

Research Article

Impact of Livelihood Assets on Farmland-Transferred Households' Willingness to Urbanism and Policies Implications for Farmland Transfer: Evidence from Zhejiang, China

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The rural households who transfer their farmland are more likely to migrate into urban cities in China. Understanding their willingness to urbanism can provide references for promoting China's new-type urbanization. Using structural equation modeling (SEM), this study analyzes the effect of livelihood assets on farmland-transferred households' willingness to urbanism in Zhejiang province in China. The results show that there is no relationship between natural capital (NC) and willingness to urbanism (UI). Statistically significant negative relationships are identified between human capital (HC), financial capital (FC), and social capital (SC), respectively, and UI. Physical capital (PC) has a statistically significant and positive relationship with UI. The findings demonstrate that the farmland transfer characteristics have different effects on farmland-transferred households' livelihood assets. Benefit of farmland transfer (BFT) has a statistically significant positive influence on HC, FC, and SC. Meanwhile, PC, FC, and SC are positively affected by openness in farmland transfer (OFT). Based on these profiles, Chinese local governments should design more livelihood-oriented policies to help farmland-transferred households raise willingness to urbanism in the process of operation right transfer under Three Rights Separation Policy for farmland.

1. Introduction

China has the largest rural-to-urban migration in the world after over 30 years of the opening-up reform [1, 2]. But many migrants cannot really merge into urban cities because of *hukou* (household registration) system, taxation, land use system, and urban planning policy [3–5]. They face a number of obstacles to obtain sustainable livelihoods in urban cities [6]. Therefore migrants have various willingness to urbanism. China's planning for a new type of urbanization seeks to raise the urbanization rate and reduce the rural-to-urban migration restriction. It suggests that there are millions of migrant workers that should become permanent migrants [7]. The migrants' willingness to urbanism is important in the process of rural-to-urban migration. Therefore, understanding their complicated willingness to urbanism can provide essential references for promoting the new type of urbanization in China.

The migration of farmers from rural areas to urban areas is driven by increasing off-farm employment opportunities

and high nonagricultural income [8, 9]. Since the adoption of the household responsibility system in the early 1980s in rural China, rural collectives have contracted farmland to peasant households for agricultural production [10]. The household responsibility system has improved the agricultural production efficiency dramatically. However, on average, the farmland size that is distributed to a peasant household is too small under household responsibility system. The peasant households are hardly to get rich by farming. Expectation for higher incomes stimulated the movement of labor from farm production to nonagricultural industries. During a long period, Chinese government forbids farmers to leave farmland uncultivated [11]. Article 37 of Land administration law of the People's Republic of China stipulates that all units and individuals are forbidden to leave farmland uncultivated [12]. Therefore the peasant households who cannot farm by themselves transfer their farmland to other households in rural China, particularly economically developed areas. The Rural Land Contracting Law also allowed land use right to be transferred in 2002 [13]. The households who transfer their

redundant farmland most likely migrate to urban areas since there are more off-farm employment opportunities in urban areas. The farmland-transferred households' willingness to urbanism affects their migration intention and the dispose of land property rights. Understanding farmland-transferred households' willingness to urbanism helps households to seek strategies for building livelihoods in urban areas and raise urbanization rate.

The influencing factors of farmland-transferred households' willingness to urbanism reveal the reasons that result in differences among households' willingness to urbanism. It is one of key issues that are fundamental to understanding farmland-transferred households' willingness to urbanism. Many studies have analyzed the influencing factors of willingness to urbanism. Todaro [14] found that the high non-agricultural income in urban sectors and a related migration future stimulated the willingness to rural-urban migration. Huang et al. [15] revealed the social ties of migrants that are categorized into two types: interactive social ties and supportive social ties played an important role in migrants' permanent settlement intention. Xie and Chen [16] found that rural migrants who lived in better housing conditions and enjoy housing support were more determined to increase willingness to settle in urban areas. Khoo et al. [17] examined the impact of geographic and institutional contexts in the place of destination on the migrants' settlement intention. Zhao [18] found that urban villages generated transient urbanism of rural migrants since the urban villages have not been integrated into the urban systems in China. Mohabir et al. [19] analyzed the effects of notions of gender, age, and sense of belonging on the return migration from the urban back to the rural. From the above, the influencing factors of willingness to urbanism include micro and macrolevel factors. These influencing factors involve many aspects of livelihood. The farmland-transferred households also require a range of livelihood assets which are the essential livelihood resources facilitating the achievement of livelihoods for peoples to turn into permanent migrants in nonrural areas. Therefore a linkage should be expected between livelihood assets and farmland-transferred households' willingness to urbanism. But few researches have studied the impact of livelihood assets on farmland-transferred households' willingness to urbanism. Based on the sustainable livelihood approach [20], this study attempts to assess the relationship among livelihood assets, farmland-transferred households' willingness to urbanism, and farmland transfer.

Willingness to urbanism has been operationalized as a polarized (i.e., yes or no) question in previous researches [15]. In other words, many aspects of willingness to urbanism such as migration regions and urbanization types (i.e., settle temporarily or settle permanently) are hardly analyzed in detail in previous researches. It is necessary to describe farmland-transferred households' willingness to urbanism from all angles. Therefore the farmland-transferred households' willingness to urbanism is difficult to be defined as one variable which can be observed quantitatively. Meanwhile, according to the sustainable livelihood approach, the livelihood assets also should be classified into several different assets to understand the specific aspects of farmland-transferred

households' strengths [20, 21]. Therefore the structural equation modeling (SEM) which is widely used in multivariate analysis is selected in this study [22].

Using the case of Zhejiang, one of the economically developed provinces in China, this article aims to (1) identify the variables for livelihood assets, farmland-transferred households' willingness to urbanism, and farmland transfer; (2) quantify the relationships between livelihood assets and farmland-transferred households' willingness to urbanism; (3) analyze the characteristics of farmland transfer on the households' livelihood assets; and (4) provide suitable policies to improve farmland-transferred households' livelihood assets to raise their willingness to urbanism.

