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Housing Property and Social Integration of the Migrant Population

Empirical analysis based on China Migrants Dynamic Survey 2017

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Abstract: This paper uses China Migrants Dynamic Survey 2017 data and designing the research framework based on push-pull theory, empirically analyzing the impact of urban and rural residential property rights factors on the social integration of the migrant population. The results show that there is a significant negative relationship between the ownership of rural residential property rights (residential bases) of the migrant population on their social integration in the inflowing cities. The higher the house price of the migrant population in the inflow city, the lower the level of their social integration. In addition, there is non-linear relationship between the impact of house price on the social integration of migrant population.

Keywords: Migrants; house price; Social Integration; Homestead; China

1 Introduction

Urbanization is a necessary process for developing countries to evolve into developed countries [Zhang, 2016]. China has experienced nearly three decades of rapid economic growth since reform and opening up in the 1980s resolved the institutional barriers to population migration, this economic excellence is closely linked to the massive movement of the rural population to the urban industrial sector [Li, 2019]. The rural exodus has provided important human resources for urban development and played a huge role in the urbanisation process [Zhang and Shunfeng, 2003]. According to the results of the seventh national census, the urbanisation rate of China's resident population exceeds 64.72%, and the size of the migrant population exceeds 375.82 million, with the number increasing by 69.73% [NBS, 2021] in the past decade. The potential power of the migrant population for economic development is being increasingly appreciated in a policy environment where China's manufacturing sector continues to grow.

However, the influx of labour into cities in the form of 'migrant populations' is hardly a long-term human resource [Connell and Burgess, 2009]. In the process of citizenship, migrant groups are less integrated in terms of economic, cultural and identity [Yunsong and Yi, 2016]. In the job market, urban residents enjoy a more pronounced resource advantage than the migrant population in the job market. There is a significant occupational discontinuity between urban and rural residents, and this discontinuity cannot be explained by productivity differences [Meng and Zhang, 2001]. It is relatively difficult for the migrant population to integrate into the local society. The migrant population is an important part of the urban labour market and is highly involved in consumption and production activities in the city, improving the level of social integration can enhance their employment and consumption capacity and

promote economic development [Banerjee, 1983]. In addition, migrant populations often come from less economically developed areas, and their migration activities tend to exacerbate polarisation and inequality in urban society. Increasing the level of social integration of the migrant population can alleviate this phenomenon and enhance social stability [Milanovic, 2012].

Housing ownership has an important impact on the level of social integration of the migrant population [Zheng et al., 2020]. Stable housing ensures and enhances the ability of the migrant population to survive and develop in the city, and thus to integrate into the local community [Milanovic, 2012]. If they do not have access to housing, they may face instability in their lives and jobs, which is a threat to their psychological status. The high cost of housing is the biggest obstacle to the migrant population's access to urban housing ownership. In addition, the property rights of migrants in their place of origin may also be one of the reasons for their reluctance to migrate [Gu et al., 2020]. As the existence of a rural household registration is the basis for their access to land property rights, once they choose to move to an urban household registration, they have to give up their property rights in their original place of residence [Wang et al., 2023]. Thus, the difficulty of acquiring urban housing property rights and the ties to rural property rights together constitute the reasons that affect the social integration of the migrant population.

Using China Migrants Dynamic Survey(CMDS) data and designing a research framework based on the push-pull theory, this study empirically analyses the impact of urban and rural residential property rights factors on the social integration of the migrant population by using residential bases as the proxy variable for the ownership of rural housing property rights of the migrant population, and house price as the proxy variable for the difficulty of acquiring urban property rights of the migrant population. The paper is organised as follows, with Section 2 being the literature review; Section 3 being the model and identification strategy; Section 4 being the variables and descriptive statistics; Section 5 being the empirical analysis; and Section 6 being the concluding recommendations.

2   Review of the Literature

The concept of social integration is central to understanding the differences between different groups in contemporary society, particularly marginalised social groups [Wang and Fan, 2012]. In the current scholarly consensus, individual differences of immigrants, such as income and skills, have a greater impact on their level of social integration. [Zhang and Meng, 2007] analyses the social integration between immigrants and urban populations based on a dynamic perspective in terms of income disparity and provides empirical evidence on the income assimilation of urban immigrants from a labour market perspective. [?]'s study suggests that self-employed people who can speak the local dialect and are wealthy are better integrated into the local urban society. There are also studies that focus on the impact of urban characteristics and rural land on social integration. For example, [Massey, 1990] argues that the urban characteristics of immigrant urban destinations are an important factor in population migration.

In studies on the social integration of migrants in China, [Tian et al., 2019] also argues that specific urban factors can influence the status of urban destinations. [Zheng et al., 2020] study found that migrants living in affordable housing exhibited higher levels of social integration than those living in other types of housing. [Tyner and Ren, 2016] study found that immigrants' level of social integration was in part related to land ownership. [Zhang et al., 2020] found that landless households that migrated from rural to urban areas were not better integrated into the local urban society, but that access to land improved their quality of life and social well-being. However, most studies have focused on the impact of a single city, town or village on the level of social integration of migrants.

