

Article

The Impacts of In Situ Urbanization on Housing, Mobility and Employment of Local Residents in China

Yanxu Li ¹, Zhenfa Xie ¹, Bo Li ^{2,*} and Muhammad Mohiuddin ^{3,*} 

¹ School of Economics, Xiamen University, Xiamen 361005, China; liyx1995@163.com (Y.L.); xzfxmu2022@163.com (Z.X.)

² School of Management, Tianjin University of Technology, Tianjin 300384, China

³ Faculty of Business Administration, Laval University, Quebec, QC G1V 0A6, Canada

* Correspondence: great2011818@126.com (B.L.); muhammad.mohiuddin@fsa.ulaval.ca (M.M.)

Abstract: Rapid economic growth and infrastructure development force in situ urbanization in locations where people from rural areas gain urban residency without experiencing long-distance geographical relocation. However, the impacts of in situ urbanization on farmers' and other residents' well-being remains unclear, and there are some arguments about the idea that "urbanization of people lags behind urbanization of land" in China. Therefore, this study firstly finds a reasonable way to measure in situ urbanization: the transfer of rural-urban division codes. On this basis, by applying the PSM-DID method, we use national census data to explore the impacts of in situ urbanization on farmers from the perspective of housing, mobility and employment. The research results show that after the in situ urbanization, the possibility of farmers moving into non-self-built high-rising buildings increases, while the possibility of farmers leaving the county for employment decreases. Besides, the employment structure in the county where in situ urbanization takes place has shifted from primary industry to secondary and tertiary industry. Moreover, this paper also discusses the spillover effects of in situ urbanization on other residents in the county. Our study shows that in situ urbanization can improve residents' well-being and offers sustainable land-people integrated urbanization.

Keywords: housing; mobility; employment; spillover effects; in situ urbanization



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1. Introduction

Urbanization in China varies from developed countries [1]. Classic urbanization theories usually present the large-scale migration of rural residents to urban areas to seek job opportunities in the non-agricultural sector and become urban residents gradually [2–4]. However, urbanization in China has not only involved the above process, but also in situ urbanization, which means the local rural residents gain urban residency without experiencing geographical relocation (i.e., rural areas become urbanized).

The positive impact of urbanization on economic development and people's welfare has been shown in many developed economies [5–7]. However, China's in situ urbanization is not the same as the urbanization of the developed countries. It is usually initiated by the government to implement "urbanization of land" in China, which in turn drives "urbanization of people". "Urbanization of land" means the land is planned to use for urban development while "urbanization of people" means that farmers are gradually introduced to living the same lifestyles as urban residents. There are some arguments about the idea that "urbanization of people lags behind urbanization of land" in China, which shows concerns about Chinese farmers' well-being after in situ urbanization. Existing research places emphasis on empirical case studies and draws different conclusions about the impacts of in situ urbanization on Chinese farmers' well-being by using different samples. So it is worth studying the well-being of Chinese residents after in situ urbanization by using a convincing method.

To explore the changes of well-being after in situ urbanization, we study the impacts of in situ urbanization on Chinese residents from the perspective of housing, mobility and employment. The premise of studying the impacts of in situ urbanization on farmers is how to measure in situ urbanization. According to Gan et al., the transfer of rural-urban division codes is used to measure whether a community has undergone in situ urbanization [8]. On this basis, combined with the data of the two national censuses in 2010 and 2015, we could identify whether the individual in different communities is affected by in situ urbanization. We found that in situ urbanization will improve the housing conditions of farmers and make farmers less likely to go out for employment and more likely to stay in the county to engage in the tertiary industry. In addition, in situ urbanization will also have an impact on farmers in other non-rural-to-urban communities in the county. In situ urbanization increases the probability of other farmers leaving the county to work, attracts labors flowing into urban communities in the county, and shifts the employment structure in the county from primary industry to secondary and tertiary industry, with tertiary industry as the main transfer direction.

The main contributions of this study are as follows. Firstly, this paper uses an appropriate measure of in situ urbanization, that is, the transfer of rural-urban division codes. Secondly, unlike the existing analysis that place emphasis on empirical case study and draw various conclusions due to different research samples, this paper uses national census data and the conclusions are more informative and universal. Finally, this paper not only studies the impacts of in situ urbanization on rural-to-urban residents, but also studies the spillover effects of in situ urbanization on other residents in the county, thus we could more comprehensively assess the impacts of in situ urbanization.

