Article:
Zou, J., Chen, J. and Chen, Y. orcid.org/0000-0002-7694-4441 (2022) Hometown landholdings and rural migrants' integration intention : the case of urban China. Land Use Policy, 121. 106307. ISSN 0264-8377

https://doi.org/10.1016/j.landusepol.2022.106307

Hometown landholdings and rural migrants' integration intention: the case of urban China

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Abstract: This paper investigates the association between hometown landholdings and rural migrants' intentions to integrate in their destination societies in Chinese cities. We argue that hometown landholding affects rural migrants' integration intention through the asset effect, security effect and emotional attachment effect. The empirical work based on a large national micro-level data extracted from the 2017 China Migrants Dynamic Survey (CMDS) shows that, rural migrants who possess contracted farmland but no homestead land in hometown have the highest level of integration intention, followed by those without any land, those with both types of land, and finally those with homestead land only. Such findings suggest that the possession of farmland tends to boost rural migrants' integration intention while the possession of homestead land appears to have a depressing effect. However, the depressing effect of homestead land on average dominates the boosting effect of farmland. Further analysis shows that, the positive effect of farmland is strengthened when the asset function of contracted farmland is strong, while the negative effect of homestead land is reduced when migrants have purchased housing in the host cities. The paper also identities the mediating effect of local social security insurance in the impacts of hometown landholding on rural migrants' integration intentions as well as the heterogeneity of such impacts across age-cohorts and subgroups associated with different connection levels to hometowns.

Key words: landholdings; integration intention; migrants; urban China; hometown attachment

1 Introduction

Migrants' socio-economic integration into the host society is crucial for both social stability and sustainable development (Hainmueller et al., 2017; Waters and Jiménez, 2005). Numerous studies have examined migrants' integration in different countries, exploring the theoretical mechanisms (Goldstein and White, 1985; Gordon, 1964; Portes and Zhou, 1993), the measurements (Forrest and Kearns, 2001; Kearns and Whitley, 2015) and determinants of migrants' integration (Hainmueller et al., 2017; Kearns and Whitley, 2015; Zou and Deng, 2022) . Given China has experienced the largest scale of rural-urban migration in human history and urbanization is one of the fundamental propels of China's modernization and socio-economic development (United Nations, 2014; World Bank and DRC, 2013), the issue of rural migrants' socio-economic integration in their host cities have recently attracted growing attention in the literature (Wang and Fan, 2012 ; Yue et al., 2013; Chen and Wang, 2015; Chen and Liu, 2016; Zou, Chen and Chen, 2020).

Existing studies on Chinese migrants have primarily focused on the measurement as well as the influencing factors of their integration status in cities, yet limited attention has been given to migrants' willingness to integrate. Migrants' integration intention in this paper refers to migrants' willingness to get integrated in various domains of economic world and social life in the destination. Intention matters greatly for behavior outcomes but they are two different processes, as intention mainly derives from internal attitudes and subjective judgments while observed behavior outcomes are significantly impacted by external forces that are often out of one's control (Dang et al., 2019; Toruńczyk-Ruiz and Brunarska, 2020). For the purpose of guiding policy making, knowledge on migrants' integration intention sometime could be more valuable than knowledge on their integration status as the former reveals more on the real internal motivations of migrants under fewer disturbances of external constraints. For example, some literature has found migrants' internal intentions are often overlooked in the design of integration policies (Tang et al., 2016). Further, integration intention also differs from settlement intention as it is highly possible that a migrant could have strong intention to settle down in the host city but no interests in getting integrated into the local society, and vice versa. It thus contains both academic interests and practical values to study migrants' integration intention.

Meanwhile, existing studies on migrants' integration generally neglect the role of rural

landholdings. Rural land, as one of migrants' ties to the countryside, functions as an important asset as well as a source of security for rural residents (Pal et al., 2021; VanWey, 2005). The possession of hometown land is likely to play an important role in rural migrants' senses of "place attachment" to hometown which refers to an emotional bond with a given place (Lewicka, 2011). Recent literature has suggested that place attachment acts as an important mediator between migrants' social integration and settlement intention (Toruńczyk-Ruiz and Brunarska, 2020). Several studies have examined the relationship between Chinese rural migrants' possession of hometown land and their migration decisions (Giles and Mu, 2018; Mullan et al., 2011; Xiao and Zhao, 2018), as well as their choices or outcomes in the host cities including their willingness to transfer *hukou* status from rural to urban (Gu et al., 2020; Hao and Tang, 2015), settlement intention (Tang et al., 2016), and income levels (Hao, 2021). However, to our best knowledge, no previous studies have explicitly examined the relationship between hometown landholdings and rural migrants' willingness to integrate into the host urban society.

To bridge these research gaps, this paper first develops an analytic framework to understand how hometown landholdings may affect rural migrants' integration intention in the destination city. Further, based on a large national micro-level dataset extracted from the 2017 China Migrants Dynamic Survey (CMDS), we empirically test the relationship between hometown landholdings and rural migrants' integration intention in urban China. It is noted that, in China, land in the countryside is collectively owned by villagers, but its use right is possessed by individual villagers (Brandt et al., 2002). Throughout the paper we discuss the possession of use rights of rural land rather than land ownership.

Our work contributes to existing literature in three respects. First, we conceptualize that hometown landholding affects rural migrants' integration intention in the cities through the asset effect, the security effect and the emotional attachment effect, offering an analytic framework to examine this topic. Second, we provide a robust empirical investigation of the relationship between rural migrants' landholdings in the countryside and their willingness to integrate into the host urban society, taking advantage of a large national-level dataset as well as the unique institutional setting that rural farmers could not exchange their landholdings on the market. That is, rural migrants' status of rural landholdings is in most cases exogenous rather than endogenous, which greatly helps to

alleviate the potential endogeneity issue in the empirical analysis. Third, by exploiting the great spatial-temporal heterogeneity in China as well as acknowledging that rural migrants are a vastly heterogeneous group, we uncover the significant heterogeneity of the relationship between hometown landholding and integration intention of rural migrants across different regions and different generations.

The remainder of the paper is arranged as follows. Section 2 provides brief background and reviews existing studies on migrants' integration as well as their integration intention. Section 3 provides theoretical analysis and research hypotheses. Section 4 discusses data and methodology. The empirical findings are presented in Section 5. Section 6 concludes the paper with discussions of policy implications.

