, and restoring land ownership.	1970s: Second Nationwide Land Reforms Time: 1970s Policy Bill and Content: The Indian government took measures such as enacting regulations to limit the maximum area of land holdings and promoting land redistribution through land reform laws. These policies aimed to reduce land inequality and enhance the socio-economic status of farmers.	Late 1980s to Early 1990s: Rural Land Contractual Operation Rights Confirmation Registration Time: Late 1980s to Early 1990s Policy Bill and Content: The confirmation registration of rural land contractual operation rights was carried out to clarify farmers' land rights and enhance the clarity of land use.
1930s: Agricultural Adjustment Acts during the New Deal Time: 20th Century (1930s) Policy Bill and Content: During the New Deal era led by President Roosevelt, a series of acts were passed in response to the Great Depression. Some of these acts involved agricultural adjustments, including payments to farmers to reduce production and increase agricultural product prices. This indirectly impacted land use and agricultural structure.	2006: The Forest Rights Act Time: 2006 Policy Bill and Content: The Forest Rights Act aimed to protect the land rights of indigenous tribes and other traditional forest dwellers in India, allowing them to acquire and hold forest land.	2008: Rural Land System Reform Time: 2008 Policy Bill and Content: China initiated a new round of rural land system reform in 2008. This included expanding trials of the rural homestead system, improving the transfer system of farmers' land contractual operation rights, and promoting the scale of agricultural land operation.
1938: National Agricultural Act Time: 1938 Policy Bill and Content: The National Agricultural Act established some fundamental principles of agricultural policy, including price support and land conservation.	2013: Land Acquisition Rehabilitation and Resettlement Act Time: 2013 Policy Bill and Content: This act regulated land acquisition in India and specified procedures and rules for providing compensation, rehabilitation, and resettlement to those whose land was acquired.	2014 Onwards: Rural Homestead System Reform Plan Time: 2014 Onwards Policy Bill and Content: Nationwide implementation of reforms in the rural homestead system, including changes in ownership, usage rights, and allocation of rural homesteads and construction land.
1936: Soil Conservation and Domestic Allotment Act Time: 1936 Policy Bill and Content: The Soil Conservation and Domestic Allotment Act encouraged farmers to implement soil conservation measures and provided economic incentives for such practices.	Recent Years: National Agricultural Policy Time: Recent years Policy Bill and Content: The Indian government continuously formulates and amends national agricultural policies to support the development of the agricultural sector. This includes support in the form of loans, irrigation facilities, technical assistance, etc., to promote sustainable land use and increase agricultural yield.	2018: Rural Revitalization Strategy Time: 2018 Policy Bill and Content: China introduced the Rural Revitalization Strategy, emphasizing reforms in the land system and optimizing land-use structures to promote diversified development in rural economies.

clear, and land rights are tradable. The convenience of trading rural residences and homesteads is higher, and the government provides robust institutional support for the establishment of the homestead trading market. Thus, increased urbanization enables farmers to obtain more property income through more market-oriented homestead transfers (Happe, 2004; Lu et al., 2020). In areas with strong policy influence but weaker marketization, farmers, as suppliers of homesteads, may not gain additional income with increased urbanization. This impedes their willingness to transfer homesteads,

as they receive subsidies but no additional profits from homestead withdrawal (Smith, 2014).

The higher the level of urbanization, the stronger the willingness of farmers to participate in homestead exit and transfer. Promoting homestead policies among highly urbanized farmers in regions with high urbanization levels is likely to encourage them to make decisions regarding homestead exit and transfer. However, similar efforts in regions with lower urbanization levels may yield limited results. Therefore, based on field survey data from 12 townships in Zhejiang

and Sichuan provinces, two experimental areas for homestead reform in China, comprising a total of 459 households, this study constructs an econometric model to empirically test the impact mechanism of urbanization level on farmers' homestead exit and transfer behavior. From the perspective of urbanization, this paper empirically analyzes farmers' participation in homestead exit and transfer behavior. Based on theoretical analysis, the following research hypotheses are proposed:

*H1:* The higher the level of urbanization, the more farmers will reduce their dependence on homesteads, thereby driving them to make decisions regarding homestead exit and transfer.

*H2:* In areas with high marketization levels, higher urbanization levels will encourage farmers to choose homestead transfer rather than homestead exit. In areas with low marketization levels, higher urbanization levels will lead farmers to choose homestead exit rather than homestead transfer.

The purpose of this study is to clarify the extent to which the level of urbanization, encouraged by national policies, influences farmers' participation in homestead exit and transfer. The aim is to provide policy suggestions for the promotion and innovation of land reform policies in China and potentially for different countries worldwide.