2. Hypotheses

Department for international development (DFID) puts forward a livelihood framework to help understand the livelihoods [20, 23]. Chambers and Conway [21] defined assets as a collection of stores, resources, claims, and access. DFID identifies five different capital endowments to compose the livelihood assets, including natural capital, human capital, physical capital, financial capital, and social capital [20]. Erenstein et al. [24] revealed that poverty incidence was associated with the livelihood asset in Indo-Gangetic Plains in India. Belay and Bewket [25] examined the influence of ownership of livelihood assets in farmers' decisions to use cattle manure as land improvement technology in northwestern highlands of Ethiopia. Li et al. [26] found that household livelihood assets had an important impact on the households' willingness to select the economic compensation pattern for cultivated land protection. According to the livelihood framework, the livelihood assets are classified into natural capital, human capital, physical capital, financial capital, and social capital.

Specifically, the variables of farmland transfer comprise benefit of farmland transfer and openness in farmland transfer. The benefit of farmland transfer reveals the characteristics of farmland-transferred households' income from farmland transfer. The openness in farmland transfer reveals transferee and farmland transfer tenure in the process of farmland transfer.

An investment regret mitigation effect has existed in the process of farmland transfer. The investment regret mitigation effect results when greater transfer rights make households more willing to make investments [27]. It means that farmland transfer can increase the agricultural investment in the farmland. Heerink et al. [28] found chemical fertilizers (phosphorus and potassium) were used in larger quantities on rented plots in Jiangxi province. Consequently, farmland transfer can improve farmland-transferred households' natural capital such as farmland quality. Based on these observations, the following is suggested:

H1: The benefit of farmland transfer (BFT) is positively related to the natural capital (NC).

H2: The openness in farmland transfer (OFT) is positively related to the natural capital (NC).

There is a significant direct effect of farmland transfer on long-term capital accumulation of household including years

of education completed in India [29]. But the migrant farmers who transfer farmland suffer the conflicting impacts on their health. For one thing, the farmers have more opportunities to access to improved health care infrastructure in cities. For another, they are exposed to health risks including work stress and pollution [30]. Based on these observations, the following is suggested:

H3: The benefit of farmland transfer (BFT) is positively related to the human capital (HC).

H4: The openness in farmland transfer (OFT) is positively related to the human capital (HC).

In rural China, the rural residential buildings' quantity and quality are largely determined by the economic status of the households [31]. And the farmland transfer has significant impact on the economic status of the farmland-transferred households [32]. Therefore it can be assumed that there is a relationship between farmland transfer and physical capital. Based on these observations, the following is suggested:

H5: The benefit of farmland transfer (BFT) is positively related to the physical capital (PC).

H6: The openness in farmland transfer (OFT) is positively related to the physical capital (PC).

The agricultural income of household decreases since the household transfers their farmland [33]. The nonagricultural income of household can increase because of growing off-farm employment opportunities for labour force of household [34]. And the nonagricultural income plays a key role in the financial capital of most farmland-transferred households. Based on these observations, the following is suggested:

H7: The benefit of farmland transfer (BFT) is positively related to the financial capital (FC).

H8: The openness in farmland transfer (OFT) is positively related to the financial capital (FC).

The farmland transfer also has relationship with social capital since the absence of a formal system that can guarantee permanent farmland property right for households, and social capital can substitute for the formal system by using a nonmarket solution [35]. Consequently, social capital can be increased in the process of farmland transfer since the nonmarket solutions are applied frequently. Based on these observations, the following is suggested:

H9: The benefit of farmland transfer (BFT) is positively related to the social capital (SC).

H10: The openness in farmland transfer (OFT) is positively related to the social capital (SC).

There is a relationship between natural capital and the willingness to urbanism. Due to the existing arrangement of land management, the households have not been willing to migrate permanently to urban areas [1]. The following hypothesis is offered:

H11: The natural capital (NC) is negatively related to the willingness to urbanism (UI).

The willingness to urbanism also has significant relationship with households' human capital. The human capital determines what kinds of job opportunities are available for the households [36]. These job opportunities may have different impacts on the farmland-transferred households' willingness to urbanism. The farmland-transferred households can

get employment in rural areas or get employment in urban areas. The following hypothesis is offered:

H12: The human capital (HC) is negatively related to the willingness to urbanism (UI).

The greater quantity and higher quality of households' residential buildings can reduce the willingness of households for settling in cities and towns permanently. Transportation is also an insignificant determinant of migration [37]. The following hypothesis is offered:

H13: The physical capital (PC) is negatively related to the willingness to urbanism (UI).

There are the inconsistent results found in the literature about the effect of the financial capital on the willingness to urbanism. In the household sample of one study [38], most poor famers do not migrate. But in the household sample of the other study, the poor famers tend to migrate due to local few off-farm work opportunities (Rozelle et al., 2005). The following hypothesis is offered:

H14: The financial capital (FC) is negatively related to the willingness to urbanism (UI).

The social capital plays an important role on the migration decisions. Zhao [39] found that the migrant networks have impact on the process of migration. Experienced migrants have a positively significant effect on subsequent migration, but return migrants do not. The following hypothesis is offered:

H15: The social capital (SC) is negatively related to the willingness to urbanism (UI).

3. Data and Methods

3.1. Data Collection. Zhejiang province, situated to the south of Taihu Lake, is located in China's southeastern coast. Zhejiang is one of the most economically developed provinces in China, and the peasant households in Zhejiang tend to transfer their farmland since they have many opportunities for higher income nonfarm employment. It is estimated that approximately one-third of farmland is being transferred in Zhejiang [40]. Data for empirical study came from a questionnaire survey of 318 peasant households in Zhejiang province in 2014. The surveyed locations included Xiaoshan district in Hangzhou, Nanhu district in Jiaxing, and Jiangshan city in Quzhou (Figure 1). The selected villages in surveyed locations were determined by local government staff. The interviewees were household heads or key members of households. The questionnaire interviewers visited 360 households, but 20 interviewees refused to be interviewed. Since the 22 questionnaires were eligible for data analysis, the final sample was comprised of 98 farmland-transferred households in 10 villages located in Xiaoshan district, 110 farmland-transferred households in 9 villages located in Nanhu district, and 110 farmland-transferred households in 10 villages located in Jiangshan city.

