Institutional Supply, Digital Governance and Homestead Exit in Megacity
——An empirical study based on Shanghai

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ABSTRACT. [Research methods] The binary logistic regression model was used for quantitative research, and the self-determination theory was introduced to analyze the influencing factors of the willingness of farmers to quit their homesteads in the megacity. [Research results] (1) Self-support has become a key factor influencing the willingness to withdraw from homesteads in the megacity. (2) Competency support factors are secondary influencing factors. The age of farmers, the per capita income of households, and the proportion of agricultural income all have a negative effect on the willingness to quit homesteads in the megacity. (3) To a lesser extent, the attribution support factor negatively affects the willingness of farmers to quit their homesteads. The modern information technology should be further used to strengthen the intelligent governance and digital governance of homesteads, and strengthen farmers' trust in government decision-making, so as to promote the process of homestead withdrawal.

Keywords: urban planning; homestead exit; self-determination theory; smart governance; information technology

1   Introduction

As a mega-city, Shanghai has scarce land resources, land prices in the central urban area continue to rise, and the value of the homestead property for rural households in the suburbs is also increasingly prominent. At the same time, the homesteads and buildings of rural households in the suburbs are facing a series of illegal use and governance difficulties, such as idle abandonment, illegal occupation, area exceeding the standard, and multiple houses for one household. As a result, "it is difficult to effectively utilize idle land resources, the supply and demand in the land market are unbalanced, and the waste of land resources is caused" [1-2].

What kind of policy effects can the country, Shanghai and Fengxian District have a series of institutional supply of rural homesteads? What are the factors that affect the willingness of rural households to withdraw from homesteads in Shanghai suburbs? This paper takes Nanqiao Town, Fengxian District, a pilot area of Shanghai's "three

plots of land" as an example, to analyze the willingness, influencing factors and policy effects of farmers to withdraw from homesteads in megacity.

2   Literature review and theoretical analysis

2.1   Literature review

In recent years, related researches on homestead exit in academia, mainly focus on the homestead exit mode [3-4], the evaluation of homestead reuse efficiency [5], homestead exit dynamic mechanism [6-8], and homestead exit risk research [9-11], compensation standards for homestead withdrawal [12], factors affecting homestead withdrawal [13], etc. The paid and voluntary withdrawal of homesteads will help to revitalize idle rural land resources, protect farmers' land rights and interests, and balance the supply and demand of the land market. Studying the main decision-making behavior of farmers will also help to smoothly promote the withdrawal of homesteads [14]. There is a problem of further widening the economic gap within farmers, and fairness and efficiency should be taken into account in the process of homestead withdrawal.

However, there is little research in academic circles on the willingness of farmers to quit their homesteads in the suburbs of the megacity. Based on the resource endowment of the megacity this paper introduces the theory of self-determination, and analyzes the willingness of farmers to quit their homestead and their influencing factors.

2.2   Theoretical analysis and research hypothesis

Self-determination Theory is suitable for exploring the motivation of personal behavior, emphasizing the internalization of people's autonomous will and the degree of influence of the external environment on people. This paper introduces the theory into the field of homestead exit research to confirm the applicability of self-determination theory in homestead exit research.

Hypothesis 1: The independent support of farmers has a positive effect on the willingness to quit the homestead

Self-support is expressed as the opportunity for farmers to choose independently, and whether farmers choose to withdraw from their homestead is their own will. Mainly reflected in policy expectations are economic compensation satisfaction and job opportunity satisfaction.

Hypothesis 2: Farmers' competency support negatively affects their willingness to quit homestead

Competent support is the ability of an individual to perform a certain behavior. It is mainly reflected in individual and family characteristics (age, education level) and economic characteristics (per capita annual household income, agricultural income ratio, and the number of urban housing purchases).

Hypothesis 3: The negative effect of farmers' belonging, support and their willingness to quit the homestead

Belonging support is mainly reflected in the social support, social participation and other elements that farmers get, getting along with others and getting support from others.