2 Related literature

2.1 Literature on integration and its underlying factors

Migrants' integration into the local society has long been an important policy concern worldwide (Goldstein and White, 1985; Gordon, 1964). Although integration is a complex and contested concept, most scholars agree that integration is a multi-faced process involving structural integration, economic integration, social integration, cultural integration, and psychological integration (Hainmueller et al., 2017; Robinson, 2010; Toruńczyk-Ruiz and Brunarska, 2020). Migrants' integration might take generations to fulfill, with very different trajectories, for example, segmented integration where migrants are integrated well economically while keeping their ethnic culture and customs unchanged or spatially separated (Portes and Zhou, 1993; South et al., 2005). The heterogeneity of integration trajectories may result from both migrants' socio-economic characteristics and local institutional contexts (Benson, 2010; Gordon, 1964). It might also reflect migrants' self-selection behaviors, their willingness to integrate and efforts towards integration (Chiquiar and Hanson, 2005; McKenzie and Rapoport, 2010).

Previous studies have examined three groups of determinants of integration, including socio-economic status, demographic and life-cycle variables, and mobility attributes (Forrest and Yip, 2007; Robinson, 2010; Zhu et al., 2012; Wang and Fan, 2012; Chen and Wang, 2015; Wang et al., 2016; Liu et al., 2018). Significant attention has been given to migrants' ties to the host urban society

but relatively less is placed on their ties to hometown.

2.2 Literature on migrants in China and their integration

China has witnessed enormous migration waves in the past four decades (United Nations, 2014). In the Chinese context, migrants refer to those who do not live in the place where they hold local *hukou* status (household registration), noting that the *hukou* system plays an important role in determining one's access to local public services and social benefits (Afridi et al., 2015). As admitted by the Chinese central government in the National Plan for New Urbanization (2014-2020), while migrants have reached 234 million and accounted for one third of total urban population in the year of 2013, most of them did not have the same access to local public services as local residents due to institutional barriers such as the *hukou* system (The State Council, 2014). According to the latest population census, the number of migrants in China exceeded 375 million at the end of 2020 (NBSC, 2021). In this paper we focus on rural-to-urban migrants, which accounts for more than three quarters of migrants in China.

Numerous studies have examined the determinants of Chinese rural migrants' socio-economic integration into the host urban society. The literature has indicated that the *hukou* system acts as the major barrier to migrants' integration in cities (Afridi et al., 2015; Niu and Zhao, 2018; Wang and Fan, 2012; Wu and Treiman, 2004). In recent years, the circular nature of migration in China has experienced some significant changes, as many migrants obtain stable employment and stay longer at destination cities (Chen and Wang, 2019). However, migrants with permanent settlement intention are still a minority (Lin and Zhu, 2022). The hukou system has reformed to allow migrants to access some social benefits at destination, such as medical insurance, pension, as well as public rental housing in some cities. However, migrants' access to social benefits is limited compared with that of local residents. This contributes to hukou-based social divide between the two groups, which has been shown to exert profound negative impacts on migrants' integration in cities (Liu et al., 2018; Ouyang et al., 2017; Shi et al., 2017; Wang et al., 2016).

Besides institutional factors, individuals' socio-economic characteristics, social networks, and neighbourhood types are closely linked with rural migrants' urban integration. For example, high educational attainment, decent jobs and income facilitate rural migrants' integration (Chen and Wang, 2015); those who stay longer in cities tend to integrate in a better way than new arrivals (Yue

et al., 2013); families with children are more likely to integrate than single households (Tian et al., 2019). In addition, social networks that provide more interaction opportunities with local residents facilitate integration (Yuan, 2016; Yue et al., 2013). A recent study finds that rural migrants' socio-economic integration varies with the neighbourhoods where they live, i.e., a higher level of socio-economic integration is found among rural migrants who live in formal neighbourhoods, compared with those living in informal neighbourhoods (such as urban villages) (Zou, Chen and Chen, 2020). Moreover, it is found that social-cultural attachment are important factors influencing migrants' settlement intention (e.g., Chen and Liu, 2016; Lin and Zhu, 2022).

2.3 Literature on the association between rural landholding and migration

Existing studies have discussed the effects of landholding on rural residents' migration intention and rural migrants' settlement intention in the host city. It is found that the insecure land tenure and restrictions of land rentals reduce Chinese famers' likelihood of rural-to-urban migration (Giles and Mu, 2018; Mullan et al., 2011). An increase in farmland might boost farmers' migration propensity but reduces their days of out-migration (Xiao and Zhao, 2018). It is also shown that the possession of both farmland and homestead land reduces rural migrants' willingness to convert their *hukou* status from rural to urban (Gu et al., 2020; Hao and Tang, 2015) and their intention to settle in cities (Tang et al., 2016). This is because many migrants are not willing to abandon their rights to land as they may encounter difficulties in settling down in the destination city due to hukou restrictions and their relatively low income (Meng, 2012; Xie and Jiang, 2016).

So far existing research on migrants' integration mainly focuses on individual and household characteristics, and ignores the important role of rural land. These studies have analyzed the influencing factors of rural migrants' integration in cities, but have not explored the determinants of migrants' willingness to integrate in the host city. In this paper we extend the literature to investigate the association between hometown landholding and rural migrants' willingness to integrate into the host urban society.

3 Theoretical analysis and hypotheses development

In this section we introduce a conceptual framework to explain the relationship between hometown land and migrants' integration intention in host cities, as shown in Figure 1.

3.1 Institutional background

According to transnational immigration theories, migrants from different countries tend to maintain connections with both their places of origin and destination (Chiquiar and Hanson, 2005; McKenzie and Rapoport, 2010). Like transnational immigrants, Chinese rural migrants have connections with both their hometown and host cities. Moreover, due to *hukou*-related institutional constraints, rural migrants in China are confronted with difficulties in fully integrating into the host city (Afridi et al., 2015; Cheng and Selden, 1994; Wu and Treiman, 2004). Thus, they have incentives to simultaneously maintain two sets of "place attachments": ties to the host urban society and ties to hometown, so that they can access both emotional and instrumental resources that helpful for accumulating their social capital (Coleman, 1988; Putnam, 1995).

The human-land relationship is at the core of the rural system, and the regulation of land use function decisively governs the process of multifunctional rural development (Jiang et al., 2022; Long et al., 2022). In China, the rights to use contracted farmland and homestead land in a rural community unit ("rural collective") are granted freely to members of this community per household basis (Brandt et al., 2002). Contracted farmland is restricted for certain agricultural purposes (Ma et al., 2020), while homestead land is limited only for the purpose of constructing homes for self-use (Gu et al., 2020). The use rights of the two types of land are not allowed to be freely traded on the open market according to the Law of Land Administration. While in recent years the lease market of the use rights of contracted farmland has steadily expanded under the government's promotion (Ma et al., 2020), the lease of the use rights of homestead land or housing built upon it is still heavily restricted and commonly can be conducted only amongst members of the same rural collective (Xu et al., 2022).