3.2. Selected Variables. The purpose of this study is to identify the interrelationships between livelihood assets and farmland-transferred households' willingness to urbanism when the households transfer their farmland. Therefore the influences of farmland transfer on livelihood assets and

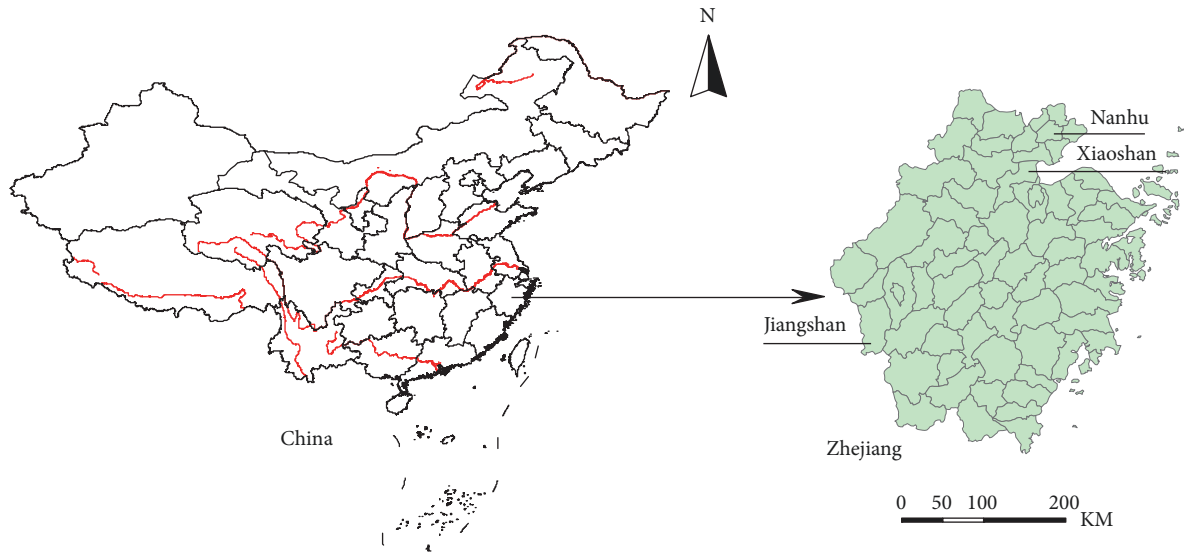


FIGURE 1: Map of surveyed locations.

willingness to urbanism were also investigated in SEM. There are 8 latent variables in the whole model. Specifically, the latent variables of farmland transfer comprise benefit of farmland transfer and openness in farmland transfer. The latent variable of farmland-transferred households' willingness to urbanism is willingness to urbanism. The latent variables of livelihood assets consist of natural capital, human capital, physical capital, financial capital, and social capital. Those latent variables are measured by observed indicators (Table 1).

Benefit of farmland transfer is measured by the factors that reveal the characteristics of farmland-transferred households' income from farmland transfer. Two manifest variables including transfer income and transfer area are selected [41]. Openness in farmland transfer, one latent variable, is presented in terms of two manifest variables: transferee and farmland transfer tenure. Willingness to urbanism is measured by urbanization type and migration region. Farmland-transferred households were asked to perceive which type they select to settle in the migration region, how to deal with their land contractual right, whether they are willing to migrate to nonrural areas, and where they want to migrate. According to the literature, natural capital is described by area of farmland belonged to the household and area of high quality farmland belonged to the household [42]. Human capital is measured by years of education completed of the head of household, number of labour force in the household, and health status of the household head [43]. Physical capital is measured by number of residential buildings belonging to the household, residential quality, and convenience of public transportation [44]. Financial capital is measured by nonagricultural income of household last year and difficulty level of borrowing money [20]. Social capital is measured by relationships among household, friends, relatives, and village cadres [35]. The relationships are measured by three items on 5-point scales that ranged from 1 (not at all intimate) to 5 (not at all intimate). Statistical description of manifest variables is shown in Table 2.

3.3. Estimation Procedures. SEM is very flexible, because it can be viewed as a sort of a combination of factor analysis with structural models (e.g., regression analysis or path analysis) [45]. SEM allows for complex relationships between one or more independent variables and one or more dependent variables. The variables are divided into manifest variables and latent variables. A manifest variable is defined as a variable that is directly observed and measured, and a latent variable is defined as a variable that cannot be directly observed and measured but is rather inferred from manifest variables by using a mathematical model. SEM allows for ease of interpretation of latent variables [46]. Voon et al. [47] analyzed the determinants of willingness to purchase organic food by using SEM. Le Dang et al. [48] assessed the farmers' adaptation intention to climate change in the Mekong Delta in Vietnam based on a SEM. Masud et al. [49] found that status of residents' livelihoods has a positive effect on environmental conservation attitudes in Tioman Island Marine Park area by applying SEM. Therefore the SEM is selected to assess the relationship among livelihood assets, farmland-transferred households' willingness to urbanism, and farmland transfer.

A two-step procedure for SEM is proposed by Anderson and Gerbing [50]. The first step concerns the measurement model validation and aims to discover the validity of the manifest variables in relation to the latent variable. Goodness of fit testing is conducted in the first step. Goodness of fit allows the adequacy of the tested SEM to be evaluated. Specifically, goodness of fit reflects the extent to which the tested SEM fits the current sample under investigation. Multiple goodness of fit indices have been put forward to assess the goodness of fit of the measurement model since there are no concrete rules about which goodness of fit index is best. The second step evaluates the extent to which the hypothesized relationships between the latent variables are supported within the current sample.

TABLE 1: Selected variables used in SEM.

Latent variables	Manifest variables	Definition
<i>Farmland transfer</i>		
Benefit of farmland transfer (BFT)	Transfer income (TI)	Income of farmland transfer
	Transfer area (TA)	Area of transferred farmland
Openness in farmland transfer (OFT)	Transferee (TF)	Transferee of farmland
	Farmland transfer tenure (FT)	The period of time that farmland is used by transferee
<i>Willingness to urbanism</i>		
Willingness to urbanism (UI)	Urbanization type (UT)	Urbanization type of household
	Migration region (MR)	The region that the household migrates in
<i>Livelihood assets</i>		
Natural capital (NC)	Farmland area (NC1)	Area of farmland belonged to the household
	High quality farmland (NC2)	Area of high quality farmland belonged to the household
Human capital (HC)	Education level (HC1)	Years of education completed of the head of household
	Labour force (HC2)	Number of labour force in the household
	Health status (HC3)	Health status of the household head
Physical capital (PC)	Residential quantity (PC1)	Number of residential buildings belonged to the household
	Residential quality (PC2)	Residential quality of household
	Public transportation (PC3)	Distance between residential house and bus passenger station
Financial capital (FC)	Non-agricultural income (FC1)	Non-agricultural income of household last year
	Capacity to borrow (FC2)	Difficulty level of borrowing money
Social capital (SC)	Relationship with friends (SC1)	Relationship between household and friends
	Relationship with relatives (SC2)	Relationship between household and relatives
	Relationship with village cadres (SC3)	Relationship between household and village cadres

3.4. *The Proposed SEM.* The hypothesized structural equation model based on the selected variables and the hypothesized relationships among latent variables between is presented in Figure 2.