Push-pull theory is an important theory in the field of population migration. In the framework proposed by [Lee, 1966], favourable factors in cities attract people to move in and unfavourable factors contribute to population loss. Many empirical results show that the pull of the city and the push of the countryside can positively influence migrants' subjective willingness to integrate socially. For example, the single industrial structure and inadequate infrastructure development in the countryside create a push that leads to population flow and integration into the city [McGranahan and Beale, 2002]. According to the theory of territorial division of labour [Lipietz, 1977, Massey, 1995], cities are spatial agglomerations of various industries that can provide abundant jobs and infrastructure to attract and integrate labour.

However, the push of the city and the pull of the countryside may also affect the social integration of migrant populations from an opposite perspective. For example, the push from the city can also stop the influx of people. In parallel with the mass migration into the city, some labour may return on a 'compensatory' basis. This phenomenon is explained by [Dustmann, 1996] in terms of comparative returns, cumulative return on investment (ROI) and individual preferences. [Berry, 2008] found in a study of the urbanisation process that a higher cost of living leads to an exodus of urban population back to the countryside. [Wang et al., 2020] argues that the deterioration of the urban employment environment due to a single industrial structure is also an important reason for the return of the migrant population. [Chan, 2010] found that the household registration system under China's dualistic system restricts the rights of the migrant population to public services and political participation in the city, resulting in their inability to integrate institutionally into the city and backflow to the countryside.

On the other hand, the pull of the countryside also reduces the willingness of the migrant population to integrate into the city. By introducing the concept of 'location-specific capital', [DaVanzo, 1983] makes the case that the more human capital migrants accumulate in a given area, the more likely they are to return to that area. The presence of rural housing and land, important proxies for capital accumulation, undermines the willingness of migrant populations to actively integrate into the city [Hu et al., 2011]. A further explanation comes from the target income theory, which states that improved economic conditions can shorten the length of stay of mobile people in urban destinations. The reason for this is that rural-urban migration is essentially a household strategy to accelerate capital accumulation, which aims to create the conditions for migrants to have better opportunities for development when they return home [Vadean and Piracha, 009a, Constant and Massey, 2002] Research by [Henderson and Wang, 2005] has shown that people usually tend to return home to spend after completing the necessary capital accumulation in the

city, a phenomenon that also serves as a rural pulling force for migrants to return.

At present, most academic research on push-pull theory focuses on the attractiveness of cities to urban and rural labour (pull) and the repulsion of the countryside to labour (push), with less attention paid to the analysis of the repulsion of cities and the attractiveness of the countryside. In this paper we focus on measuring the impact of housing ownership factors on the social integration of urban and rural migrant populations based on push-pull theory.

3 Econometric model and identification strategy
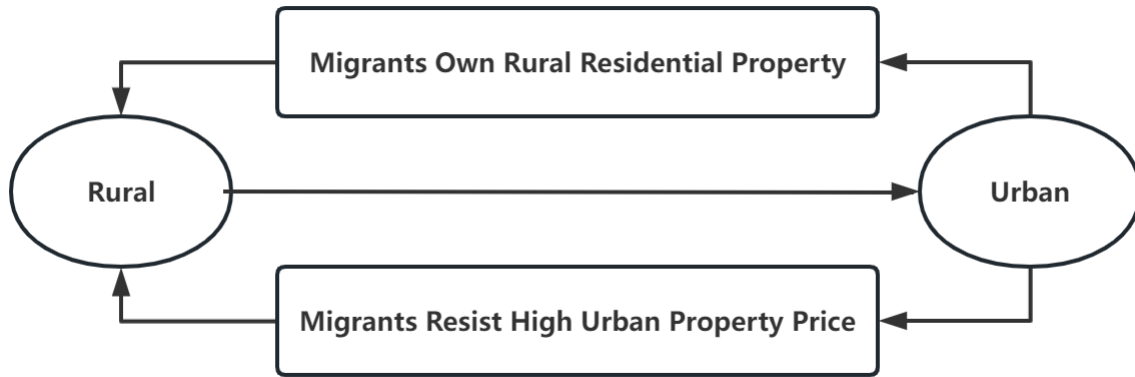
3.1 Research framework

Figure 1: The impact of housing property rights on population migration

Push-pull theory is the basic theory of population migration, which distinguishes between places of population inflow and places of population outflow based on a geographical regional perspective, and the driving force of population migration consists of a combination of push forces (repulsion) in the place of departure and pull forces (attraction) in the place of entry. This paper analyses the negative impact of housing ownership on the social integration of the migrant population in the place of inflow from the perspective that the factors that attract the migrant population are also present in the place of departure, while factors that hinder the integration of the migrant population are also present in the place of entry.