While it is true that in June 2021 the Regulation for the Implementation of the Law of Land Administration was revised to formally allow residents who hold rural hukou but have settled down in the cities to voluntarily return the use rights of their land on compensation basis to their rural communities, such cases are still very rare. The reason is that rural migrants could not "sell" land to people outside their communities under the collective land ownership and thus the compensation of returning land to the community organization is generally very low (Gu et al., 2020; Xu et al., 2022). Meanwhile, since the land is allocated freely and could be used indefinitely (Brandt et al., 2002),

rural migrants have no internal incentives to voluntarily return the land to the community and generally choose to keep it even if they do not put it into use (Hao, 2021; Lyu et al., 2020). The low efficiency of rural land use heavily restricts rural-urban migration as well as urban development (Hao and Tang, 2015; Liu et al., 2020). The huge waste of rural land and housing resources, alongside with the growing concurrence of industrial lag and rural hollowing (Jiang et al., 2022; Long et al., 2012), has been long recognized as a serious challenge for the sustainable urbanization in China (The State Council, 2014).

Hometown land is crucial for rural migrants because it is an important asset and a reliable source of livelihood (Hao, 2021; VanWey, 2005). Rural land is also a source of security which can alleviate the uncertainty and reduce the cost of migration to the city (Ma et al., 2020; Xiao and Zhao, 2018). Two important reasons for many migrants to keep their land in hometown are the security need to live on the farmland in case of job loss in the city and the shelter need when returning back home after getting old (Gu et al., 2020; Zhu, 2007). Moreover, rural land carries migrants' emotional attachment to hometown. Therefore, hometown land is likely to exert significant impacts on migrants' integration intention in cities.

For most rural migrants who still keep their membership status in their original rural collectives, the only scenario that they exchange the possession rights of their hometown land for money is when the land is acquired by the local state through the land expropriation system (Brandt et al., 2002; Wu et al., 2022). Nonetheless, the expropriation is decided by the local state according to their economic development planning, which means the variations of hometown landholding among rural migrants are largely exogenous to our analysis. This provides a unique advantage to analyze the relationship between hometown landholding and rural migrants' integration intentions in the Chinese context.

3.2 Hypothesis development

Two types of rural land have different functions and attributes, which may exert different effects on migrants' integration intention in cities. First, their asset functions are different. For contracted farmland, in recent years its use right can either be transacted, generating revenue, or leased to yield rental income (Ma et al., 2020). Contracted farmland as an income-generating asset can boost migrants' income (Hao, 2021), which might increase their willingness to integrate in cities,

as they have more resources to integrate into the local society. However, homestead land, still legally restricted to be traded in the open market, cannot generate income unless the housing built upon it is rented, which usually occurs in city outskirts where demand for peasants' housing is high. Second, their security functions are different. With limited access to subsidized housing in cities due to lack of local *hukou* status, many migrants find it difficult to afford housing in cities. Homestead land in hometown provides a retreat for migrants whenever they decide to return back to hometown. The possession of homestead land will thus reduce rural migrants' incentives or pressures to integrate in the city. On the other hand, farmland in China is subject to strict land use constriction, and thus could not provide a shelter place for return migrants. Third, their strengths of hometown attachment are different. Rural land is associated with migrants' emotional attachment to hometown as landholding is an important tie to hometown. Migrants with hometown landholding are more likely to have more emotional bonds with their hometown, such as returning hometown more frequently, and interacting more with hometown villagers. Rural land as migrants' emotional attachment to hometown is likely to exert negative effects on migrants' integration intention in cities. However, we expect that homestead land, through the emotional bond of home building constructed upon it, would carry stronger emotional attachment to hometown than farmland. Considering the prevalent insecurity of farmland tenure in China (Giles and Mu, 2018; Mullan et al., 2011), as well as the rising secure value of homestead land against the skyrocketing housing price in Chinese cities, we propose that the depressing effect of homestead land on integration intension is on average larger than the boosting effect of farmland. Therefore, we propose the following hypotheses.

Hypothesis 1: Rural migrants' integration intention is the highest when they only possess contracted farmland in their hometown, second when they possess no land, third when they possess both types of land, and lowest when they possess only homestead land.

High housing price in cities is likely to deter migrants' integration intention, especially when they have retreat solution secured by their homestead land at hometown. However, it is reasonable to expect that, the negative effect of homestead land on migrants' integration intention might be reduced after migrants have already purchased houses in the host cities, especially in eastern China[1]

[1] Eastern China refers to the provinces and cities located along the east coast which have witnessed rapid economic growth since the initiation of the opening-up policy in 1978. In our data, it includes 11 provinces and

where many job opportunities and urban amenities exist. The following hypothesis is derived.

Hypothesis 2: The negative effect of rural homestead land on rural migrants' integration intention is reduced when rural migrants have purchased housing in eastern China.

In addition, social insurance in the host cities serves to reduce migrants' financial risks and increases their sense of security, which increases the attraction to settle in the city. Migrants with social insurance are associated with more stability in economic status and have more opportunities to utilize economic and social resources to prepare for long-term residence (Cao et al., 2015). Furthermore, social insurance may shape migrants' settlement intention through its impact on their enhanced sense of place attachment to the local society (Huang et al., 2020). Compared with China's relatively underdeveloped western regions, the coverage of social insurance in China's prosperous eastern regions is much higher. Thus, it is reasonably expected that, the impact of hometown landholding, no matter which type of land, will be greatly weakened when migrants are covered by the social insurance system in the host cities, especially in eastern China where living costs are higher compared with other regions. Therefore, we propose the third hypothesis as below.

Hypothesis 3: The effect of hometown landholding, for any type of land, on rural migrants' integration intention is weakened when rural migrants participate in the urban social insurance system in eastern China.

As widely discussed in previous studies, new-generation migrants, who are defined as those born after 1980, have little experience, expertise and interest in agricultural work (Chen and Wang, 2015). However, due to their young age and a limited amount of savings, new-generation migrants are more likely to confront with financial pressure in cities compared with old-generation migrants. The asset effect of land resources in hometown may thus be less powerful to cushion the high living costs in the city for new-generation migrants. Meanwhile, as they are likely to accumulate relatively less social capital in the urban society, they may have stronger intention to return back to hometown while not necessarily taking up farmland work. Thus, we expect the depressing effect of hometown landholdings on integration intention would be stronger for new-generation migrants. Moreover, we expect the depressing effect of hometown landholdings would be stronger on migrants with more

cities such as Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan.

intensive connections with hometown, since the effect of emotional attachment to hometown would be amplified with the bond of land possession in hometowns. Thus, we propose the fourth hypothesis as following:

Hypothesis 4: Differences exist in the effect of hometown landholding on rural migrants' integration intention, across different age cohorts and subgroups with different connections to hometown.