3   Research Design

3.1   Research model

The willingness to quit the homestead of farmers in mega-city is the explained variance of this study. The influencing factors of homestead quitting are the explanatory variables, while the willingness of farmers to quit the homestead is a dichotomous variable, which can be divided into two situations: willing to quit the homestead and unwilling to quit the homestead, so a binary logistic regression model was used for quantitative research. If P is used to represent the probability that farmers in mega-city are willing to quit their homesteads, and 1-P represents the probability that farmers in mega-city are not willing to quit their homesteads, the resulting Logistic regression model is as follows:

$$P = \frac{\exp(\beta_0 + \beta_1 X_1 + ... + \beta_n X_n)}{1 + \exp(\beta_0 + \beta_1 X_1 + ... + \beta_n X_n)} \qquad (1)$$

$$1 - P = \frac{1}{1 + \exp(\beta_0 + \beta_1 X_1 + ... + \beta_n X_n)} \qquad (2)$$

It can be obtained by transforming the formula:

$$Y = Ln\left(\frac{p}{1-P}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n + \varepsilon \qquad (3)$$

In the formula: Y is the explained variable - the willingness of farmers to quit the homestead in mega-city. When Y=1, it means that they are willing to quit the homestead, and when Y=0, it means that they are unwilling to quit the homestead. X is an explanatory variable—a factor that affects the willingness of farmers to quit their homesteads in the megacity, is the regression coefficient of each influencing factor, and n is the number of each influencing factor, which is a constant term and a random disturbance term.

3.2   Data sources

Using the Participatory Farmer Survey and Assessment (PRA) method, questionnaires and informal interviews were distributed to farmers in Nanqiao Town to fully understand the actual situation of rural homestead withdrawal in the area. In order to ensure the authenticity and credibility of the questionnaire survey in the field survey, a pre-

liminary survey was firstly carried out to the farmers in the area. After the content of the questionnaire was continuously revised, the survey was formally carried out until it was consistent with the actual situation of the local homestead exit. In the actual investigation, a total of 300 farmer samples were randomly selected from 10 villages in Nanqiao Town, Fengxian District, including 52 resistance samples. After excluding 19 samples with incomplete information, a total of 229 valid samples was obtained, and the effective rate of the questionnaire was 76%.

4   Empirical Analysis

4.1   Model testing

Goodness of fit test.

Using KMO and Bartlett Sphericity test to analyze the sample data, the analysis results show that the sample data KMO value = 0.752 and reach a significant level (p = 0.000), the significance of the Hosmer coefficient = 0.37> 0.05, the model fit better.

Multicollinearity diagnosis.

Table 1. Multicollinearity diagnosis

variable	TOL	VIF	variable	TOL	VIF
X_1	0.771	1.297	X_7	0.665	1.503
X_2	0.776	1.288	X_8	0.901	1.110
X_3	0.453	2.208	X_9	0.593	1.687
X_4	0.493	2.030	X_{10}	0.943	1.061
X_5	0.635	1.576	X_{11}	0.803	1.246
X_6	0.633	1.579			

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Multicollinearity diagnosis is used to determine whether there is a correlation between variables. If there is a correlation between independent variables, the accuracy of the model will be affected. SPSS was used to test the Multicollinearity among variables, and the variance inflation factor (VIF) and tolerance (TOL) were extracted. The results show that the VIF index of all selected independent variables is less than 5, and the TOL index is greater than 0.1. All 11 selected independent variables passed the Multicollinearity test, that is, the regression model was considered to have no Multicollinearity problem.