This paper assumes that the outflow of the migrant population is rural and the inflow is urban. When the migrant population owns housing property rights in rural areas, their willingness to integrate in urban areas will decline, i.e. the pull of rural property rights on the migrant population; when housing property rights are difficult to obtain due to higher housing prices in urban areas, the willingness of the migrant population to integrate socially will also decline, which is the push of urban property rights on the migrant population. This paper selects the sample's homestead ownership status as a proxy variable for rural property rights and house price as a proxy variable for the difficulty of obtaining housing property rights in the inflow city to examine the impact of housing property rights on the social integration of the

migrant population. Under this research framework (Figure 2), this paper proposes the following two research hypotheses:

H1: There is a negative relationship between the social integration intentions of the migrant population in the inflow city and their rural housing property rights ownership status.

H2: There is a negative and significant relationship between the migrant population's willingness to integrate socially in the inflowing city and the price of housing in the inflowing city.

3.2 Social integration indicator

The establishment of a valid system of indicators plays a crucial role in the study of the integration of mobile social populations. Based on the classical theory of the dimensions of social integration measurement, [Park, 1928] defined social integration as the interpenetration and assimilation of individuals or groups between cultures in a single dimension. [Gordon, 1964] developed a 'two-dimensional' model of social integration theory for both cultural integration and structural assimilation. [Entzinger and Biezeveld, 2003] proposes a fairly comprehensive dimension of measurement based on the subjective and objective social integration intentions of individuals in terms of social, economic, cultural, legal and political aspects. [Basu, 2013] builds on this with an innovative account of the importance of identity for social integration.

Almost all the literature agrees that cultural integration is an important component of social integration and that it is a key consideration regardless of which dimension is used to measure the degree of social integration. However, this idea faces certain limitations in concrete practice. For example, the concept of cultural integration is not clear. Some studies include immigrants' sense of belonging and identification with the city in the context of cultural integration, while others confuse it with psychological integration, so that the boundaries between cultural and psychological integration are blurred. Another example is the emphasis on the progressive relationship between indicators such as economic integration, social integration and cultural integration, while ignoring the possible interactions between the various factors. [Basu, 2013] argues that identity can be effective in improving workers' performance in the labour market, further contributing to economic integration. However, economic integration may also have a countervailing effect on immigrants' sense of group identity.

Much of the current research on factors influencing willingness to integrate has focused on the analysis of social capital, social discrimination, human capital and the labour market. Economic, cultural, political and identity constitute the main system of indicators of social integration. With the increasing number of theories related to the willingness to integrate socially and the enrichment of statistical data, there is great scope for the development of traditional measurement criteria and indicator systems. Taking the above studies into account, this paper defines social integration of the migrant population in terms of economic integration, psychological integration and cultural integration.

In terms of economic integration, this paper selects "willingness to move household registration to the city" as an indicator to measure the impact of rural property rights on the social integration of the migrant population, and "willingness to stay in the inflow city for a long time" as an indicator to measure the impact of urban property rights on the social integration of the migrant population. homestead is the land occupied by rural households in China as a residential base, and the property rights belong to the rural collective. If rural hukou holders move their hukou to the city, they will lose their inheritance rights to the homestead, and the homestead will become the asset of the village collective. This paper therefore sets the willingness to move the household to the city as an indicator to measure the impact of rural property rights on the social integration of the migrant population. High urban property prices make it difficult for the migrant population to own a home in the city, which affects their willingness to stay for a long period of time.

In this study, the use of the same economic integration indicator for both rural and urban property rights has the potential to bias estimates. For example, if 'willingness to stay permanently in the city' is used as a measure of the impact of ownership of rural property rights (house bases) on the social integration of mobile people, this indicator is not valid for mobile people who own house bases, as their permanent residence in the city does not affect their house base property rights. In contrast, "willingness to move one's household to the city" affects the ownership of one's homestead and is a valid measure for those who own a homestead.

In terms of psychological integration, the two indicators "I am willing to integrate with the locals" and "I feel that the locals are willing to accept me as one of them" are chosen as indicators to measure the psychological integration of property rights to the migrant population. These two indicators not only reflect the subjective willingness of the migrant population to integrate into the inflowing city, but also whether the objective human environment of the inflowing city is conducive to the integration of the migrant population.

In terms of cultural integration, this paper selects "Are you more willing to refer to the living habits of the inflowing city in order to handle your affairs? as a cultural integration indicator. Living habits are a good proxy variable for the willingness of the migrant population to accept and integrate into the local culture. If the migrant population is repulsed by the culture of the place of entry, it will be difficult for them to integrate into the local society.

3.3 The impact of rural residential property rights

3.3.1 Baseline model

In the first part of the empirical evidence, this paper analyses the impact of ownership of rural residential property rights (homestead) of the migrant population on their social integration in the inflow area. The core explanatory variable is the area of the homestead owned by the sample, and the explanatory variable: the social integration indicator of the migrant population is a dummy variable, so this paper chooses a Probit model based on likelihood estimation for the regression. It is expressed as

$$Pr\left(\mathrm{S}_{ij} = 1 \mid hs, X\right) = F\left(hs, \beta_1\right) = \frac{\exp\left(\beta_0 + \beta_1 hs_{ij} + \beta X_{ij} + \varepsilon_{ij}\right)}{1 + \exp\left(\beta_0 + \beta_1 hs_{ij} + \beta X_{ij} + \varepsilon_{ij}\right)} \tag{1}$$

where. S_{ij} is the willingness of the migrant population i to be socially integrated in place j, a dummy variable. $Pr(S_{ij} = 1 \mid hs, X)$ is the probability that the migrant population has the willingness to integrate socially in the inflow city. F is the cumulative distribution function of the standard normal. hs_{ij} is the area of homestead owned by the sample, X_{ij} are other control variables, and ε_{ij} is a random disturbance term.