4 Data and methodology

4.1 Data

Our data come from the 2017 China Migrants Dynamic Survey (CMDS), organized by the National Population and Family Planning Committee. This large-scale nationwide sample survey of migrants was conducted in popular migration destinations in all provincial-level region units. The probability proportionate to size (PPS) sampling method was employed to select interviewees. The target group is migrants aged above 15 who do not have local *hukou* status and had resided in the host cities for over one month at the time of the survey. The dataset of CMDS provides information of migrants and their family members, such as their migration experiences, employment and social security, income and expenditure, housing, social integration and mental health. We focus on migrants who hold rural *hukou* status. After deleting samples with missing information of key variables, the sample size in our paper is 88,387 individuals.

Our dependent variable, integration intention, is measured by the question in the survey, i.e. 'I am willing to integrate into the local society and be part of it'. This question directly reflects migrants' subjective integration intention. Respondents answered the question using a four-point likert scale (1 disagree completely; 2 disagree; 3 agree slightly; 4 agree completely). Migrants who answered "agree completely" have the highest level of integration intention, and those who answered "disagree completely" have the lowest level of integration intention.

The independent variable, land in hometown, is measured by two questions, i.e., 'Do you have contracted farmland in your hometown? ' and 'Do you have homestead land in your hometown?'. Responses classified as "unclear" are excluded. They are divided into four categories: without any land, with farmland only, with homestead land only and with both types of land.

Following previous studies, we construct a series of control variables, including socio-demographic characteristics, migration patterns, housing characteristics, city characteristics and provincial dummies (e.g. Wang and Fan, 2012; Wang et al., 2016; Chen and Wang, 2019). Gender, age, household composition, education, occupation, income and access to medical insurance are included into the model, as these variables are likely to influence migrants' integration intention. Participation in the urban social insurance system can also affect migrants' integration intention as it provides resources at destination cities (Huang et al., 2020). Migration patterns, such as trans-provincial migration may affect migrants' integration intention, as long-distance migrants tend to encounter more difficulties in getting familiar with local culture and customs (Chen and Wang, 2015), and the cultural and dialect differences may discourage them from integration. Length of stay in the host communty may also affect migrants' integration intention, and is therefore included into the model (Robinson, 2010). Housing tenure in cities can affect migrants' integration intention, as homeowners may be more willing to integrate (Forrest and Yip, 2007; Zhu et al., 2012; Wang et al., 2016; Liu et al., 2018). In addition, the characteristics of the host city are also important factors affecting migrants' integration intention (Dang et al., 2019; Liu and Wang, 2020; Zou and Deng, 2022). We divide the cities into three categories: first-tier cities, second-tier cities and third-tier cities and below, according to their development levels and population sizes (Zou, Chen and Chen, 2020). There might be other city-level factors which influence migrants' integration intention, such as average wage and industrial structure. Due to data availability, we do not include them in our modules because the inclusion results in a significant reduction of the sample size. Therefore we use the variables of first-tier, second-tier and other cities as proxies for city-level development.

Table 1 displays a summary statistical description of key variables. Among all samples, 48.01% are female and 51.94% are aged below 35. They have relatively low educational attainment; 68.33% have junior high schooling or below, and only 11.09% have diplomas from colleges or universities. Meanwhile, 60.10% are manufacturing workers or low-skilled staff, followed by businessmen (28.84%). Further, only 21.65% have access to local medical insurance but 45.53% have access to local social insurance. Many rural migrants brought their families to the host cities, 74.92% live with spouses and 53.22% live with children in the host cities. As to length of stay, 60.92% of rural migrants have stayed in the host cities for more than one year. More than half (51.06%) of rural

migrants move across provincial boundaries. In the host cities, most rural migrants are still accommodated in rental housing but the proportion of rural migrants owning home has increased to 22.28%, as opposed to 9.93% in 2014 reported in previous studies (Zou, Chen and Chen, 2020).

Our primary interest is rural migrants' landholding in their hometown. According to Table 1, about 23.21% of rural migrants in our study do not possess any type of rural land, 8.19% possess farmland only, 22.86% possess homestead land only; and the remaining 45.75% possess both types of land. Furthermore, to analyze the characteristics of rural migrants possessing rural land, we divide the sample according to rural landholdings, which is shown in Table 2. The four groups appear to be associated with different demographic-economic characteristics but no immediate discernable pattern can be identified.

4.2 Methodology

As mentioned above, integration intention of rural migrants is coded as an ordered variable with four categories. Therefore, we use multivariate ordered logit model (OLM) which does not require variables to satisfy normal distribution or equal variance as the benchmark model. The specific formula is as follows,

$$\mathrm{P}(\mathrm{y}=\mathrm{j}\,|X_i)=\frac{1}{1+e^{-(\alpha+\beta X_i)}} \tag{1}$$

X_i indicates the *i*th influencing factor, y represents the probability of a certain degree of integration willingness of rural migrants, and gives each willingness selection order Y values starting from 1. Then the cumulative logit model is established as follows.

$$\ln\left[\mathrm{P}_j/P(1-\mathrm{P}_j)\right]=\alpha_0+c\mathrm{Land}_\mathrm{i}+\alpha_\mathrm{i}\mathrm{X}_\mathrm{i}+\varepsilon_i \tag{2}$$

Here, P_j is the probability of the dependent variable (the individual rural migrant' integration intention) taking the value of class j. Land_i represents migrants' landholding status in hometown. Control variables X_i include migrants' socio-demographic characteristics, mobility attributes, housing characteristics, city characteristics and provincial dummies. α_0 is the constant term; α_i are the correlation coefficients of control variables and ε_i is the random error term.