## 3 Materials and methods

### 3.1 Data source

This study selected the national homestead reform pilot areas - Jinhua City and Shaoxing City in Zhejiang Province, and Chengdu City in Sichuan Province - as case study points. In each of these cities, five sample counties (or districts) were selected: Yiwu, Keqiao, Shangyu, Pidou, and Wenjiang. Two to three townships were randomly chosen in each county (or district), and 2–3 villages were selected in each township. Subsequently, 10–20 households were randomly chosen in each village. The survey was conducted through one-on-one questionnaire interviews between investigators and farmers. A total of 461 questionnaires were collected, with 459 valid samples, resulting in a valid sample rate of 99.6%. The survey covered aspects such as farmers' basic information, homestead information, farmers' cognition, willingness, and participation in homestead exit and transfer.

### 3.2 Variable selection

#### 3.2.1 Dependent variables

This study focuses on farmers' homestead qualification exit and homestead usage rights transfer behaviors. Two binary variables, "Whether the farmer exits the homestead" and "Whether the farmer transfers the homestead," were chosen to measure farmers' homestead exit and transfer behaviors, respectively. According to the "Central Document No. 1" of 2018, when farmers no longer have homestead qualification rights, it is considered that the farmer has participated in homestead exit behavior (Yuan et al., 2022). For homestead usage

rights transfer, as per the principle of integrated housing and land, various methods such as renting, mortgaging, and transferring are considered homestead transfer behaviors when adopted by farmers.

#### 3.2.2 Key variables

Some scholars have used indicators such as farmers' non-agricultural income levels, years of working outside the village, and whether they have urban hukou (household registration) to measure farmers' urbanization level (Xiao and Zhao, 2018; Zhao et al., 2019). This study uses indicators "Whether the farmer has purchased a house in the city" and "Whether the farmer's work in the city is stable" as proxy variables for the urbanization level. Considering the lag effect of urbanization on farmers' homestead exit (Woods, 2006), data from the year 2017 were used to investigate the impact of urbanization on farmers' homestead exit and transfer behaviors in 2018 (the year of implementation of the reform).

#### 3.2.3 Control variables

Scholars studying homestead exit have used four aspects of control variables: (1) Individual characteristics of the household head. Gender, age, education level, whether the household head is a village cadre, and employment type may influence farmers' intentions and decisions (Zhang et al., 2020). (2) Family characteristics. The total population of the family, the number of agricultural laborers, total family income, the proportion of non-agricultural income to total income, and the overall health status of family members are considered as family characteristics (Chen et al., 2017). (3) Cognitive variables. Farmers' understanding and evaluation of homestead policies were selected as control variables (Shi et al., 2022). (4) To consider the regional differences in the impact of homestead exit, dummy variables for regions were introduced into the model as controls. The urbanization rates of Jinhua City, Shaoxing City, and Chengdu City were 67.7, 66.6, and 73.12%, respectively (2018 statistical reports). Chengdu City was chosen as the reference group, and Yiwu City and Shaoxing City were treated as dummy variables in the model for control (Table 2).

### 3.3 Research methods

This study primarily analyzes the impact of urbanization on farmers' homestead exit and transfer behaviors. As the dependent variables are "Whether the farmer exits the homestead" and "Whether the farmer transfers the homestead," represented by "1" for farmers who have exited or transferred and "0" for those who have not, they fall into the category of 0–1 type binary choice variables. Therefore, it is suitable to use binary logistic models for analysis (Sartori, 2003). The basic form of the model is as follows:

$$P_i = \text{pro}(y) = \frac{e^z}{1 + e^z} \quad (1)$$

$$Z = \beta_0 + \beta_1 \text{urbanization}_i + \sum \beta_i x_i + \varepsilon_i \quad (2)$$

$$\text{Ln}\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 \text{urbanization}_i + \sum \beta_i x_i + \varepsilon_i \quad (3)$$

TABLE 2 Explanation and statistical description of sample variables.