To test the hypothesized structural equation model, AMOS 21.0 was employed. And the maximum likelihood estimation was used to examine the proposed hypothetical model. Multiple goodness of fit indices revealed that the hypothesized structural equation model did not adequately fit to the data. Given the complexity of SEM, there are no common methods to improve the fit of a proposed model which is poor [51]. In this study, the process for improving model fit includes two steps. The variables whose measurement error variances are negative are deleted in the first step [52]. Then the paths whose P values are higher than 0.1 are deleted in the second step [53]. The revised SEM is presented in Figure 3. It resulted in a moderate fit to the data ($\chi^2/df = 2.543$, GFI = 0.906, RMSEA = 0.070, PCFI = 0.714, PNFI = 0.69, PGFI=0.647) (Table 3).

The reliability of the manifest variables in relation to the latent variable was tested (Table 4). A manifest variable can be considered as a defining part of that latent variable when the absolute value of the loading of the manifest variable is greater than 0.3. Therefore these latent variables are treated as the relevant parts for the latent variables when the SEM is established. Cronbach's alpha (Cronbach's α) is one important measure of internal consistency. Cronbach's α value that is greater than 0.5 is usually acceptable. Cronbach's α values are greater than 0.5 in the test. Therefore the manifest variables in relation to the latent variable have high internal consistency. Average variance extracted (AVE) is a common measure of the amount of variance. AVE value that is above 0.5 is usually acceptable. AVE values are above 0.5 in the test. Therefore the manifest variables in relation to the latent variable have high discriminant validity. Additionally, construct reliability (CR) is a less biased estimate of reliability than Cronbach's α . CR value that is greater than 0.6 is usually acceptable. CR values are greater than 0.6 in the test. Therefore the manifest variables in relation to the latent variable have high reliability.

TABLE 2: Statistical description of manifest variables.

Manifest variable	Unit or variable assignment	Min.	Max.	Mean	Std.dev.
TI	10 ⁴ Yuan	1.000	5.000	2.097	0.936
TA	Mu	0.200	6.500	2.478	1.387
TF	relative=1, friend=2, village collective=3, migrant worker=4, enterprise=5	1.000	5.000	2.906	1.340
FT	flexible tenure=1, <1 year =2, 1 year =3, 2-5 years=4, > 5years=5;	1.000	5.000	2.770	1.518
UT	unwilling to migrate =1; willing to migrate, settle temporarily =2; willing to migrate, settle permanently and hold the land contractual right=3; willing to migrate, settle permanently and give up land contractual right=4	1.000	5.000	2.280	0.770
MR	village or town=1, country town=2, prefectural-level city=3, provincial capital=4, Beijing/Shanghai/Guangzhou=5	1.000	5.000	2.343	1.137
NC1	Mu	0.200	13.000	3.456	2.366
NC2	Mu	0.000	13.000	2.792	2.401
HC1	0-6 years=1; 7-9 years =2, 9-11 years =3, 11-15 years =4, >15 years =5	1.000	5.000	3.079	1.128
HC2	Person	0.000	5.000	2.484	0.969
HC3	very poor=1, poor=2, fair=3, good=4, very good=5	1.000	5.000	3.333	1.093
PC1	House	0.000	5.000	1.770	0.934
PC2	very poor=1, poor=2, fair=3, good=4, very good=5	1.000	5.000	2.739	1.105
PC3	Km	1.000	10.000	2.596	1.411
FC1	0-50000 Yuan=1, 50001-100000 Yuan=2, 100001-150000 Yuan=3, 150001-200000 Yuan=4, >200000 Yuan=5	1.000	5.000	2.447	1.096
FC2	very difficult=1, difficult =2, fair=3, easy=4, very easy=5	1.000	5.000	2.660	0.869
SC1	not at all intimate =1, not so intimate =2, somewhat intimate=3, very intimate=4, extremely intimate=5	1.000	5.000	2.786	1.148
SC2	not at all intimate =1, not so intimate =2, somewhat intimate=3, very intimate=4, extremely intimate=5	1.000	5.000	2.994	1.014
SC3	not at all intimate =1, not so intimate =2, somewhat intimate=3, very intimate=4, extremely intimate=5	1.000	5.000	3.116	1.024

Abbreviations: TI, Transfer income; TA, Transfer area; TF, Transferee; FT, Farmland transfer tenure; UT, Urbanization type; MR, Migration region; NC1, Farmland area; NC2, High quality farmland; HC1, Education level; HC2, Labour force; HC3, Health status; PC1, Residential quantity; PC2, Residential quality; PC3, Public transportation; FC1, Nonagricultural income; FC2, Capacity to borrow; SC1, Relationship with friends; SC2, Relationship with relatives; SC3, Relationship with village cadres.

TABLE 3: Model fitness index for the hypothesized and alternative models.

Index	Abbreviation	Value	Criteria (acceptable) value
Chi-square/df	χ^2/df	2.543	<5.00
Goodness-of-fit index	GFI	0.906	>0.90
Root-mean-square error of approximation	RMSEA	0.070	<0.08
Parsimony adjustment to the CFI	PCFI	0.714	>0.50
Parsimony adjustment to the NFI	PNFI	0.669	>0.50
Parsimony goodness of fit index	PGFI	0.647	>0.50

The discriminant validity is measured as the square root of AVE compared to the construct correlations [54, 55]. The correlation matrix and discriminant validity assessment are shown in Table 5. Values in diagonal are the square roots of AVE in Table 5, and the other values in corresponding rows and columns are the construct correlations. The square root of AVE of a latent variable is greater than the construct correlations of that latent variable with other latent variables. Overall, the latent variables exhibited high discriminant validity in final SEM.