Further, we test the underlying mechanism by using interaction terms to verify the asset effects of farmland, security and emotional attachment to hometown. The specific steps are as follows:

$$Integration\_intention_i = \alpha_0 + c'Land_i + bIntermediary\_vari + cLand_i * Intermediary_{vari} + \alpha_1 X_i + \varepsilon_3 \quad (3)$$

Where $Integration\_intention_i$ represents rural migrants' integration intention and X_i is the set of control variables. $Intermediary\_var_i$ represents the intermediary variables. We use the intermediary variables of 'farmland revenue' and 'hometown location' to test the asset effect of rural land. The variables of 'eastern China', 'homeownership' are used to assess the differentiated effect of rural landholding in hometown in Hypothesis 2. The variable of 'social insurance' and 'eastern China' are used to assess the weakening effect of land on integration intention in Hypothesis 3. Finally, the variables of 'the frequency of going back to hometown' and 'interaction with hometown villagers' are employed to test the effects of emotional attachment to hometown for different generations, as we discuss in Hypothesis 4.

5 Empirical results and discussions

5.1 Integration intention of rural migrants with different landholdings

Figure 2 displays the distribution of average score of integration intention of rural migrants with different landholding in their hometown. It shows that, those who only possess contracted farmland have the highest integration intention, while those only possessing homestead land have the lowest integration intention. Figure 2 intuitively suggests that rural homestead land and contracted farmland may have different impacts on rural migrants' integration intention, but such proposition needs further robust empirical validation.

5.2 Benchmark model results

We first use OLM to estimate the benchmark results. The control variables, including socio-demographic characteristics, household characteristics, migration patterns, housing characteristics, city characteristics and provincial dummies, are added gradually. The estimation results are reported in Table 3.

According to Table 3, gender does not have significant impacts on integration intention, but older and highly-educated rural migrants generally have stronger integration intention. Regarding occupation, compared with rural migrants who have irregular employment, manufacturing workers have weaker integration intention. In addition, access to both medical insurance and social insurance has a significant positive impact on integration intention. Regarding household characteristics,

migrating together with spouses does not has a significant impact on integration intention, while migrating together with children has a positive effect. Further, homeowners are positively associated with higher integration intention. Those migrants who have stayed longer in the host cities or experienced intra-provincial migration also have a higher level of integration intention. Compared with migrants who live in third-tier cities and below, those living in second-tier cities have a lower level of integration intention. These findings are consistent with previous studies. In the following sections we focus on the relationship between rural land and integration intention.

The results in Table 3 show that the possession of contracted farmland only is positively associated with rural migrants' integration intention, while the possession of homestead land only is negatively associated with integration intention. That is, compared with migrants without any land, those possessing only farmland have higher integration intention, while those with homestead land only have lower integration intention. When migrants possess two types of land, the negative effect of homestead land is greater than the positive effect of contracted farmland, resulting in the net negative effects. When more control variables are added, the coefficients of hometown land become smaller, as expected.

However, the estimation coefficient of OLM only reflects the direction of the effect of rural land on migrants' integration intention. It does not provide a direct estimate of the magnitude of this effect. To get a sense of the size of the land impact, we further estimate the marginal effect of the ordered logit. The results for the case of strong integration intention ("agree completely" to be integrated) are reported in Table 4. According to Column 3 of Table 4 (Model 3), compared with that of rural migrants without any hometown land, the level of strong integration intention for rural migrants who only possess contracted farmland is 1.71% higher on average, but the level for rural migrants who only possess homestead land is 2.18% lower on average; and that for migrants possessing both land is 1.49% lower. When we estimate the model by alternative outcomes of integration intention, i.e., 'agree slightly' or 'disagree' or 'disagree completely' to be integrated, the results remain similar[2]. Thus, hypothesis 1 is supported.

[2] Due to space constraints, only marginal effects of strong integration intention (= Agree completely) are reported in the paper. The marginal effect estimates for other measures of integration intentions are available upon request.

5.3 Mechanism testing and impact heterogeneity

The results from the descriptive statistical analysis and baseline regression models have suggested that rural land is associated with migrants' integration intention. In this section we explore how these observed associations are derived from the asset effects of rural farmland, the security effect and the effect of emotional attachment to hometown. These effects influence migrants' willingness to integrate in cities.

In order to test the asset effect, we introduce two variables, i.e. "farmland revenue" and "hometown location" into the models. Farmland revenue is measured by the question in the survey, i.e. 'What is the average annual income per mu of contracted farmland by your family?' Hometown location is measured by the question 'Where is your hometown located?' Hometown in non-rural areas is recorded as 1, 0 otherwise. The results in column (1) in Table 5 show that farmland revenue is positively associated with migrants' integration intention. When farmland revenue increases one unit (2.72 yuan), rural migrants' level of strong integration intention increases by 0.71%. In addition, as show in column (2) in Table 5, the interaction term between possessing both types of land and hometown location is positively associated with integration intention. When farmland and homestead land are located approximate to urban areas, rural migrants' level of strong integration intention increases by 2.19%. Therefore, farmland and homestead land located near urban areas provide more asset values, which improve rural migrants' integration intention.

To test Hypothesis 2, additional variables (eastern China and homeownership) are introduced into the model. Migrants' integration intention is lower for those living in cities in eastern China where living costs are higher compared with other regions. Column (3) in Table 5 indicates that the interaction term between possessing homestead land only and eastern China is not significantly correlated with migrants' integration intention. Column (4) in Table 5 demonstrates that the interaction term among possessing homestead land, eastern China and homeowner, is positively associated with migrants' integration intention. These results support Hypothesis 2 that the negative effect of rural homestead land on rural migrants' integration intention is reduced when rural migrants have purchased housing in eastern China.

Further, column (5) in Table 5 shows that the interaction term of social insurance and landholdings is not statistically significant. However, when the variable eastern China is further

introduced into the interaction term, column (5) in Table 5 implies that social insurance in eastern China have greatly weakened the negative effect of rural land on rural migrants' integration intentions. Therefore, Hypothesis 3 is confirmed.

To test Hypothesis 4, additional variables (dummy of new-generation, eastern China, frequency of returning hometown, interacting with hometown villagers) are introduced into the models. The estimation results reported in column (1) in Table 6 show that the interaction term between the two dummies of "possessing farmland only" and "new-generation" is negatively associated with integration intentions, suggesting that the boosting effect of farmland on integration intention is weaker among new-generation migrants as compared with old-generation migrants. In addition, column (2) in Table 6 shows that the interaction term of possessing farmland only, eastern China and new generation is negatively correlated to integration intentions of migrants. One explanation is that the asset effect of contracted farmland in hometown is less effective for new-generation migrants to cope with the high living costs in the city. Further, column (3) in Table 6 indicates that the interaction term of possessing farmland only, returning home more frequently and new generation is negatively correlated to migrants' integration intention. Finally, column (4) in Table 6 suggests that the interaction term of possessing farmland only, interacting with hometown villagers and new generation is also negatively correlated to migrants' integration intention. These findings suggest that the positive effects of farmland on integration intention is further reduced for new-generation migrants with stronger emotional attachment to hometown, proxied by frequent hometown visiting and interaction with members in the same villager. These findings render supports to Hypothesis 4.