Variable type	Variable name	Variable assignment	Mean	Standard deviation	Minimum	Maximum
Dependent variable	Are rural households withdrawing from homestead land	Yes = 1; No = 0	0.21	0.41	0	1
	Are rural households transferring the rights to use homestead land	Yes = 1; No = 0	0.27	0.45	0	1
Key variables	Whether farmers have purchased housing in urban areas	Yes = 1; No = 0	0.29	0.46	0	1
	Is the employment of rural residents in urban areas stable	Yes = 1; No = 0	0.17	0.38	0	1
Characteristics of the head of household individual	Gender	Male = 1; Female = 0	0.86	0.35	0	1
	Age	Age	56.49	11.59	22	85
	Educational level	Primary school and below = 1; Junior high school = 2; Senior high school = 3; Junior college and above = 4	1.93	0.83	1	4
	Employment type	Agricultural production = 1; Part-time farmers = 2; Working outside (or non-agricultural employment) = 3; Self-employed or freelancer = 4; Stable urban job = 5; Other = 6	3.30	1.86	1	6
	Village official status	Yes = 1; No = 0	0.19	0.39	0	1
Family characteristics	Total household population	Person	4.15	1.62	1	12
	Number of agricultural laborers	Person	0.78	1.17	0	9
	Total annual household income	Ten Thousand Yuan (RMB)	15.11	28.17	0.5	500
	Percentage of non-agricultural income	Percentage (%)	81.67	29.80	0	100
	Overall health status of household members	Very poor, with severe illness/long-term bedridden patient = 1; Poor, with chronic illness = 2; Fair = 3; Good = 4; Very good = 5	3.97	1.10	1	5
Farmers' perception of policies	Level of understanding among farmers regarding the rural homestead policy	Full understanding = 1; Partial understanding = 2; No understanding at all = 3	2.47	0.72	1	3
	Farmers' stance on the rural homestead policy	Supportive, in line with the overall trend = 1; Indifferent, of limited significance = 2; Harmful to farmers' interests, affecting rural social stability = 3	1.21	0.43	1	3



In Eq. 1,  $P_i$  represents the probability of farmers' homestead exit or transfer.

In Eq. 2,  $urbanization_i$  represents the urbanization level, with "Whether the farmer has purchased a house in the city" and "Whether the farmer's work in the city is stable" as key explanatory variables.  $x_i$  represents the control variables,  $\beta_i$  is the regression coefficient, and  $\beta_0$  is the constant term.

In the model, assuming the probability of farmers participating in homestead exit behavior is denoted as  $P$  (dependent variable  $Y=1$ ), the probability of farmers not exiting the homestead is denoted as  $1-P$  (dependent variable  $Y=0$ ). The same applies for the probability of farmers participating in homestead transfer behavior. Taking the

natural logarithm  $P/(1-P)$  of the odds  $Ln\left(\frac{P_i}{1-P_i}\right)$ , as shown in Eq. 3,

yields a linear expression of the probability function and the independent variables. Additionally, to ensure the robustness of the model, this study uses the alternative variable "Number of urban houses owned by farmers" to investigate the impact of urbanization on farmers' participation in homestead exit behavior.

### 3.4 Statistical analyses

Analysis of variance (ANOVA) was performed using SPSS 20.0 (IBM Corp., Armonk, NY, United States). Means were tested by the least significant difference at  $p < 0.05$  (LSD 0.05). The logistic model analysis was conducted using Stata 16.0 software.

## 4 Result

### 4.1 Empirical analysis of the impact of urbanization on farmers' homestead exit and transfer behaviors

The analysis of homestead exit behavior among farmers reveals that in Chengdu, the city with the highest rate, 56% of farmers have exited their homesteads (Table 3). Following Chengdu, Jinhua has the second-highest rate at 44%, and Shaoxing has the lowest at 18%. In contrast, the analysis of homestead transfer behavior indicates that Jinhua has the highest rate of 95%, significantly higher than the 5% observed in Shaoxing. The behavior of transferring homesteads constitutes 51%, surpassing the 44% observed for homestead exit behavior.

From the estimated results of the Logistic model, it can be observed that in the process of urbanization, farmers participating in homestead exit behavior are 9.69% more likely to do so if they have purchased a house in urban areas compared to those who have not, and farmers with stable urban employment are 0.49% more likely to participate in homestead exit behavior than those with unstable employment (Table 4). Similarly, in the urbanization process, farmers participating in homestead transfer behavior are 11.10% more likely to do so if they have purchased a house in urban areas compared to those who have not, and farmers with stable urban employment are 0.52% more likely to engage in homestead transfer behavior than those with unstable employment. The marginal effect of the key

variable "whether farmers have purchased a house in urban areas" is greater than that of "whether farmers have stable urban employment."