4.2   Analysis of measurement results

Table 2. Logistic regression analysis of farmers' willingness to quit their homestead

variable	Beta	SE	Wald	Exp(B)
Financial compensation satisfaction	1.932***	0.474	16.641	6.905
Job Opportunity Compensation Satisfaction	1.37***	0.449	9.316	3.934
Age	-0.16***	0.038	17.409	0.852
education level	0.172	0.464	0.138	1.188
per capita annual household income	1.434***	0.527	7.413	4.197
share of agricultural income	-1.718***	0.574	8.972	0.179
Number of house purchases in town	0.793*	0.41	3.743	2.210
Homestead residents	-0.544**	0.224	5.927	0.580
Years of residence	0.226**	0.091	6.104	1.254
Frequency of connecting neighbors	-0.499	0.406	1.515	0.607
land attachment	-1.347***	0.510	6.983	0.260
constant	3.944	3.606	1.197	51.637

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Analysis of independent support factors.
The research results show that satisfaction with economic compensation and satisfaction with employment opportunities both passed the significance test at the 99% significance level, and were positively correlated with the willingness to quit the homestead. Hypothesis 1 was tested. The economic conditions of megacity are superior, and farmers can guarantee self-satisfaction of income without leaving their homesteads. Therefore, expectations for economic compensation in megacity are often too high, and it is difficult to balance expectations and reality, and the willingness to withdraw from homesteads is low. With the improvement of farmers' satisfaction with employment opportunities, their willingness to withdraw from their homesteads has gradually become stronger. Farmers in megacity do not need to rely on agriculture for their livelihoods. Rent is the main source of income. After the housing land is withdrawn, the rental income will decrease, and the employment problem will be difficult to solve. And employment opportunities, as farmers' long-term income guarantee expectations in the future, will have a certain negative impact on farmers' willingness to withdraw from their homesteads.

Analysis of competency supporting factors.
In terms of economic characteristics, the per capita annual income of households passed the test at the 99% confidence level, and was negatively correlated with the willingness to quit the homestead. When the annual income of farmers' households is sufficient to meet their living expenses and social security, they can support their inner competency needs, and the demand for residential functions and social security functions of the homestead has declined, and they cannot meet their own competency needs

by withdrawing from the homestead. Therefore, the higher the per capita annual income of rural households, the more inclined they are to choose not to withdraw from the homestead. Second, the proportion of agricultural income passes the significance test at the 95% significance level, which has a significant negative impact on the willingness to quit homestead. The agricultural income of farmers in megacity accounts for a relatively low proportion of household income, and some farmers are even completely divorced from agricultural production. Therefore, farmers are more willing to migrate to central urban areas. A small number of farmers have been engaged in agricultural economic activities for a long time, and agricultural income is the main source of income. Once they choose to withdraw from the homestead, it will lead to the lack of long-term stable income source guarantee, bring uncertainty and lose a sense of security, and cannot meet the competent support. The willingness to quit will also decrease.

Attribution support factor analysis.

The number of residents living on the homestead, the annual living time farmers and the land attachment degree all passed the test at the 99% significance level, and were negatively correlated with the willingness to quit the homestead. At present, there is a problem of one family with multiple houses on the homestead, and there are many people living on the homestead. However, in the process of exiting, the compensation amount for exiting the homestead cannot be calculated according to the "multiple houses", resulting in uneven distribution of compensation for family members and difficulty in guaranteeing the housing problem after exiting. The number of people living in the homestead, the weaker the willingness to quit the homestead. The degree of land attached has a significant negative and significant impact on the decision to withdraw from the homestead, indicating that the higher the degree of farmer's land attachment, the lower the willingness to withdraw from the homestead. Farmers have lived in rural homesteads for a long time. Most of the homesteads are passed down from generation to generation. In addition to the residential function, homesteads also have a certain emotional attachment value. Therefore, farmers are often based on the emotion that it is difficult to give up the homestead and cannot satisfy the support of belonging. Choose to refuse to exit Homestead. Assumption 3 passes verification.

5   Conclusions

Through sampling surveys and informal interviews with farmers in Nanqiao Town, Shanghai, and using the binary Logistic model, this paper studies and analyzes the willingness of farmers to quit their homesteads and their influencing factors in mega cities.