6 Conclusions and policy implications

While previous studies have paid due attention to the extent of rural migrants' integration in Chinese cities, there are surprisingly few empirical studies which examine the determinants of their willingness to integrate, especially the role of landholding at home villages. This paper extends the literature by developing an analytical framework and then empirically examining the association between hometown land and rural migrants' integration intention in urban China.

Our results show that rural migrants' integration intention is positively associated with the

possession of contracted farmland in hometown but negatively associated with the possession of homestead land in hometown. When migrants possess both types of land, the negative effect of homestead land exceeds the positive effect of contracted farmland, resulting in the total negative effect. Further analysis shows that rural land impacts on rural migrants' integration intention through the asset effect, the security effect and the emotional attachment effect. The positive effect of rural contracted farmland on migrants' integration intention is strengthened as contracted farmland acts as a valuable asset, especially when their hometown is located in the urban fringe. However, homestead land in migrants' hometown can decrease their integration intention. Such effects are reduced when migrants purchased housing in the host cities in eastern China. In addition, the effect of rural land on migrants' integration intention is greatly weakened when migrants have access to social insurance in eastern China. We also find the significant heterogeneity in the association between hometown landholdings and integration intention across different generations. The positive effect of possessing contracted farmland on integration intention is weakened for new-generation migrants compared with old-generation migrants. This may be due to the fact that new-generation migrants are confronted with greater financial constraints, and working and living pressures than old-generation migrants in cities with high living costs. This hinders their willingness to integrate. Findings in this paper carry several direct implications for policies governing integration of rural migrants in the cities as well as urban-rural integrated development.

First, our analyses suggest that hometown landholding plays important roles in shaping the integration intentions of rural migrants in the host urban society through the mechanisms of the asset effect, the security effect and the emotional effect. Therefore, to improve rural migrants' willingness to get integrated in the cities, the following reform proposals under debate or at the pilot experiment stage are recommended, i.e. the reforms that could help to expand the lease market of the use rights of farmland and then to increase its rental income or asset value (Ma et al. 2020); the reforms that could incorporate idle homestead land into an integrated urban-rural land market and capitalize the possession rights of homestead land through some form of market-led nationalization (Wu et al. 2018); and the reforms that could help to put idle farmhouse into lease use or to construct rental housing blocks serving urban residents upon homestead land after land consolidation in order to construct an integrated urban-rural housing system (Lyu, Yu, and Hu 2020).

Second, according to the analysis in this paper, the reforms recommended above can also greatly help to promote rural vitalization and achieve urban-rural integrated development. Notably, some relevant policies or pilot policy experiments have been introduced to address the increasingly acute imbalance between the supply and demand of rural land use functions in recent years (Jiang et al. 2022). However, there is still a large scale of idle homestead land together with a significant number of vacant rural housing in the countryside (Lyu, Yu, and Hu 2020; Gu et al. 2020). The findings of this paper, by shedding light on potential gains from coordinated development of rural population-land-economy, can help to promote urban-rural integrated development too.

Third, the paper identities the mediating effect of local social security insurance in the impacts of hometown landholding on rural migrants' integration intentions as well as the vast heterogeneity of such impacts across age-cohorts and subgroups associated with different connection levels to hometowns. This implies that, the expansion of social insurance should be placed with priority to increase rural migrants' willingness to get integrated in the host cities. Meanwhile, the government should adopt differential approaches to enhance integration intention across rural migrants with different personal traits.

This study adds to the literature by exploring the association between hometown land and integration intention for different rural migrant groups. However, the paper has not well taken account of how most recent changes of rural land use regulations may impact our major findings. Considering the importance of the topic for both social harmony and urban-rural integrated development, further research is warranted..

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Appendix

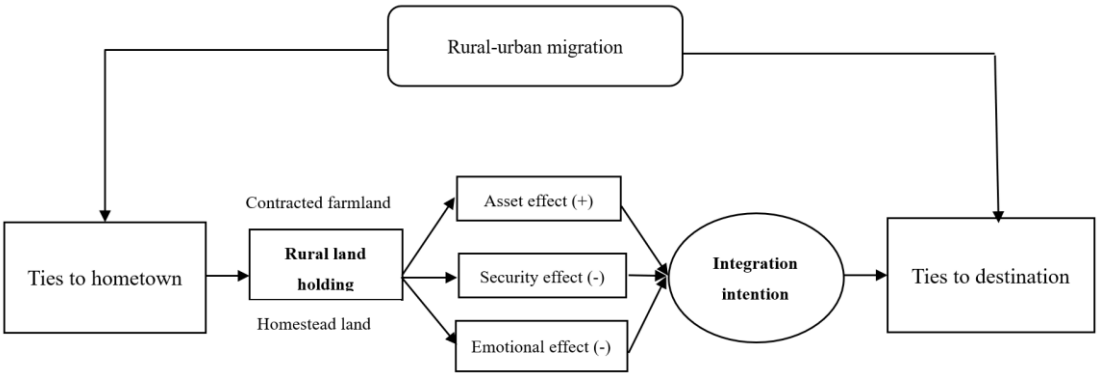

Figure 1 The conceptual framework of this paper

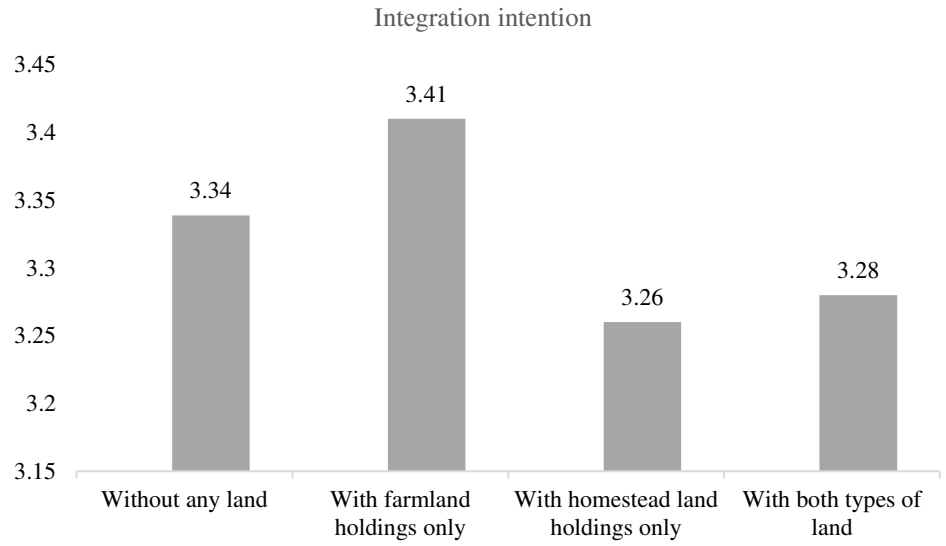

Figure 2 Integration intention of rural migrants across different status of landholding