The gender of the household head has a positive impact on farmers' homestead exit behavior (Table 4). Whether the household head is a village cadre has a positive impact on both homestead exit and transfer behavior. Total annual family income has a positive impact on farmers' homestead exit behavior. Additionally, the level of farmers' understanding of homestead exit policies has a positive impact on homestead exit behavior, while the age of the household head has a negative impact on both homestead exit and transfer behavior. Regarding regional characteristics, there are differences in the impact of urbanization on farmers' homestead exit and transfer behavior among different regions. Compared to the reference group Chengdu, farmers in Jinhua show a more pronounced tendency to participate in homestead exit and transfer behavior, as is the case in Shaoxing.

There are significant differences in farmers' participation in homestead exit and transfer behavior between Zhejiang and Sichuan provinces (Table 5). The impact of urbanization on farmers' participation in homestead transfer behavior is significant in Zhejiang Province, while it is not significant for farmers' participation in homestead exit behavior. However, in Sichuan Province, the impact of urbanization on farmers' participation in homestead exit behavior is significant, while it is not significant for farmers' participation in homestead transfer behavior.

For farmers' homestead exit behavior, those who purchase multiple urban houses are 11.4% more likely to participate compared to those who purchase fewer or no urban houses, and the result is statistically significant at the 5% significance level (Table 5). Regarding farmers' homestead transfer behavior, those who purchase multiple urban houses are 17.9% more likely to participate compared to those who purchase fewer or no urban houses, and the result is statistically significant at the 1% significance level.

## 5 Discussion

### 5.1 Adhering to people-centered homestead reform to further liberate productivity

The United States, the world's largest economy, is dominated by advanced technology, finance, and services, with a population exceeding 300 million. China, as the world's second-largest economy with a population exceeding 1.3 billion, is renowned for its robust manufacturing sector and rapid growth. India, the sixth-largest economy globally, relies on the service sector, with a population also exceeding 1.3 billion (Harris, 2005; Srinivasan, 2006; Kagan, 2013). Despite these distinctions, all three nations share both similarities and differences in rural land transfer and withdrawal processes.

Rural land transfer and withdrawal pose significant challenges for all three countries, particularly amidst rapid urbanization, necessitating innovative approaches to rural land utilization and management (Levien, 2012; Durst and Wegmann, 2017; Huang et al., 2018; Tian and Zheng, 2022). Initiatives are underway to enact legislation, bolster land management practices, and protect the rights of farmers. However, land policy reforms in China, the United States, and India are intricately shaped by social and cultural nuances,

TABLE 3 Descriptive statistics of farmers' participation in the exit and circulation of homesteads.

Province	Sample points	Rural household involvement in homestead land withdrawal actions			Rural household participation in homestead land transfer activities		
		Exited	Not exited	Total	Transferred	Not transferred	Total
		Percentage (%)	Percentage (%)	Percentage (%)	Percentage (%)	Percentage (%)	Percentage (%)
Zhejiang province	Jinhua City	44	56	100	95	5	100
	Shaoxing City	18	82	100	5	95	100
Sichuan province	Chengdu City	56	44	100	67	33	100
Total		44	56	100	51	49	100

including traditional values, regional practices, and perceptions of land ownership. These factors contribute to the gradual and multifaceted nature of the reform process, amplifying its complexity.

The extent and manner of government intervention, the structure of land ownership, and the effects of urbanization vary among the three countries discussed. The land policies in the United States favor large-scale farmers, leading to the gradual elimination of small-scale agricultural operators and widening socio-economic disparities, emphasizing economic development and exacerbating social inequality (Durst and Wegmann, 2017) (Table 1). In contrast, in countries like India, cautious approaches to land transfer and ownership stem from deep-rooted cultural norms. Despite the enactment of the "Homestead Act" in 1996, its practical implementation is hindered by social dynamics, religious beliefs, and historical legacies, resulting in challenges such as weak enforcement and regional disparities (Tsosie, 2003; Jenkins, 2013). China, on the other hand, prioritizes safeguarding the basic rights of its citizens concerning land ownership and transfer (Deng and Huang, 2004). To facilitate the process of rural homestead transfer, the Chinese government has implemented various national laws and regulations, including the "Regulations on Homesteads in the People's Republic of China" and the "Management Measures for the Transfer and Operation of Homestead Use Rights in Rural Areas." (Zhou et al., 2020; Wang and Liu, 2022). Concurrently, efforts have been made to bolster rural social security systems, enhance farmer welfare, provide subsidies for land transfer, and protect the interests of the majority of farmers (Zhang et al., 2021). Moreover, essential prerequisites for rural land system reform and revitalization include strengthening farmer education and awareness, aligning traditional land concepts with modern societal needs, and promoting legal literacy among rural populations (De Janvry et al., 2001). As urbanization progresses, the proportion of urban dwellers increases, accompanied by a rise in agricultural migrant populations. Urban infrastructure development continues apace, alongside reforms to the household registration system, driving urban expansion (Zhang, 1997; Chen and Davis, 1998). However, the pace and nature of urbanization vary across regions, presenting challenges such as urban poverty and social security concerns. To address these issues, governments must adapt policies to foster sustainable and equitable urban development (Spicker, 2013).