2. Literature Review

Existing research have shown that urbanization promotes economic development in many ways. Bertinelli & Black find that urbanization can promote human capital accumulation, which is the engine of growth [9]. Iyer finds that the impacts of urbanization on the productivity of manufacturing industries in India vary both within and across industries [10]. Rosero et al. specifies that the agglomeration externalities during urbanization play an important role in the local productivity of sectors [11]. Tran points out that the productivity of informal household businesses in Vietnam benefits from urbanization [12]. With its unique characteristics, China's urbanization is still worth studying.

At this stage, China's urbanization mainly includes two ways. The first is the urbanization of migrant workers, that is, farmers move to distant cities to obtain jobs and then become city residents. This is usually accompanied by the process of "urbanization of people" and is similar to the urbanization format of developed countries. The relevant research mainly focuses on the reform of the household registration system (hukou) [13–15], the provision of equal public services [16–19], and the reform of rural land systems [20–22]. There are also some studies focusing on the subjective well-being of farmers after completing the rural-urban migration [23–26].

The second is the in situ urbanization, that is, the local rural residents change to urban residents without experiencing geographical relocation [27–29]. In the early days of reform and opening up, in situ urbanization was mainly driven by the development of township and village enterprises (TVEs) and foreign investment in rural areas [28,30]. But since the late 1990s, with the slowdown of development of TVEs, in situ urbanization has been increasingly dominated by the government, because expropriating rural land at a low price and selling it at a high price has become a chief means for local governments to obtain revenue [31,32]. After expropriating rural land, farmers usually passively become urban residents. Therefore, in situ urbanization is often initiated by "urbanization of land" in China, which in turn drives "urbanization of people". However, there are some worries about "urbanization of people" lagging behind "urbanization of land" during the in situ urbanization, so scholars hold different attitudes towards in situ urbanization.

Some studies show the negative effects of in situ urbanization. Firstly, due to the dual structure of urban and rural areas in China, rural areas and farmers could not be well incorporated into the urban social, administrative and welfare system in China after in situ urbanization [33]. Even when farmers obtain urban status after in situ urbanization, they may not be able to receive the same benefits as urban residents which leads to significant social, economic, and environmental challenges for farmers after in situ urbanization. Many studies show adverse effects of in situ urbanization on farmers in terms of identity, mental health, and satisfaction [34]. Chen et al. find that in situ urbanized rural residents have fewer years of education and less skilled employment and compared with the both urban hukou residents and rural-to-urban migrants [32]. Liu et al. point out that residents after in situ urbanization face decreasing income and increasing living cost, and in situ urbanization may lead environmental challenge [35]. Xie & Chen find that in situ urbanized rural residents have a low level of urban identity due to the challenges in the course of integration into urban life in terms of income, occupation, social insurance, and housing [27].

Other studies show the positive effects of in situ urbanization, especially from the perspective of housing, mobility and employment. The most direct impacts of in situ urbanization on farmers are at the housing aspect [4,36]. In situ urbanization usually forces farmers to move to urban or concentrated areas to live, and their living conditions are significantly improved. At the same time, farmers have more opportunities to engage in non-agricultural work in hometown, and their income also have increased, which in result to improve living conditions in education, medical care, health and so on [29,37]. Therefore, farmers are more likely to stay in their hometown and are less likely to become migrant workers [29]. This is in consistent with urbanization process in western countries. Sato and Zenou find that workers in regions with a lower urbanization rate experience less social interaction and a higher unemployment rate [38]. Evers points out that one of the effects of urbanization is a high rate of both vertical and horizontal mobility [39].

According to the above literatures, we could find that the negative effects of in situ urbanization focus on the farmers' subjective perceptions or relative situations compared with urban residents. However, research holds almost the same opinion that in situ urbanization leads to better housing, mobility and employment for residents compared with their past. Therefore, we propose the following hypotheses.

Hypothesis 1 (H1). *In situ urbanization will improve farmers' housing conditions.*

Hypothesis 2 (H2). *In situ urbanization will make farmers more likely to stay in their native county.*

Hypothesis 3 (H3). *In situ urbanization will enhance possibility of farmers to engage in non-agricultural work.*