Table 1 Descriptive statistics of the variables

Variables		Percentage（%）
Gender	Male	51.99
	Female	48.01
Age	Less than 25	14.41
	25-35	37.53
	35-45	26.77
	More than 45	21.29
Education	Junior high school and below	68.33
	High school	20.57
	College and above	11.09
Occupation	Irregular employment	2.72
	Service personnel	34.13
	Manufacturing worker	25.97
	Manager & technician	8.35
	Businessman	28.84
Medical insurance	They don't have local medical insurance	78.35
	They have local medical insurance	21.65
Social insurance	They don't have local social insurance	54.47
	They have local social insurance	45.53
Generation	Old generation	51.39
	New generation	48.61
Parter_present	Not live in destinations	25.08
	Live in destinations	74.92
Child_present	Not live in destinations	46.78
	Live in destinations	53.22
Length of stay	≤1 year	17.97
	1 year-10 years	60.92
	>10 years	21.11
Longmove	Intra-provincial mobility	51.06
	Inter-provincial mobility	48.94
Homeownership	Tenant	77.72
	Homeowner	22.28
Hometown landholdings	Without any land	23.21
	With farmland holdings only	8.19
	With homestead land holdings only	22.86
	With both types of land	45.75
City level	First-tier city	12.30
	Second-tier city	34.26
	Third-tier city and below	53.44
Total		100%

Table 2 Variable means by landholdings

Variables	Entire	Without any land	With farmland holdings only	With homestead land holdings only	With both types of land
Female	0.480	0.577	0.483	0.509	0.416
Age	36.075	34.256	39.122	34.135	37.423
Junior school and below	0.683	0.639	0.728	0.657	0.711
High school	0.206	0.221	0.169	0.224	0.196
College and above	0.111	0.141	0.104	0.119	0.093
Irregular employment	0.027	0.036	0.047	0.022	0.023
Life service personnel	0.341	0.386	0.338	0.342	0.322
Manufacturing worker	0.260	0.218	0.270	0.250	0.281
Manager & technician	0.083	0.094	0.082	0.088	0.077
Businessman	0.288	0.266	0.263	0.298	0.297
Month income	4160.27	4031.07	3913.68	4355.44	4160.18
Medical insurance	0.216	0.250	0.253	0.216	0.193
Social insurance	0.498	0.497	0.489	0.499	0.499
Parter_present	0.749	0.692	0.798	0.747	0.770
Child_present	0.532	0.506	0.583	0.527	0.539
Child_number	1.553	1.404	1.551	1.534	1.631
≤1 year	0.180	0.168	0.106	0.202	0.188
1 year-10 years	0.609	0.625	0.573	0.617	0.604
>10 years	0.211	0.208	0.321	0.181	0.208
Longmove	0.511	0.474	0.426	0.573	0.513
Homeowner	0.223	0.249	0.343	0.170	0.214
First-tier city	0.123	0.126	0.093	0.149	0.114
Second-tier city	0.343	0.289	0.297	0.375	0.362
Third-tier city and below	0.534	0.585	0.610	0.476	0.524

Table 3 Benchmark results

Variables	(1) OLM	(2) OLM	(3) OLM
Hometown land variables:			
Without any land (ref.)			
With farmland holdings only	0.1883***	0.1318***	0.0769***
	(0.0281)	(0.0283)	(0.0290)
With homestead land holdings only	-0.2334***	-0.1781***	-0.0977***
	(0.0205)	(0.0206)	(0.0212)
With both types of land	-0.1526***	-0.1221***	-0.0668***
	(0.0180)	(0.0181)	(0.0189)
Control variables:			
Female	-0.0218	-0.0187	0.0053
	(0.0142)	(0.0143)	(0.0144)
Age			
Less than 25 (ref.)			
25-35	0.1686***	0.0944***	0.0745**
	(0.0330)	(0.0332)	(0.0335)
35-45	0.2990***	0.1568***	0.1316***
	(0.0340)	(0.0345)	(0.0348)
More than 45	0.4094***	0.2440***	0.1898***
	(0.0355)	(0.0361)	(0.0365)
Education			
Junior high school and below (ref.)			
High school	0.1936***	0.1672***	0.1765***
	(0.0177)	(0.0178)	(0.0180)
College and above	0.4044***	0.3398***	0.3542***
	(0.0266)	(0.0269)	(0.0272)
Occupation			
Irregular employment (ref.)			
Life service personnel	0.0187	0.0204	0.0860**
	(0.0412)	(0.0414)	(0.0419)
Manufacturing worker	-0.3614***	-0.3125***	-0.1793***
	(0.0418)	(0.0420)	(0.0426)
Manager & technician	-0.0745	-0.0688	0.0189
	(0.0481)	(0.0483)	(0.0489)
Businessman	-0.0022	-0.0266	0.0653
	(0.0413)	(0.0415)	(0.0421)
Month_income	-0.0469***	-0.0357***	0.0001
	(0.0114)	(0.0116)	(0.0119)
Medical_insurance	0.3961***	0.3392***	0.2736***
	(0.0182)	(0.0185)	(0.0190)
Social_insurance	0.0239	0.0097	0.0335**
	(0.0146)	(0.0146)	(0.0155)
Parter_present	-0.0491**	-0.0303	-0.0226
	(0.0193)	(0.0195)	(0.0198)
Child_present	0.3428***	0.2534***	0.2169***
	(0.0149)	(0.0152)	(0.0155)
Child_number	-0.0505***	-0.0422***	-0.0079
	(0.0096)	(0.0096)	(0.0099)
Length of stay			
≤1 year (ref.)			