4. Results

Figure 4 displays the outcomes of the final structural equation model with standardised parameters. Table 6 displays the estimated parameters. There is no relationship between NC and UI. PC has a statistically significant and positive relationship with UI (path coefficient=0.19). And there are statistically significant negative relationships between HC, FC, and SC, respectively, and UI (path coefficients=-0.15, -0.15, and -0.12, respectively). The SEM also reveals that

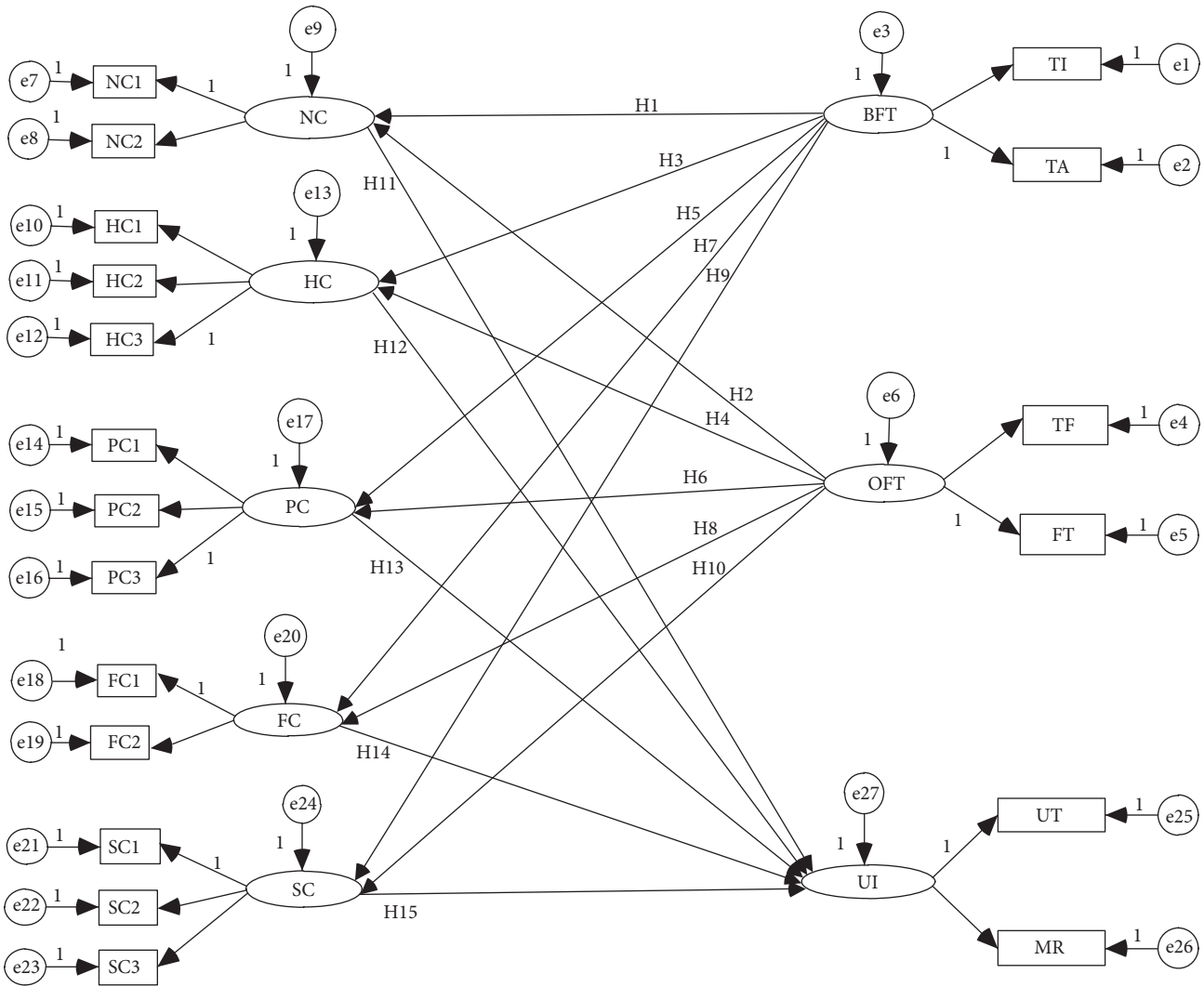


FIGURE 2: Hypothesized structural equation model. Abbreviations: BFT, Benefit of farmland transfer; OFT, Openness in farmland transfer; TI, Transfer income; TA, Transfer area; TF, Transferee; FT, Farmland transfer tenure; UI, Willingness to urbanism; UT, Urbanization type; MR, Migration region; NC, Natural capital; NC1, Farmland area; NC2, High quality farmland; HC, Human capital; HC1, Education level; HC2, Labour force; HC3, Health status; PC, Physical capital; PC1, Residential quantity; PC2, Residential quality; PC3, Public transportation; FC, Financial capital; FC1, Nonagricultural income; FC2, Capacity to borrow; SC, Social capital; SC1, Relationship with friends; SC2, Relationship with relatives; SC3, Relationship with village cadres.

the characteristics of farmland transfer have different effects on farmland-transferred households' livelihood assets. There is no relationship between NC, PC, and BFT. BFT has statistically significantly positive influence on HC, FC, and SC (path coefficients=0.26, 0.24, and 0.36, respectively). The relationships between NC and HC, respectively, and OFT are also insignificant. PC, FC, and SC are positively correlated with OFT (path coefficients=0.13, 0.18, and 0.20, respectively). Therefore hypotheses including H1, H2, H4, H5, H11, and H13 are not supported. Hypotheses including H3, H6, H7, H8, H9, H10, H12, H14, and H15 are supported.