3.3.2 Robustness test: propensity score matching

Despite the wide coverage and large sample size of the CMDS database used in this paper, and the inclusion of control variables in the model, there is still a certain problem of sample selection bias in the ownership of homestead and contracted land among the migrant population - the migration behaviour from the rural population may itself be related to ownership of means of production and livelihood, Which is the endogeneity problem of 'self-selection'. Propensity score matching is the preferred method for addressing the problem of sample selection bias, and it can be effective in mitigating this problem. In this paper, a propensity score matching model is used to match the untreated sample with the treated sample to balance the data so that the individual characteristics of the matched treated group (owning more than 1 m^2 of homestead) and the control group (owning less than 1 m^2 or no homestead) are consistent and reduce statistical differences.

The first step in propensity score matching is to estimate the propensity score P(X) for each indicator of social integration of the migrant population by logistic regression, denoted as

$$P\left(X_i\right) = Pr\left(Move_i = 1 \mid X_i\right) \tag{2}$$

where X is a set of control variables affecting the social integration of migrant populations, also known as matching variables. The treatment and control groups are matched according to the common support region of the propensity score, and then the corresponding matching method is used to calculate the average treatment effect (ATT) on the treatment group, expressed as

$$ATT = E\left(Y_i^T - Y_i^C \mid Move_i = 1\right) = E\left(Y_i^T \mid Move_i = 1\right) - E\left(Y_i^C \mid Move_i = 1\right) \tag{3}$$

The ATT aims to compare the differences in social integration indicators between mobile people who own a homestead and those who do not (or own less than 1 square metre of homestead) and to derive the specific impact of homestead on the social integration of mobile people. This paper uses a 1:1 nearest neighbour matching method for analysis, and a 1:2 nearest neighbour matching, radius matching and

kernel matching for robustness testing.

It is worth adding that we argue that the mechanism of the impact of rural property rights on the social integration of the urban migrant population does not suffer from bidirectional causality and does not require the search for instrumental variables for estimation. This is because the migrant population's willingness to integrate at the inflow location does not affect their ownership of their homestead and contracted land; their homestead ownership changes only when the migrant population gives up their rural hukou to switch to an urban hukou, and the sample selected for this paper is a mobile group that has not acquired a hukou at the inflow location. The core explanatory variable of the second part of the study, house price, is highly endogenous and the instrumental variables have been selected for causal inference in this paper.

3.3.3 Discussion: impact of contracted land

Apart from homestead, contracted land is also an interest in land owned by the urban and rural migrant population in China. Contracted land refers to rural land issued by a member of a rural collective economic organisation in accordance with the law, and the contractor enjoys the right to use, benefit from and transfer the contracted land in accordance with the law. Unlike homestead as residential property rights, contracted land is more of an expression of economic rights and interests. The nature of property rights in contracted land is similar to that of homestead in that it belongs to the rural collective. This section of the paper discusses the differences in the impact of economic land property rights on the social integration of mobile people as opposed to homestead property rights.

3.4 The impact of urban residential property rights

3.4.1 Baseline model

The willingness of migrant populations to integrate into inflowing cities also depends on the difficulty of acquiring urban housing titles. Even if migrants are not affected by rural residential property rights, high urban housing prices are a barrier to living permanently in the place of inflow. The variable that measures the difficulty of acquiring urban housing ownership in this paper is: house price/per capita disposable income in the city of inflow, expressed in the Probit model as

$$Pr\left(\mathrm{S}_{ij} = 1 \mid hi, X\right) = F\left(hi, \beta_1\right) = \frac{\exp\left(\beta_0 + \beta_1 hi_{ij} + \beta X_{ij} + \varepsilon_{ij}\right)}{1 + \exp\left(\beta_0 + \beta_1 hi_{ij} + \beta X_{ij} + \varepsilon_{ij}\right)} \tag{4}$$

where. S_{ij} is the willingness of the migrant population i to be socially integrated in place j, a dummy variable. $Pr(S_{ij} = 1 \mid hi, X)$ is the probability that the migrant population has a willingness to integrate socially in the inflow city. F is the cumulative distribution function of the standard normal. hi_{ij} is the house price to income ratio in the city where the sample is located, X_{ij} are other control variables, and

ε_{ij} is a random disturbance term.

3.4.2 Robustness tests: instrumental variable

The core explanatory variable for measuring the impact of urban property rights on the subjective willingness to integrate of the migrant population is the house price to income ratio. However, house price is a highly endogenous variable that is influenced by a number of factors. When the measure of social integration of migrants in a particular area is high, the underlying demand may push up housing prices, thus creating a possible two-way causality endogeneity problem in the prediction, which affects the unbiasedness of the estimates. Instrumental variables are widely used in the treatment of two-way causality problems.