The socio-economic, cultural, and political determinants shaping land use dynamics in China may diverge notably from those in other

nations. Nevertheless, embracing concepts like "policy-oriented learning," "lesson-drawing," "social learning," and "government learning" can assist regions or nations seeking to undertake rural homestead reforms in tailoring policies to suit local contexts (Bennett and Howlett, 1992). By embracing these principles of learning and adaptation, countries or regions embarking on rural homestead reforms can enhance their chances of success while minimizing potential risks and challenges (Dolowitz and Marsh, 2000). Ultimately, the goal is to create policies that are not only effective in achieving their intended objectives but also equitable, sustainable, and responsive to the diverse needs of rural communities.

Therefore, China's new urbanization strategy highlights the necessity of reforming the rural homestead system, particularly as higher urbanization rates prompt farmers to withdraw from and transfer their homesteads worldwide. Tailored homestead policies that consider regional disparities in urbanization levels are crucial.

## 5.2 The interplay and regional differences between urbanization and land reform

With the implementation of the new urbanization strategy, the drawbacks of the rural homestead system have become apparent (Shi et al., 2022). The "internalization" of institutional changes highlights the necessity of reforming the rural homestead system (Chen and Davis, 1998; Lu et al., 2020; Zhou et al., 2020). In the process of urbanization, the likelihood of farmers participating in homestead exit behavior is 9.69% higher for those who purchase houses in urban areas than for those who do not, and it is 0.49% higher for those with stable urban employment compared to those with unstable employment (Table 3). Similarly, in the urbanization process, farmers engaging in homestead transfer behavior are 11.10% more likely to have purchased houses in urban areas and 0.52% more likely to have stable urban employment (Table 6). Furthermore, for homestead exit behavior, farmers who purchase multiple houses in urban areas are 11.4% more likely than those who do not purchase houses. The findings of our study parallel those of Shi et al. (2022), indicating that the level of urbanization significantly influences farmers' engagement in homestead exit and transfer behaviors. Moreover, heightened urbanization levels can effectively stimulate farmers' decisions to exit and transfer their homesteads.

TABLE 4 Logistic model estimation result.

variable type	Variable name	Rural household homestead land withdrawal activity		Rural household homestead land transfer behavior	
		Coefficient	Marginal effect	Coefficient	Marginal effect
Key variables	Whether farmers have purchased housing in urban areas	0.680**	0.097**	0.923***	0.111***
		(2.19)	(2.23)	(2.87)	(2.91)
	Whether farmers have purchased housing in urban areas	0.034*	0.005*	0.043*	0.005*
		(1.86)	(1.87)	(1.79)	(1.81)
Household head individual characteristics	Gender	0.826**	0.118**	0.204	0.024
		(2.15)	(2.21)	(0.44)	(0.44)
	Age	-1.077**	-0.153**	-0.029*	-0.004*
		(-2.13)	(-2.15)	(-1.91)	(-1.91)
	Educational level	0.172	0.024	-0.047	-0.006
		(1.03)	(1.03)	(-0.23)	(-0.23)
	Employment type	-0.067	-0.009	-0.140	-0.016
		(-0.77)	(-0.77)	(-1.30)	(-1.30)
Village official status	0.014**	0.002**	0.015**	0.001**	
	(2.22)	(2.21)	(2.43)	(2.38)	
Family characteristics	Total household population	-0.108	-0.015	-0.092	-0.011
		(-1.35)	(-1.36)	(-1.09)	(-1.10)
	Number of agricultural laborers	-0.006	-0.001	-0.071	-0.008
		(-0.03)	(-0.03)	(-0.33)	(-0.33)
	Total annual household income	0.021*	0.003*	0.021	0.002
		(1.88)	(1.89)	(1.46)	(1.47)
Percentage of non-agricultural income	0.213	0.030	-0.159	-0.019	
	(0.66)	(0.67)	(-0.47)	(-0.47)	
Overall health status of household members	0.030	0.004	-0.033	-0.004	
	(0.23)	(0.23)	(-0.26)	(-0.26)	
Farmers' perception of policies	Level of awareness among rural residents regarding homestead land policies	0.568*	0.081*	-0.102	-0.012
		(1.75)	(1.76)	(-0.48)	(-0.48)
	Support for homestead land policies among rural residents	0.166	0.023	-0.100	-0.012
		(0.48)	(0.48)	(-0.25)	(-0.25)
Region	Jinhua City	1.505***	0.214***	3.556***	0.429***
		(4.05)	(4.31)	(8.61)	(11.29)
	Jinhua City	0.067	0.009	0.134	0.016
		(0.16)	(0.16)	(0.29)	(0.29)
Constant term		-0.317		-0.420	
		(-0.23)		(-0.28)	
Number of obs		459		258	
Wald chi2 (Durst and Wegmann, 2017)		57.29		144.24	
Prob > chi2		0.0000		0.0000	
Pseudo R2		0.1387		0.3537	