5. Discussion

5.1. Effect of Livelihood Assets on Willingness to Urbanism. The results of SEM indicate that the farmland-transferred

households are more likely to enhance willingness to urbanism when they obtain more physical capital. But the willingness to urbanism is reduced when they get more human capital, financial capital, and social capital. More specifically, the farmland-transferred households tend to migrate from rural areas to big cities and settle down permanently in nonrural areas when they have more physical capital. More quantity and higher quality of residential buildings may lead to households settling down in nonrural areas permanently since farmland-transferred households who have more quantity and higher quality of residential buildings may have residential buildings in towns and cities. And the convenient public transportation helps farmers travel to and from rural areas and urban areas. In contrast, when the farmland-transferred households have higher education level, increased labour force, or improved health status, they

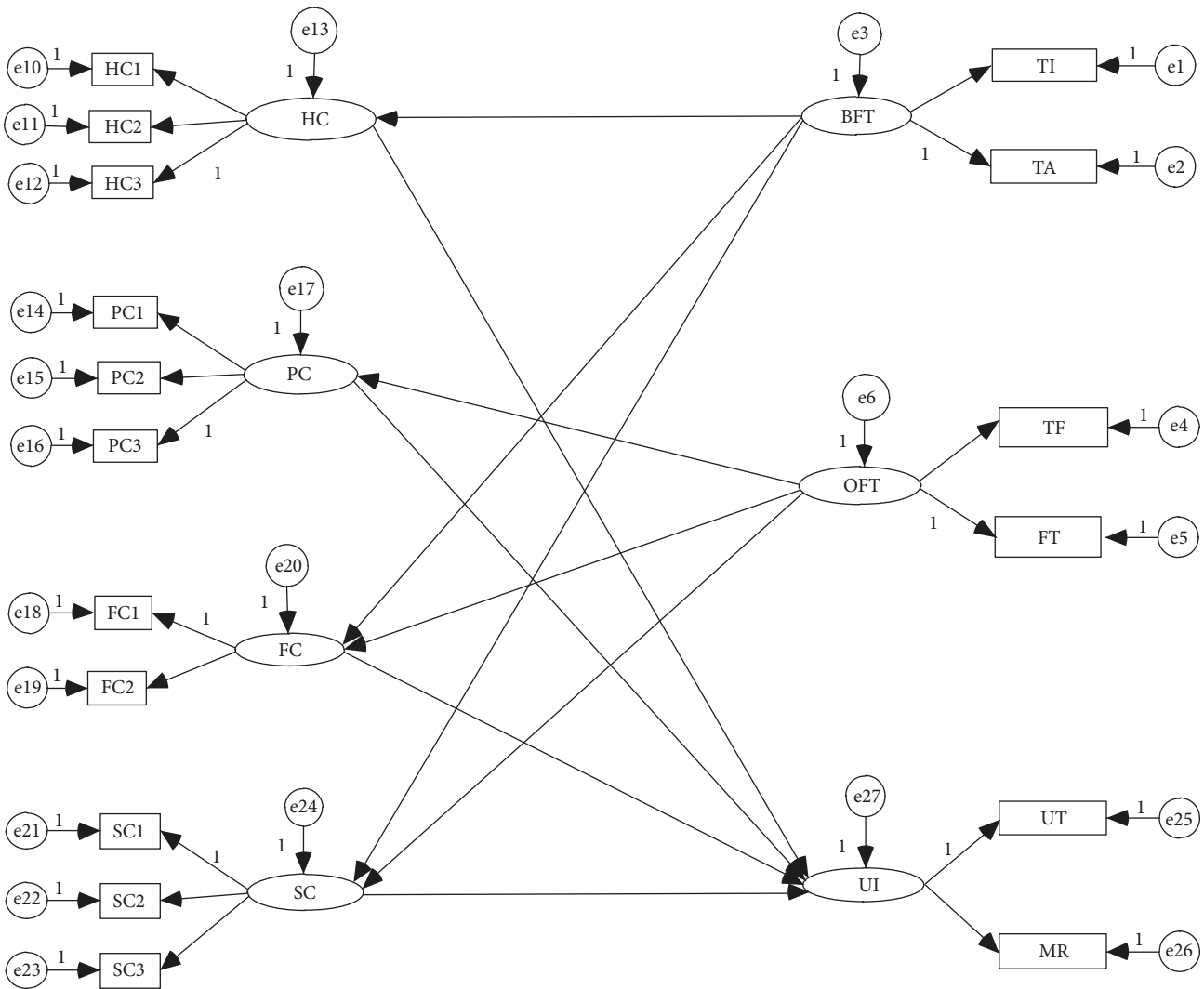


FIGURE 3: Final structural equation model. Abbreviations: BFT, Benefit of farmland transfer; OFT, Openness in farmland transfer; TI, Transfer income; TA, Transfer area; TF, Transferee; FT, Farmland transfer tenure; UI, Willingness to urbanism; UT, Urbanization type; MR, Migration region; NC, Natural capital; NC1, Farmland area; NC2, High quality farmland; HC, Human capital; HC1, Education level; HC2, Labour force; HC3, Health status; PC, Physical capital; PC1, Residential quantity; PC2, Residential quality; PC3, Public transportation; FC, Financial capital; FC1, Nonagricultural income; FC2, Capacity to borrow; SC, Social capital; SC1, Relationship with friends; SC2, Relationship with relatives; SC3, Relationship with village cadres.

decrease their willingness to urbanism. The main reason is that the households with higher human capital have more opportunities to work in the rural areas in developed provinces. And rural areas in developed provinces also can provide opportunities for households with higher human capital to improve livelihoods. The findings are consistent with the conclusions from the reported research [56]. The farmland-transferred households who have high nonagricultural income and strong capacity to borrow decrease their willingness to urbanism. A possible reason is that although households gain more nonagricultural incomes, it does not improve the access of public services that are provided by governments, such as education and public health service. Therefore households choose to settle down in cities temporarily or migrate to a nearby nonrural area. These findings are consistent with what has been proposed in

previous research [57]. Meanwhile, the farmland-transferred households also decrease their willingness to urbanism when they strengthen the relationship between households and their friends, relatives, and village cadres. This implies that the improved social capital raises the households' willingness of living in the rural areas since the peasant households are sentimentally attached to their native land in China [58].

Results of SEM reveal that increasing benefit of farmland transfer can help farmland-transferred households increase human capital, financial capital, and social capital. The increasing benefit of farmland transfer induces the households to transfer more farmland, and they have more time and income to improve their education level and health status. Income of farmland transfer is the part of the nonagricultural income of household. And capacity to borrow money is strengthened when the nonagricultural income of household

TABLE 4: Reliability of the manifest variables.