The use of instrumental variables is well established in empirical studies of house price. Common instrumental variables include land development area, the product of long-term interest rate and land supply elasticity, and lagged land sale price [Peng and Du, 2016, Zhang et al., 2018, Chaney et al., 2012, Waxman et al., 2020]. In this paper, we choose the land sales price with a two-period lag as the instrumental variable for house price. Land sales prices directly affect house price, which is consistent with the correlation assumption of the instrumental variable; at the same time, migrant populations do not take into account lagged land sales prices during their integration in the inflow, which is consistent with the exogeneity assumption of the instrumental variable [Waxman et al., 2020].

4 Data, variables descriptive statistics

4.1 Data source

This paper selects data from the 2017 China Migration Dynamics Survey (CMDS) organised by the National Health Planning Commission for empirical analysis. The survey covered 31 provinces (municipalities and autonomous regions) in mainland China, and the sample was selected from the migrant population who had stayed in the area for more than one month. The average age of the sample ranged from 15-59 years. A stratified, multi-stage, large-scale PPS sampling method was used to investigate in detail the developmental status, individual characteristics, social integration and employment of the migrant population in China. After data cleaning, the valid sample size used in this paper was 152,491. data relating to city control variables were obtained from the statistical yearbooks of each city.

4.2 variables and descriptive statistic

The dependent variables in this paper are social integration indicators in the form of dummy variables, including economic integration indicators (Econ_hs), which measure the impact of rural property rights (housing land), and economic integration indicators (Econ_hi), which measure the impact of urban property rights (house price to income ratio), as well as psychological integration indicators (Psyc_1,

Table 1: Variable description

Variables	N	Mean	S.D.	Min	Max
Social integration indicators					
Econ_hs	152,491	0.395	0.489	0	1
Econ_hi	152,491	0.832	0.374	0	1
Psyc_1	152,491	0.931	0.254	0	1
Psyc_2	152,491	0.927	0.260	0	1
Culture	152,491	0.444	0.497	0	1
Independent variables					
lnhs	152,491	2.241	2.014	0	6.908
lnhi	152,491	0.623	0.813	-5.167	7.376
Control variables					
gender	152,491	0.514	0.500	0	1
age	152,491	36.49	10.95	15	96
edu	152,491	10.22	3.384	0	19
hukou	152,491	0.825	0.380	0	1
marriage	152,491	0.814	0.389	0	1
scope	152,491	1.306	0.756	0	2
lngdp	152,491	6.173	1.137	3.018	8.099
tgdp	152,491	0.544	0.124	0.280	0.871
hospital	152,491	63.33	22.64	17.46	137.7
teacher	152,491	45.15	18.02	19.77	163.0

Psyc_2) and cultural integration indicators (Culture). The core explanatory variables in this paper are log The core explanatory variables in this paper are the logarithmic homestead (lnhs) and the logarithmic house price to income ratio (lnhi).

The demographic characteristics of the sample are usually used as control variables. In human capital theory, factors such as education level and work experience can help individuals to obtain better jobs and income, thus enabling them to integrate into the incoming population. In this paper, gender (gender), years of education (edu), range of migration (scope) and marital status (marriage) and household registration (hukou) are chosen as demographic control variables. Urban characteristics may influence the level of social integration of the migrant population in the place of inflow. The urban control variables selected in this paper mainly reflect economic, industrial structure and infrastructure characteristics. They mainly include the share of tertiary GDP (tgdp), gross domestic product (lngdp), number of doctors per 1,000 population (hospital), and number of primary school teachers per 1,000 population (teacher). The results of the descriptive statistics are shown in Table 1.

5 Empirical analysis

5.1 Effect of rural property rights

5.1.1 Homestead regression results

In the first part of the empirical study, this paper reports on the impact of rural housing property rights (homestead) ownership of the migrant population on their willingness to integrate into the influx. According to the regression results in Table 2, homestead ownership by the migrant population has a significant negative impact on their subjective willingness to integrate into inflow cities. Specifically, for every doubling of the size of the homestead owned by the migrant population, the probability of economic integration in the inflow area will decrease by 4.92%, the probability of subjective psychological integration will decrease by 2.71%, the probability of objective psychological integration will decrease by 1.5% and the probability of cultural integration will decrease by 3.21%.

Due to the large sample area span of the data used in this paper, we used propensity score matching for robustness testing in order to avoid potential endogeneity problems due to sample selection bias. After passing common support hypothesis tests and stationarity tests, this paper reports core density plots before and after using propensity score matching (Figure 2 and Figure 3). The quality of the data is significantly better after matching compared to before matching.

Table 3 shows the results of the PSM estimation, with the average treatment effects of the three matching methods after matching the sample characteristics being -10.1%, -1.4%, -0.9%, and -5.4%, respectively, and significant at a statistical level of 5%. This is the same conclusion as the Probit regression results, i.e. the existence of a negative effect of homestead ownership of the migrant population on the social integration of the migrant population.