The symbols \*\*\*, \*\*, and \* denote significance levels at 1, 5, and 10%, respectively.



TABLE 5 The impact of the degree of civilization on farmers' participation in the withdrawal and transfer of homesteads varies in different regions.

Variable type	Variable Name	Zhejiang province				Sichuan province			
		Rural household homestead land withdrawal actions		Rural household homestead land transfer behaviors		Rural household homestead land withdrawal actions		Rural household homestead land transfer behaviors	
		Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
Key variables	Whether farmers have purchased housing in urban areas	0.207	0.041	0.127*	0.022*	0.328*	0.051*	0.127	0.022
		(0.63)	(0.63)	(1.71)	(1.83)	(1.93)	(1.89)	(0.50)	(0.50)
	Whether farmers have purchased housing in urban areas	0.032	0.006	0.051**	0.009**	0.040**	0.006**	0.051	0.009
		(1.37)	(1.38)	(2.05)	(2.06)	(2.01)	(2.01)	(1.05)	(1.32)
Household Head individual characteristics	Gender	0.642	0.127	0.999**	0.179**	0.751**	0.116**	0.999**	0.179**
		(1.20)	(1.21)	(2.38)	(2.46)	(2.01)	(2.04)	(2.38)	(2.46)
	Age	-0.742	-0.146	-0.046***	-0.008***	-0.935**	-0.144**	-0.047***	-0.008***
		(-1.24)	(-1.25)	(-3.86)	(-4.13)	(-2.01)	(-2.02)	(-3.86)	(-4.13)
	Educational level	0.157	0.031	0.131	0.023	0.165	0.025	0.131	0.023
		(0.78)	(0.78)	(0.81)	(0.81)	(1.04)	(1.04)	(0.81)	(0.81)
	Employment type	0.052	0.010	0.103	0.018	0.005	0.001	0.103	0.018
		(0.52)	(0.52)	(1.28)	(1.30)	(0.08)	(0.08)	(1.28)	(1.30)
Village official status	0.021**	0.004**	0.021***	0.004***	0.017**	0.003***	0.021***	0.004***	
	(2.17)	(2.19)	(2.63)	(2.72)	(2.57)	(2.58)	(2.63)	(2.72)	
Family characteristics	Total household population	-0.123	-0.024	-0.128	-0.022	-0.131	-0.020	-0.128	-0.022
		(-1.28)	(-1.29)	(-1.53)	(-1.55)	(-1.59)	(-1.60)	(-1.53)	(-1.55)
	Number of agricultural laborers	-0.620**	-0.122**	-0.213	-0.038	-0.096	-0.014	-0.213	-0.038
		(-2.00)	(-2.04)	(-1.11)	(-1.12)	(-0.53)	(-0.53)	(-1.11)	(-1.12)
	Total annual household income	0.024*	0.004*	0.040**	0.007**	0.028**	0.004**	0.040**	0.007**
		(1.69)	(1.71)	(2.29)	(2.30)	(2.41)	(2.43)	(2.29)	(2.30)
	Percentage of non-agricultural income	0.026	0.005	0.061	0.011	0.251	0.038	0.061	0.011
		(0.07)	(0.07)	(0.22)	(0.22)	(0.80)	(0.80)	(0.22)	(0.22)
Overall health status of household members	0.170	0.033	0.042	0.007	0.061	0.009	0.042	0.007	
	(1.02)	(1.02)	(0.41)	(0.41)	(0.50)	(0.50)	(0.41)	(0.41)	

(Continued)

TABLE 5 (Continued)