Latent variables	Manifest variables	Loadings	Cronbach's α	AVE	CR
<i>Farmland transfer</i>					
BFT	TI	0.88	0.630	0.538	0.690
	TA	0.55			
OFT	TF	0.76	0.759	0.617	0.763
	FT	0.81			
<i>Willingness to urbanism</i>					
UI	UT	0.83	0.682	0.569	0.723
	MR	0.67			
<i>Livelihood assets</i>					
HC	HC1	0.99	0.724	0.561	0.768
	HC2	0.33			
	HC3	0.77			
PC	PC1	0.40	0.702	0.511	0.739
	PC2	0.94			
	PC3	0.70			
FC	FC1	0.90	0.638	0.545	0.700
	FC2	0.53			
SC	SC1	0.65	0.792	0.579	0.803
	SC2	0.79			
	SC3	0.83			

Cronbach's α is Cronbach's alpha. AVE is average variance extracted. CR is construct reliability.

Abbreviations: BFT, Benefit of farmland transfer; OFT, Openness in farmland transfer; TI, Transfer income; TA, Transfer area; TF, Transferee; FT, Farmland transfer tenure; UI, Willingness to urbanism; UT, Urbanization type; MR, Migration region; NC, Natural capital; NC1, Farmland area; NC2, High quality farmland; HC, Human capital; HC1, Education level; HC2, Labour force; HC3, Health status; PC, Physical capital; PC1, Residential quantity; PC2, Residential quality; PC3, Public transportation; FC, Financial capital; FC1, Nonagricultural income; FC2, Capacity to borrow; SC, Social capital; SC1, Relationship with friends; SC2, Relationship with relatives; SC3, Relationship with village cadres.

TABLE 5: Correlation matrix and discriminant validity assessment.

	BFT	OFT	UI	HC	PC	FC	SC
BFT	0.733						
OFT	0.000	0.785					
UI	-0.117	-0.025	0.754				
HC	0.260	0.000	-0.166	0.749			
PC	0.000	0.130	0.188	0.000	0.715		
FC	0.242	0.175	-0.172	0.063	0.023	0.738	
SC	0.358	0.200	-0.146	0.093	0.026	0.122	0.761

Abbreviations: BFT, Benefit of farmland transfer; OFT, Openness in farmland transfer; UI, Willingness to urbanism; NC, Natural capital; HC, Human capital; PC, Physical capital; FC, Financial capital; SC, Social capital.

increases. Therefore the increasing benefit of farmland transfer helps the households get more financial capital. Meanwhile, the increasing benefit of farmland transfer implies that more and more farmland transfer occurred in the rural land market. The households' friends, relatives, or village cadres play a key role in the process of farmland transfer. Therefore the increasing benefit of farmland transfer boosts social capital. Results of SEM also reveal that increasing openness in farmland transfer can improve the households' physical capital, financial capital, and social capital. The increasing benefit of farmland transfer increases the households' physical capital. The main reason is that farmland-transferred households pursue the culture of towns and cities, and they particularly emphasize the residential quality in

rural areas. The increasing openness in farmland transfer has identical effect on the households' financial capital. Generally speaking, farmland-transferred households tend to ask for higher transfer income when the farmland is transferred to the unfamiliar transferee of farmland in a long period of time. The increasing openness in farmland transfer implies unfamiliar transferee of farmland and long period of time that farmland is used by transferee. In such farmland transfer process, the households are inclined to strengthen their social relationships.

5.2. Policies Implications for Farmland Transfer. The policies of farmland transfer in China now ask for paying more attention to strengthening livelihood sustainability

TABLE 6: Parameter estimated.

Hypothesis	Path	Estimate (Standardized)	Estimate (Unstandardized)	S.E.	C.R.	P
H1	BFT→NC	-	-	-	-	-
H2	OFT→NC	-	-	-	-	-
H3	BFT→HC	0.26	0.429	0.119	3.607	0.000***
H4	OFT→HC	-	-	-	-	-
H5	BFT→PC	-	-	-	-	-
H6	OFT→PC	0.13	0.105	0.058	1.833	0.067*
H7	BFT→FC	0.24	0.464	0.137	3.395	0.000***
H8	OFT→FC	0.18	0.141	0.058	2.405	0.016**
H9	BFT→SC	0.36	0.519	0.113	4.581	0.000***
H10	OFT→SC	0.20	0.122	0.045	2.717	0.007***
H11	NC→UI	-	-	-	-	-
H12	HC→UI	-0.15	-0.11	0.049	-2.262	0.024**
H13	PC→UI	0.19	0.126	0.044	2.877	0.004***
H14	FC→UI	-0.15	-0.099	0.053	-1.867	0.062*
H15	SC→UI	-0.12	-0.102	0.061	-1.682	0.093*

*P<0.1, **P<0.05, ***P<0.01.

S.E. is standard error, and C.R. is composite reliability.

Abbreviations: BFT, Benefit of farmland transfer; OFT, Openness in farmland transfer; UI, Willingness to urbanism; NC, Natural capital; HC, Human capital; PC, Physical capital; FC, Financial capital; SC, Social capital.

of farmland-transferred households. Raising the farmland-transferred households' willingness to urbanism can help farmland-transferred households promote diversity of livelihood activities by migrating into urban cities [59]. In order to promote large-scaled farmland transfer, Chinese government adopt Three Rights Separation Policy to separate the households' farmland contractual operation right into a contractual right (right of disposal) and an operation right [60]. But the changes of households' livelihood assets that can raise households' willingness to urbanism are not directly beneficial from large-scaled farmland transfer under Three Rights Separation Policy. Chinese local governments should design more livelihood-oriented policies to help farmland-transferred households raise willingness to urbanism in the process of operation right transfer. For example, the governments ought to provide more support for increasing farmland-transferred households' residential buildings in towns and cities. At present, households ought to be allowed to sell their homesteads in rural areas to buy residential buildings in towns and cities [61]. But the households' livelihood assets which are closely connected with households' rural living should be lessened since these livelihood assets can reduce the households' willingness for settling down permanently in nonrural areas. For example, the local governments should encourage households to transfer farmland in the rural land market and provide more training opportunities and high-quality public health for migrators to compensate transferred farmland. When farmland-transferred households migrate to urban areas, these policies can help them obtain sustainable livelihoods in urban areas. Meanwhile, the governments should consider the necessity of livelihood assets for households' urbanization in rural land system reform [62]. Specifically, the access to

livelihood assets which benefits households to settle down in nonrural areas permanently should be emphasized.