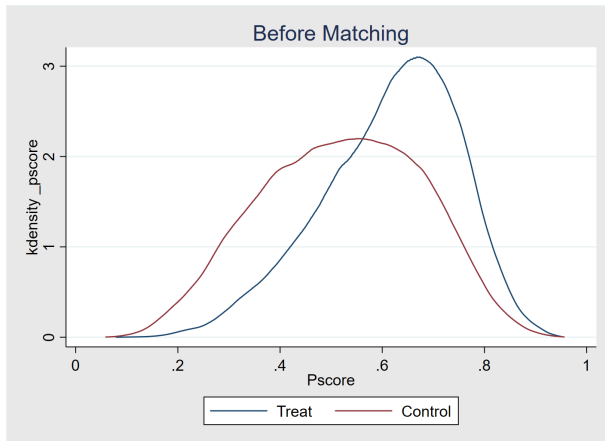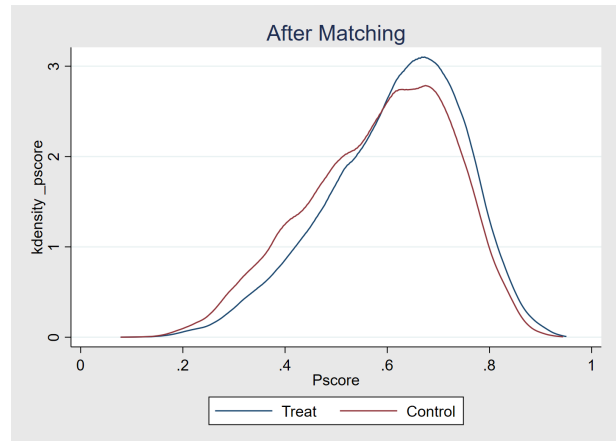Figure 2: Before-matching kernel density graph   Figure 3: After-matching kernel density graph

The homestead is an important asset for rural residents. If a migrant moves his or her household registration from rural to urban areas, the homestead will be taken back collectively and the rights and interests attached to it will be zeroed out, which is an irrecoverable economic loss for them. Despite the

Table 2: Homestead regression results

	Econ_hs	Psyc_1	Psyc_2	Culture
lnhs	-0.0492***	-0.0271***	-0.0150***	-0.0321***
	(0.00198)	(0.00289)	(0.00281)	(0.00191)
gender	-0.0333***	-0.0924***	-0.0625***	-0.0748***
	(0.00684)	(0.0103)	(0.0101)	(0.00663)
age	0.00136***	0.00655***	0.00584***	0.000885**
	(0.000368)	(0.000561)	(0.000549)	(0.000353)
edu	0.0319***	0.0537***	0.0520***	0.0454***
	(0.00121)	(0.00174)	(0.00171)	(0.00117)
hukou	-0.261***	-0.0560***	-0.104***	-0.0855***
	(0.0108)	(0.0183)	(0.0177)	(0.0106)
marriage	0.0813***	0.0869***	0.0318**	-0.0988***
	(0.00935)	(0.0134)	(0.0135)	(0.00891)
scope	0.0311***	-0.183***	-0.169***	-0.0117**
	(0.00487)	(0.00750)	(0.00747)	(0.00469)
lngdp	0.0882***	-0.0554***	-0.0820***	0.0191***
	(0.00366)	(0.00535)	(0.00529)	(0.00351)
tgdp	1.990***	0.794***	0.269***	0.337***
	(0.0379)	(0.0567)	(0.0561)	(0.0361)
hospital	-0.00100***	0.00282***	0.00148***	-0.000832***
	(0.000209)	(0.000322)	(0.000312)	(0.000204)
teacher	0.00247***	-0.00283***	-0.00387***	0.000494**
	(0.000216)	(0.000300)	(0.000286)	(0.000211)
constant	-2.097***	0.935***	1.548***	-0.633***
	(0.0334)	(0.0478)	(0.0474)	(0.0317)
N	152491	152491	152491	152491
$PseudoR^2$	0.0709	0.0406	0.0359	0.0211

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. The following table is the same.

Table 3: Propensity score matching results

Variables	Status	1:1Matching		Radius Matching		Kernel Matching	
		ATT	t	ATT	t	ATT	t
Econ_hs	Before matching	-0.147***	-58.58	-0.146***	-59.37	-0.146***	-58.76
	After matching	-0.101***	-26.62	-0.109***	-29.45	-0.103***	-29.64
Psyc_1	Before matching	-0.033***	-25.25	-0.035***	-24.49	-0.034***	-25.25
	After matching	-0.014***	-7.79	-0.017***	-7.98	-0.014***	-7.79
Psyc_2	Before matching	-0.028***	-13.16	-0.031***	-13.17	-0.029***	-14.54
	After matching	-0.009***	-7.38	-0.011***	-7.94	-0.009***	-8.26
Culture	Before matching	-0.094***	-36.83	-0.099***	-39.87	-0.096***	-36.82
	After matching	-0.054***	-14.20	-0.056***	-13.78	-0.055***	-15.21

relatively good social security system and public services in cities, the high cost of housing is beyond the financial means of most migrants, who may prefer to return to the countryside where they have residential assets rather than integrate into the city. Similarly, the home ownership situation will reduce the migrant population's willingness to purchase a home locally, meaning that this migrant population will prefer short-term housing of a rental nature. The emergence of this trend will make it easier for the migrant population to congregate in similar groups rather than move into settlements with local residents. As a result, they will also find it difficult to integrate culturally and psychologically into the local community. Combined with the above empirical results, Hypothesis 1: "There is a negative relationship between the migrant population's willingness to integrate socially in the inflowing city and their rural housing ownership." was confirmed.