Variable type	Variable Name	Zhejiang province				Sichuan province			
		Rural household homestead land withdrawal actions		Rural household homestead land transfer behaviors		Rural household homestead land withdrawal actions		Rural household homestead land transfer behaviors	
		Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
Farmers' perception of policies	Level of awareness among rural residents regarding homestead land policies	0.306	0.060	0.009	0.001	0.515*	0.079*	0.009	0.001
		(0.75)	(0.75)	(0.05)	(0.05)	(1.71)	(1.72)	(0.05)	(0.05)
	Support for homestead land policies among rural residents	0.055	0.011	0.225	0.040	0.022	0.003	0.225	0.040
		(0.13)	(0.13)	(0.79)	(0.80)	(0.07)	(0.07)	(0.79)	(0.80)
Constant term		−2.200		−1.062		−0.763		−1.062	
		(−1.18)		(−0.76)		(−0.59)		(−0.76)	
Number of obs		222		154		237		104	
Wald chi2 (Durst and Wegmann, 2017)		56.23		42.40		32.71		42.40	
Prob > chi2		0.0000		0.0000		0.0000		0.0000	
Pseudo R2		0.1367		0.1339		0.0798		0.1339	

The symbols \*\*\*, \*\*, and \* denote significance levels at 1, 5, and 10%, respectively.

TABLE 6 Logistic model estimation results: robustness test.

Variable type	Variable name	Rural household homestead land withdrawal actions		Rural household homestead land transfer behaviors	
		Coefficient	Marginal effect	Coefficient	Marginal effect
Key variables	Whether farmers have purchased housing in urban areas	0.797** (2.15)	0.114** (2.20)	1.518*** (4.21)	0.179*** (4.32)
	Whether farmers have purchased housing in urban areas	0.032* (1.78)	0.004* (1.79)	-0.045* (-1.78)	-0.005* (-1.80)
Family characteristics	Total household population	0.846** (2.24)	0.121** (2.30)	0.099 (0.21)	0.011 (0.21)
	Number of agricultural laborers	-1.051** (-2.11)	-0.150** (-2.13)	-0.028* (-1.77)	-0.003* (-1.75)
	Total annual household income	0.167 (1.00)	0.023 (1.01)	-0.055 (-0.27)	-0.006 (-0.27)
	Percentage of non-agricultural income	-0.077 (-0.87)	-0.011 (-0.87)	-0.146 (-1.34)	-0.017 (-1.35)
	Overall health status of household members	0.013** (2.17)	0.001** (2.16)	0.014** (2.37)	0.001** (2.34)
	Family characteristics	Total household population	-0.113 (-1.41)	-0.016 (-1.42)	-0.109 (-1.26)
Number of agricultural laborers		-0.014 (-0.07)	-0.002 (-0.07)	-0.123 (-0.58)	-0.014 (-0.58)
Total annual household income		0.020* (1.90)	0.002* (1.91)	0.024 (1.58)	0.002 (1.60)
Percentage of non-agricultural income		0.245 (0.78)	0.035 (0.79)	-0.179 (-0.54)	-0.021 (-0.54)
Overall health status of household members		0.022 (0.18)	0.003 (0.18)	-0.077 (-0.59)	-0.009 (-0.59)
Farmers' perception of policies		Level of Awareness Among Rural Residents Regarding Homestead Land Policies	0.580* (1.83)	0.082* (1.84)	-0.119 (-0.54)
	Support for Homestead Land Policies Among Rural Residents	0.150 (0.44)	0.021 (0.44)	-0.181 (-0.46)	-0.021 (-0.46)
Region	Jinhua City	0.858* (1.88)	0.123* (1.89)	2.341*** (5.24)	0.276*** (6.01)
	Jinhua City	0.117 (0.27)	0.016 (0.27)	-0.376 (-0.86)	-0.044 (-0.86)
Constant term			-0.211 (-0.15)		-0.134 (-0.09)
Number of obs			459		258
Wald chi2 (16)			58.57		140.67
Prob > chi2			0.0000		0.000
Pseudo R2			0.1388		0.3692

The symbols \*\*\*, \*\*, and \* denote significance levels at 1, 5, and 10%, respectively.

The survival and development capabilities of farmers in the process of urbanization have a significant positive impact on the willingness of rural migrant workers to settle in urban areas (Sim and Print, 2005; Chen et al., 2017; Gao et al., 2022). Non-agricultural income and non-agricultural employment ability have a positive impact on farmers' willingness to exit homesteads. For farmers engaging in homestead transfer behavior in our study, those who purchase multiple houses in urban areas are 17.9% more likely than those who do not purchase houses. This may be because farmers who purchase houses in urban areas are more likely to settle in urban areas and are less likely to return to rural areas, and having stable employment in urban areas encourages them to establish a stable urban residence, significantly reducing their dependence on homesteads in rural areas (Yuan et al., 2022; Xia et al., 2023). This may be closely related to the traditional Chinese concept of "owning a home." The farmers' own conditions are essential factors affecting farmers' willingness to exit homesteads (Xie and Chen, 2022). Further analysis indicates that the marginal effect of the key variable "whether farmers purchase houses in urban areas" is larger than that of "whether farmers have stable employment in urban areas," indicating that purchasing houses in urban areas is a key factor influencing farmers' exit and transfer of homesteads.