The research results show that: (1) Self-support, competent support and belonging, support all have a certain influence on the willingness to withdraw from homesteads in the megacity, and the degree of influence decreases in order. (2) Competency support factors are secondary factors. The age of farmers, the per capita income of households, and the proportion of agricultural income all have a negative effect on the willingness

to quit homesteads in the megacity. (3) To a lesser extent, the attribution support factor negatively affects the willingness of farmers to quit their homesteads. Farmers in megacity are no longer the traditional "acquaintance society". Whether farmers quit their homesteads almost no longer consider their social network, but still retain a certain amount of social network of the country complex.

To guide rural households in the suburbs of mega cities to withdraw from homesteads, attention should be paid to the hidden value of homesteads in the megacity, clarify the policy preferences of farmers, and establish a sustainable guarantee mechanism and value recognition.The modern information technology should be further used to strengthen the intelligent governance and digital governance of homesteads, and strengthen farmers' trust in government decision-making, so as to promote the process of homestead withdrawal.

References

1. Shanghai: The Road to Rural Revitalization of megacity [J]． Land and Resources, 2018(6): 32-34
2. Wang Juan, Chang Zheng. The problems and countermeasures of China's urban-rural fringes: from the perspective of interest relations [J]. Comparison of Economic and Social Systems, 2012(03): 163-173.
3. Zhu Yexin. An empirical study on the replacement mode of homestead in suburban cities ［D］. Shanghai: Shanghai Jiaotong University, 2008.
4. Feng Nana, Shen Yueqin, Sun Xiaolong, Liu Yahui. Comparison of rural homestead exit modes from the perspective of "Three Circles Theory"——Based on the observation of Yiwu City [J]. China Agricultural Resources and Zoning, 2021,42(02):44 -51.
5. Shen Susu. Empirical evaluation of rural homestead utilization efficiency in Hunan Province [J]. Economic Geography, 2017, 37(12): 190-194.
6. Liang Fachao, Lin Caiyun. The operation mechanism, mode comparison and path optimization of paid withdrawal of homestead in economically developed areas [J]. China Rural Observation, 2021, {4}(03): 34-47.
7. Guo Xiaoming, Yu Hong. Realistic Analysis and Policy Conception of Establishing a Voluntary and Paid Exit Mechanism for Rural Homesteads: An Empirical Study Based on Sichuan Province [J]. Rural Economy, 2016(05):3-9.
8. Teng Gan, Zhang Jingjing, Zhai Tengteng, Fu Qianqian, Dou Shengchao. Cognition and Influencing Factors of Residential Land Circulation Risk under "Three Powers Separation"——An Empirical Analysis Based on the Perspective of Farmers' Cognition [J/OL]. Market: 1-11 [2021-06-23].
9. Li Huan, Zhang Anlu. Welfare measurement and dynamic changes of farmers before and after the withdrawal of rural homesteads: A case study of 201 farmers in Deqing County, Zhejiang Province [J]. Agricultural Technology and Economics, 2019, {4}(07): 79-90 .
10. Zhu Xinhua, Lu Sixuan. Risk perception, anti-risk ability and farmers' homestead withdrawal [J]. Resource Science, 2018, 40(04): 698-706.
11. Guo Yuanyuan, Feng Yingbin. Research Framework Construction of Farmers' Homestead Exit Compensation Standard——Based on the Background of Ex-situ Poverty Alleviation and Relocation [J]. China Agricultural Resources and Zoning, 2020,41(02):58-65.
12. Wang Fangming. Analysis of Homestead Exit Willingness and Influencing Factors [J]. Rural Economy and Technology, 2021, 32(02): 16-17.

13. Fan Hui, Li Xiaozhen, Yu Xiangyang, Liu Zhengying, Li Jiahui, Zhang Jie. Research on the willingness to withdraw from rural homestead based on interactive determinism: Taking Henan Province as an example [J]. Resources and Environment in Arid Areas, 2020,34(02): 22-28.
14. Wei Houkai, Yan Kun. China Rural Development Report [M]. Beijing: China Social Sciences Press, 2017.