5.1.2 Discussion: impact of contracted land

Table 4 shows the regression results after replacing the homestead with contracted land as the core explanatory variable, only the economic integration indicator reached a significance level of 5%, the psychological and cultural integration indicators were not significant. Although the economic integration indicator is significant, the too small coefficient (-0.0051) is not economically meaningful. This proves that the economic property rights represented by contracted land have an insignificant impact on the social integration of the migrant population as opposed to the housing property rights represented by the homestead. The reason for this is that the migrant population group leaving the countryside is itself insensitive to the land-agricultural production relationship represented by contracted land, and that the migration decision of urban and rural migrants is itself an abandonment of agricultural production behaviour.

Table 4: Contracted land regression results

	Econ_hs	Psyc_1	Psyc_2	Culture
Contracted land	-0.00511***	0.000719	0.00296	-0.000894
	(0.00100)	(0.00127)	(0.00185)	(0.000688)
Control variables	Yes	Yes	Yes	Yes
N	152491	152491	152491	152491
R^2	0.0679	0.0395	0.0356	0.0197

5.2 Effect of urban property rights

5.2.1 house price regression results

Table 5 reports the estimated results of the house price to income ratio on the social integration intentions of the migrant population. The overall effect is negative, i.e. the higher the house price to income ratio in a particular location, the lower the social integration intentions of the migrant population in that area. Specifically, for every 100% increase in the house price to income ratio in the city to which the migrant population flows, the probability of economic integration of the migrant population in the inflowing city will decrease by 11.2%, the probability of subjective psychological integration will decrease by 4.87%, the probability of objective psychological integration will decrease by 8.80% and the probability of cultural integration will decrease by 7.16%.

Table 6 reports the regression results using lagged land sales price as an instrumental variable for house price. The absolute value of the coefficient on ivprobit increases somewhat compared to the results of the Probit model, suggesting that the underlying endogeneity problem tends to underestimate the impact of house price on the social integration of mobile people. The coefficients for economic integration, subjective psychological integration, objective psychological integration and cultural integration are -0.156, -0.086, -0.151 and -0.043 respectively.

Endogeneity tests for the explanatory variables and weak instrumental variable tests for the instrumental variables were required prior to the instrumental variable regressions. Table 6 reports the results of the Wald exogeneity test and the AR and Wald weak instrumental tests, indicating that the house price to income ratio is endogenous (at a confidence level of 0.01), while there is no weak instrumental variable problem for IV (at a confidence level of 0.01).

Higher house price to income ratio in in-migration cities may have two consequences: on the one hand, due to the short residence time and instability of the migrant population, they tend to lack a sense of security and belonging, which may lead to distrust and rejection of the city, thus affecting their level of social integration in the city. On the other hand, due to the lack of stable housing in the city, the migrant population often needs to change their place of residence, which can increase their cost of living and level of inconvenience, further reducing their level of integration. High housing prices will also force the migrant population to choose cheaper areas to live in, thus increasing aggregation among the

Table 5: house price to income ratio regression results

	Econ_hi	Psyc_1	Psyc_2	Culture
lnhi	-0.112***	-0.0487***	-0.0880***	-0.0716***
	(0.00626)	(0.00813)	(0.00805)	(0.00525)
gender	-0.0189**	-0.103***	-0.0698***	-0.0886***
	(0.00784)	(0.0102)	(0.0100)	(0.00660)
age	-0.00130***	0.00663***	0.00609***	0.00112***
	(0.000412)	(0.000551)	(0.000541)	(0.000353)
edu	0.0336***	0.0520***	0.0488***	0.0431***
	(0.00138)	(0.00181)	(0.00178)	(0.00117)
hukou	-0.0762***	-0.127***	-0.135***	-0.163***
	(0.0117)	(0.0165)	(0.0161)	(0.00938)
marriage	0.305***	0.0627***	-0.00692	-0.134***
	(0.0105)	(0.0140)	(0.0139)	(0.00918)
scope	-0.0758***	-0.185***	-0.169***	-0.0128***
	(0.00551)	(0.00737)	(0.00740)	(0.00467)
lngdp	0.0808***	-0.0456***	-0.0582***	0.0346***
	(0.00451)	(0.00597)	(0.00590)	(0.00382)
tgdp	0.785***	0.955***	0.539***	0.549***
	(0.0461)	(0.0623)	(0.0604)	(0.0385)
hospital	-0.000636***	0.00251***	0.000749**	-0.00126***
	(0.000244)	(0.000325)	(0.000319)	(0.000207)
teacher	0.0000657	-0.00231***	-0.00299***	0.00120***
	(0.000252)	(0.000315)	(0.000301)	(0.000216)
constant	-0.205***	0.854***	1.367***	-0.760***
	(0.0396)	(0.0519)	(0.0509)	(0.0334)
N	152491	152491	152491	152491
$PseudoR^2$	0.0264	0.0399	0.0371	0.0206