6. Conclusion

The present paper applies the SEM to examine the effect of livelihood assets on farmland-transferred households' willingness to urbanism in Zhejiang province of China. It presents the selected variables which include latent variables and manifest variables to identify livelihood assets, willingness to urbanism, and characteristics of farmland transfer. And the revised SEM that fits to the data of household sample well is proposed in this study.

Results show that the farmland-transferred households are more likely to enhance willingness to urbanism when they get more physical capital. But the willingness to urbanism is reduced when they get more human capital, financial capital, and social capital. The findings demonstrate that the characteristics of farmland transfer have different effects on farmland-transferred households' livelihood assets. Increasing benefit of farmland transfer can help farmland-transferred households increase human capital, financial capital, and social capital. Meanwhile, increasing openness in farmland transfer can improve the households' physical capital, financial capital, and social capital. Finally, the governments should provide more livelihood-oriented policies in farmland transfer process to improve farmland-transferred households' livelihood assets to raise their willingness to urbanism.

Based on the results and discussion, the current study has several implications for urban policies. Increasing key livelihood assets from the perspective of sustainable urbanization is a potential solution to raise peasant households'

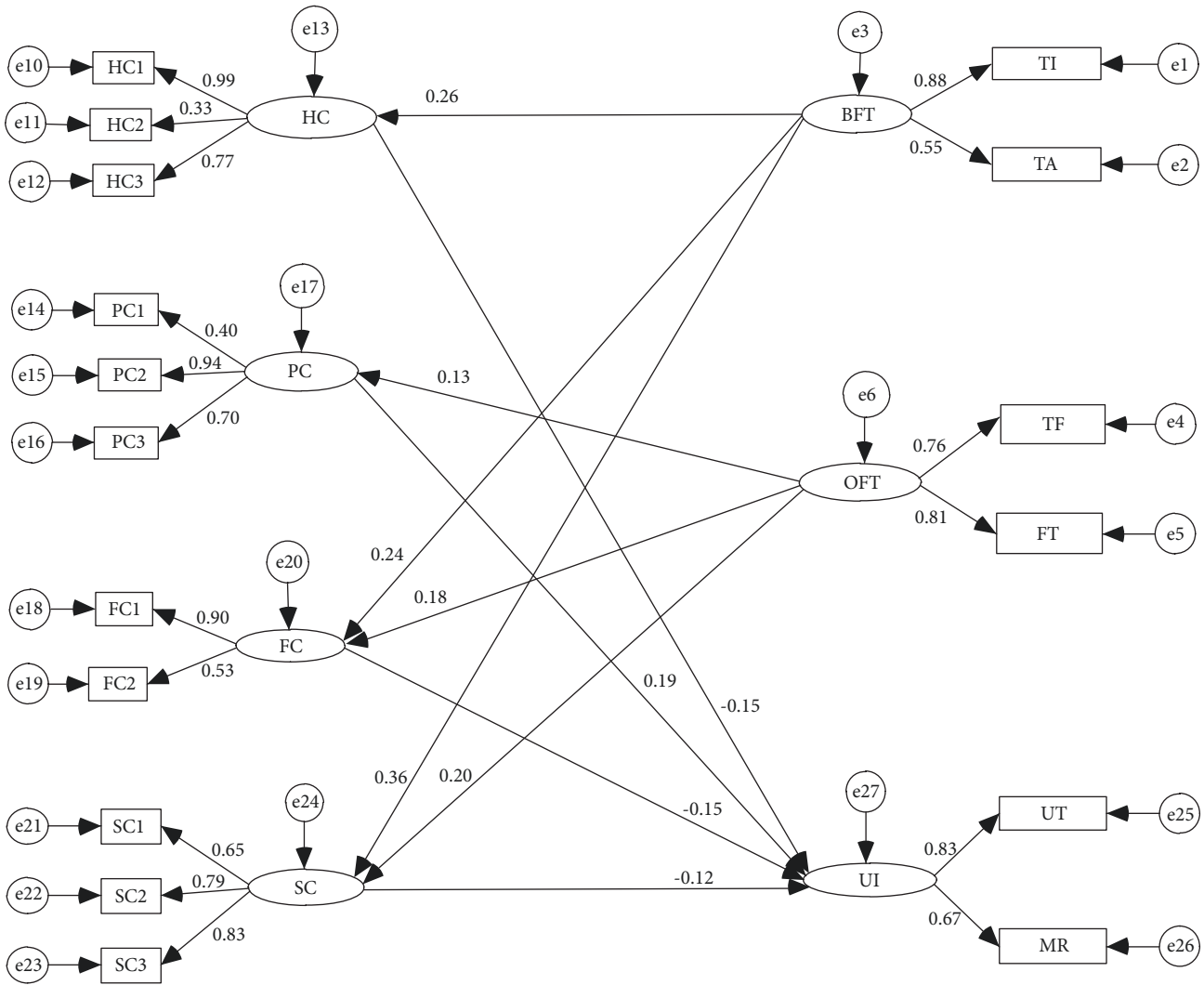


FIGURE 4: Structural equation model showing the relationships between farmland transfer, livelihood assets, and willingness to urbanism. Abbreviations: BFT, Benefit of farmland transfer; OFT, Openness in farmland transfer; TI, Transfer income; TA, Transfer area; TF, Transferee; FT, Farmland transfer tenure; UI, Willingness to urbanism; UT, Urbanization type; MR, Migration region; HC, Human capital; HC1, Education level; HC2, Labour force; HC3, Health status; PC, Physical capital; PC1, Residential quantity; PC2, Residential quality; PC3, Public transportation; FC, Financial capital; FC1, Nonagricultural income; FC2, Capacity to borrow; SC, Social capital; SC1, Relationship with friends; SC2, Relationship with relatives; SC3, Relationship with village cadres.

willingness to urbanism. Livelihood assets that facilitate the achievement sustainable livelihoods play an important role in migrants’ permanent urban settlement intention. Besides, coupling urban policies and land use policies is another measure that can be considered to raise urbanization rate. Peasant households worried about the disposition of their contracted land. Land use policies should pay more attention to effects of contracted land disposition on peasant households’ livelihood assets and their willingness to urbanism.

Data Availability

All data included in this study are available upon request by contact with the corresponding author.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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