1 year-10 years		0.1936***	0.1526***
		(0.0197)	(0.0200)
>10 years		0.4573***	0.4133***
		(0.0235)	(0.0239)
Longmove		-0.2262***	-0.2497***
		(0.0138)	(0.0164)
Homeowner		0.3188***	0.2472***
		(0.0164)	(0.0171)
City characteristics			
Third-tier city and below (ref.)			
First-tier city			0.0439
			(0.0577)
Second-tier city			-0.0818***
			(0.0177)
Provincial dummies	No	No	Yes
Constant cut1	-4.6578***	-4.5492***	-4.3535***
	(0.1107)	(0.1118)	(0.1210)
Constant cut2	-2.6157***	-2.5028***	-2.3010***
	(0.1067)	(0.1078)	(0.1173)
Constant cut3	0.3813***	0.5225***	0.7832***
	(0.1061)	(0.1073)	(0.1169)
Pseudo R2	0.0175	0.0247	0.0383
Observations	88387	88387	88387

Note: ***,** and * represent significance at 1%, 5% and 10% level, respectively; standard errors in parentheses. Same in the rest tables.

Table 4 The marginal effect of hometown land

Variables	(1) Integration intention	(2) Integration intention	(3) Integration intention
Hometown land variables:			
Without any land (ref.)			
With farmland holdings only	0.0434***	0.0300***	0.0171***
	(0.0065)	(0.0064)	(0.0065)
With homestead land holdings only	-0.0538***	-0.0405***	-0.0218***
	(0.0047)	(0.0047)	(0.0047)
With both types of land	-0.0352***	-0.0278***	-0.0149***
	(0.0041)	(0.0041)	(0.0042)
Personal characteristics	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes
Migration characteristics	No	Yes	Yes
Housing characteristics	No	Yes	Yes
City characteristics	No	No	Yes
Provincial dummies	No	No	Yes

Note：Integration intention refers to the degree of strong integration intention (“agree completely” to be integrated). Same in the results tables below.

Table 5 Testing the effect of hometown landholdings

Variables	(1) Integration intention	(2) Integration intention	(3) Integration intention	(4) Integration intention	(5) Integration intention	(6) Integration intention
Hometown land variables:						
Lnfield_value	0.0071***					
	(0.0027)					
Without any land (ref.)						
With farmland holdings only		0.0144**	0.0302***	0.0318***	0.0164*	0.0365***
		(0.0068)	(0.0079)	(0.0067)	(0.0086)	(0.0069)
With homestead land holdings only		-0.0245***	-0.0285***	-0.0368***	-0.0263***	-0.0325***
		(0.0051)	(0.0063)	(0.0048)	(0.0065)	(0.0052)
With both types of land		-0.0169***	-0.0241***	-0.0262***	-0.0124**	-0.0203***
		(0.0045)	(0.0052)	(0.0042)	(0.0057)	(0.0043)
Location variables:						
Hometown_nearby urban		-0.0058				
		(0.0098)				
With farmland holdings only* Hometown_nearby urban		0.0297				
		(0.0223)				
With homestead land holdings only * Hometown_nearby urban		0.0218				
		(0.0137)				
With both types of land * Hometown_nearby urban		0.0219*				
		(0.0128)				
Region and homeowner variables:						
Eastern China			-0.0533***	-0.0610***		-0.0497***

			(0.0075)	(0.0041)		(0.0045)
With farmland holdings only* eastern China			0.0053			
			(0.0134)			
With homestead land holdings only* eastern China			-0.0123			
			(0.0095)			
With both types of land* eastern China			-0.0001			
			(0.0083)			
Homeowner			0.0697***	0.0621***		
			(0.0037)	(0.0042)		
With farmland holdings only* eastern China* Homeowner				0.0068		
				(0.0186)		
With homestead land holdings only* eastern China* Homeowner				0.0319**		
				(0.0132)		
With both types of land* eastern China* Homeowner				0.0357***		
				(0.0102)		
<u>Social insurance variables:</u>						
Social_insurance					0.0080	0.0095**
					(0.0070)	(0.0039)
With farmland holdings only* Social_insurance					0.0017	
					(0.0128)	
With homestead land holdings only* Social_insurance					0.0093	
					(0.0092)	
With both types of land* Social_insurance					-0.0054	
					(0.0080)	
With farmland holdings only* Social_insurance* eastern						-0.0235

China						
						(0.0151)
With homestead land holdings only * Social_insurance* eastern China						-0.0104
						(0.0082)
With both types of land * Social_insurance* eastern China						-0.0179***
						(0.0067)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.0423	0.0383	0.0270	0.0271	0.0383	0.0270
Observations	17913	88387	88387	88387	88387	88387

Table 6 Testing the generation-differentials of hometown landholding effects

Variables	(1) Integration intention	(2) Integration intention	(3) Integration intention	(4) Integration intention
Hometown land variables:				
Without any land (ref.)				
With farmland holdings only	0.0308***	0.0373***	0.0256***	0.0211***
	(0.0081)	(0.0068)	(0.0075)	(0.0067)
With homestead land holdings only	-0.0194***	-0.0321***	-0.0207***	-0.0218***
	(0.0064)	(0.0051)	(0.0058)	(0.0049)
With both types of land	-0.0102*	-0.0220***	-0.0110**	-0.0129***
	(0.0055)	(0.0043)	(0.0049)	(0.0043)
Hometown connection variables:				
New_generation	-0.0140**	-0.0226***	-0.0196***	-0.0199***
	(0.0069)	(0.0041)	(0.0055)	(0.0039)
With farmland holdings only* New-generation	-0.0385***			
	(0.0133)			
With homestead land holdings only * New-generation	-0.0048			
	(0.0092)			
With both types of land * New-generation	-0.0098			
	(0.0081)			
Eastern China		-0.0528***		
		(0.0043)		
With farmland holdings only* eastern China * New_generation		-0.0366**		
		(0.0171)		
With homestead land holdings only * eastern China * New_generation		-0.0126		
		(0.0083)		
With both types of land * eastern China * New_generation		-0.0085		
		(0.0074)		
Return_more			-0.0411***	
			(0.0044)	
With farmland holdings only* Return_more* New_generation			-0.0307**	
			(0.0133)	
With homestead land holdings only * Return_more* New_generation			0.0025	
			(0.0082)	
With both types of land * Return_more* New_generation			-0.0022	
			(0.0070)	
Interaction_villager				-0.0050
				(0.0039)
With farmland holdings only* Interaction_villager* New_generation				-0.0471**
				(0.0209)
With homestead land holdings only * Interaction_villager* New_generation				0.0008
				(0.0094)
With both types of land * Interaction_villager* New_generation				-0.0107
				(0.0079)
Control variables	Yes	Yes	Yes	Yes
Pseudo R2	0.0383	0.0269	0.0389	0.0383
Observations	88387	88387	88387	88386