Table 6: IV Probit regression results

	Econ_hi	Psyc_1	Psyc_2	Culture
lnhi	-0.156***	-0.0863***	-0.151***	-0.0434***
	(0.00821)	(0.0107)	(0.0105)	(0.00703)
Control variables	Yes	Yes	Yes	Yes
N	152491	152491	152491	152491
Wald Exogeneity Test	69.80 ***	31.56 ***	89.66***	37.39***
Wald Weak Instrument Test	355.58***	63.79***	201.00***	38.70***
AR Weak Instrument Test	355.58***	63.81***	201.20***	38.67***

Table 7: Quadratic regression results

	Econ_hi	Psyc_1	Psyc_2	Culture
lnhi	-0.0307***	-0.00731***	-0.0124***	-0.0259***
	(0.00186)	(0.00126)	(0.00129)	(0.00246)
$lnhi^2$	0.00318***	0.00173***	0.000863	-0.00154
	(0.000838)	(0.000569)	(0.000583)	(0.00111)
N	152491	152491	152491	152491
R^2	0.024	0.020	0.019	0.028
Control variables	Yes	Yes	Yes	Yes
Extreme point:	4.830653	2.11619	7.192973	-8.419066

migrant population, reducing their opportunities to come into contact with locals and further weakening their cultural identification with the place they have moved to. In summary, Hypothesis 2: "There is a negative relationship between the migrant population's willingness to integrate socially in the incoming city and the difficulty of acquiring property rights in the incoming city." is confirmed.

5.2.2 Discussion: non-linear impact of house price

Non-linear relationships are commonly discussed in studies on house price [Richardson et al., 1974]. Table 7 analyses the non-linear relationship (based on OLS estimation) between house price and income ratios and social integration indicators for migrant populations. Based on Table 7, we can calculate the inflection points of the four social integration indicators on the house price to income ratio, which are 4.83, 2.12, 7.20 and -8.41. Except for the cultural integration indicator, the quadratic term coefficients of the other three indicators are positive, which proves that the relationship between the house price to income ratio and the social integration indicator is negative when it is less than the inflection point, the same result as above. The quadratic coefficient of the cultural inclusion indicator is negative, but its inflection point is -8.41. When greater than the inflection point, the relationship between the house price to income ratio and the social inclusion indicator is negative, the same as the results above.

6 Conclusions and Recommendations

Using dynamic monitoring data of China's migrant population and designing the research framework based on push-pull theory, this study empirically analysed the impact of urban and rural residential property rights factors on the social integration of the migrant population. The results show that there is a significant negative relationship between the ownership of rural residential property rights (residential bases) of the migrant population on their social integration in the place of inflow. The higher the house price of the migrant population in the city of inflow, the lower the level of their social integration. At the same time, there is the non-linear relationship between the impact of house price on the social integration of the migrant population. Based on these results, this paper makes suggestions to improve the social integration of the migrant population from three perspectives.

First, to improve housing policies for the migrant population, strengthen public capital investment in housing and expand individuals' access to housing resources. Excessive housing prices can increase the cost of living for migrant populations and reduce their economic status, which in turn has the negative impact on cultural and psychological integration. The government can invest more public capital in community building, such as providing public housing for the migrant population, in order to foster community culture and promote cultural and psychological integration of the migrant population.

Secondly, implement reforms to the household registration system to strip away the ties between rural residential property rights and household registration, while the government should take into account the practical needs of the "two-way migration" group. In the existing household registration system, the existence of rural hukou is the basis for land property rights for the migrant population. Once they choose to move to the urban household registration, they will have to give up their property rights in their original place of residence and incur financial losses. Removing the ties between rural residential property rights and household registration would reduce the opportunity cost of urban integration for the migrant population. In addition, as there is a two-way flow in the process of urban-rural integration, the individual differences of the migrant population are obvious. On the one hand, it should actively address the practical problems of the migrant population and provide adequate protection for basic public services such as medical care, economy and children's education; on the other hand, it should also face up to the contradiction between the migration of some of the migrant population's household registration and their lack of economic strength, so as to avoid secondary migration after the transfer of household registration due to low income and unstable employment, create a stable source of manpower for economic development and promote sustainable urban economic and social development.

Thirdly, strengthening urban management construction, coordinating industrial structure and creating employment opportunities. To a certain extent, the level of urban management reflects excellent or bad industrial planning and the degree of economic development. Strengthening urban management construction can effectively improve the efficiency of urban resource allocation and operation, and gain positive perceptions of the migrant population. Improving the level of urban management, building an employment service system for the migrant population, establishing an effective training and manage-

ment system for the migrant population and effectively promoting the minimum wage system will gather human capital for the economic development of the city.

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