Regarding homestead transfer, social security, activation of rural assets, and urban land are interconnected. There are significant relationships between homestead transfer behavior and issues such as homestead use rights clarification, homestead ownership, household head age, total household population, and the proportion of non-agricultural employment in households (Chen et al., 2017; Zhang et al., 2020). In this study, factors such as household head gender, whether the household head is a village cadre, total annual household income, and household head age have significant impacts on homestead exit or transfer (Table 3), which was similar to the previous study (Yuan et al., 2022; Ding et al., 2023; Zhang et al., 2023). The impact of urbanization, household head identity, and age on farmers' decisions regarding homestead exit and transfer. Additionally, farmers' understanding of homestead exit policies has a significantly positive impact on homestead exit behavior. Government compensation standards and farmers' willingness to move to cities can motivate farmers to exit homesteads (Deng and Huang, 2004; Sun et al., 2011).

The level of urbanization in China interacts with land reform and exhibits regional differences (Zhang, 1997; Zhang et al., 2021). Similarly, compared with the reference group of Chengdu city, the exit and transfer behaviors of farmers in Jinhua city are more apparent than those in Shaoxing city (Table 3). Moreover, the impact of the level of urbanization in Zhejiang Province on farmers' participation in homestead transfer behavior is significant, while its impact on farmers' participation in homestead exit behavior is not significant. In Sichuan Province, the impact of the level of urbanization on farmers' participation in homestead exit behavior is significant, while its impact on farmers' participation in homestead transfer behavior is not significant. The reason may be that according to the "China Provincial Marketization Index Report (2019)," the marketization index of Zhejiang Province and Sichuan Province in 2016 was 9.91 and 6.66, respectively, indicating a higher degree of marketization in Zhejiang Province (Wang et al., 2019). Which was in line with that when the level of urbanization increases, the convenience of homestead transfer is higher, which will reduce the transaction costs of homestead transfer,

decrease the hidden transaction market for homesteads, and increase farmers' property income (Liu et al., 2023; Hu et al., 2024). In regions with a lower degree of marketization, such as Sichuan Province, the homestead transfer market is not sound enough, and the transfer cost is higher. Therefore, as the level of urbanization increases, farmers are more willing to obtain corresponding subsidies through homestead exit to increase their property income (Xia et al., 2023). In regions with a higher level of urbanization, farmers are more enthusiastic about participating in homestead exit, indicating that the implementation of homestead exit policies is in line with public opinion. In regions with a lower level of urbanization, farmers' enthusiasm for participating in homestead exit is relatively low.

## 6 Conclusion

This paper conducts a comparative analysis of land policies in China, the United States, and India, highlighting the diverse practices of people-centered land reform in liberating productivity and promoting social equity. In China, the government prioritizes safeguarding the basic interests of farmers and actively promotes the exit and transfer of rural homesteads through legal regulations and policy measures to adapt to the development needs of urbanization and industrialization. Simultaneously, this paper analyzes the impact of urbanization on land reform and underscores existing regional disparities. The degree of urbanization plays a crucial role in farmers' decisions regarding homestead exit and transfer behaviors. As farmers attain urban residency and corresponding welfare benefits, their dependence on homesteads gradually diminishes, making them more inclined to participate in transfer or exit activities. In different regions, the impact of urbanization on farmers' decisions varies and is influenced by factors such as local marketization levels. In summary, land reform and the degree of urbanization are intricately intertwined, playing a pivotal role in realizing fundamental interests, driving rural revitalization, and promoting social equity. This study provides empirical support for a deeper understanding of the relationship between rural land reform and urbanization, offering valuable insights for the formulation of relevant policies. In future land system reforms, the government can further optimize policies, enhance communication, and provide training to better facilitate farmers' adaptation to the development of modern society, thereby promoting sustainable rural economic development.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

LY: Investigation, Writing – original draft, Data curation. LQ: Methodology, Supervision, Writing – review & editing. JF: Methodology, Supervision, Writing – review & editing, Project administration.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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