3. Data and Methods

3.1. Data Source

This paper uses the transfer of rural-urban division codes to measure in situ urbanization, which are collected from the website of the National Bureau of Statistics of China (<http://www.stats.gov.cn/tjsj/tjbz/tjyqhdmhcxhfdm> (accessed on 7 December 2020)). As what we have mentioned in the literature review, most of the research about in situ urbanization are case studies, so they seldom use any indicator to identify whether the area takes place in situ urbanization. But there are many studies using the proportion of new urban construction land to measure urbanization. It is not an accurate indicator to measure in situ urbanization. On the one hand, urbanization is different form in situ urbanization. Urbanization includes both classic urbanization (rural residents move to urban areas to seek job opportunities in the non-agricultural sector and become urban residents gradually) and in situ urbanization (the local rural residents gain urban residency without experiencing geographical relocation due to the planned schedule by government). It is not proper to measure in situ urbanization by using the method of measuring urbanization. On the

other hand, there are some arguments to measure the in situ urbanization by using the proportion of new urban construction land. The new urban construction land area will include areas that were originally wasteland and are now newly developed, so it is not an accurate indicator for measuring the level of urbanization.

The transfer of rural-urban division codes will not have the above problems. The rural-urban division codes are accompanied by the community codes, which represent the residential area. There is no worry that we will include the wasteland as an urbanization area. Moreover, Gan et al. found that areas with division code changing from rural to urban, are far less likely urbanized than those in urban areas, which is consistent with the characteristics of in situ urbanization [8]. So, we use the change in the rural-urban division code to determine whether a community has undergone in situ urbanization.

Since 2009, the National Bureau of Statistics of China has published the 15 digit statistical administrative and rural-urban division codes every year. The first 12 digits are the community codes, representing the five administrative levels in China: the first two are province-level (including provinces, autonomous regions and centrally administered municipalities), the third and fourth are city-level (including prefectures and prefecture-level cities), the fifth and sixth are county-level (including districts, counties and county-level cities), the seventh, eighth and ninth are township-level (including towns, townships and sub-districts), and the last three are community ID. The final 3 digits are the rural-urban division codes. In this 3 digit code, the first digit represents the rural-urban division (1 means urban community while 2 means rural community) and the last two represent a detailed sub-classification, which could be found in Table 1.

Table 1. Number of Different Types of Communities in 2009–2020.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Downtown area (111)	58,264	54,635	56,837	58,218	57,742	58,371	60,009	64,238	66,352	67,940	69,412	66,737
Urban-rural fringe area (112)	19,926	25,859	25,734	26,047	25,523	25,292	25,950	27,043	27,695	28,023	28,421	28,042
Town center (121)	46,416	36,554	40,102	42,024	40,800	44,222	45,126	46,644	49,416	49,920	49,852	48,767
Town-township fringe area (122)	48,374	62,801	65,450	67,219	64,401	66,406	65,068	62,918	63,912	60,603	58,507	54,852
Special zone (123)	6522	6582	7217	7357	5445	1340	1377	5789	5935	6007	6065	5426
Urban total	179,502	186,431	195,340	200,865	193,911	195,631	197,530	206,632	213,310	212,493	212,257	203,824
Rural center (210)	23,198	22,429	21,590	21,346	17,803	19,391	18,385	16,750	16,129	15,454	14,583	12,445
Village(220)	496,507	487,206	477,556	472,459	439,290	455,457	451,604	443,273	443,144	436,983	429,941	399,431
Rural total	519,705	509,635	499,146	493,805	457,093	474,848	469,989	460,023	459,273	452,437	444,524	411,876
Total	699,207	696,066	694,486	694,670	651,004	670,479	667,519	666,655	672,583	664,930	656,781	615,700

Notes: The 3 digit number in brackets in the first column represents the urban and rural division codes.

This paper uses the change in the rural-urban division code to determine whether a community has undergone in situ urbanization. It is worth noting that if the administrative level or its superior authority changes, a region's community code will also change. For example, in 2016, Chongming County in Shanghai was changed to Chongming District, and the first 6 digits of its community code were changed from 310230 to 310151. This paper only considers those communities whose 12 digit community code has not changed between 2009 and 2020. This is different from Gan et al., who track all community ID even its administrative and upper-level administrative units have changed from 2009 to 2017 [8]. Unlike them, we exclude those communities whose administrative or upper-level administrative units have changed, mainly because the change in (upper-level) administrative level

is also a shock to the region, and taking this into account is not conducive to identifying the effect of in situ urbanization.

We collect all community codes that have appeared from 2009 to 2020. The number of various types of communities is shown in Table 1. There are 374,789 communities that have survived from 2009 to 2020, that is, the 12 digit community code has not changed during this period. Excluding the communities that have changed from urban to rural and communities in special zones, the sample size we use is 362,899. We recognize those communities transferred from rural to urban are areas that take place in in situ urbanization. There were 16,082 in situ urbanization communities from 2009 to 2020, of which 10,199 occurred between 2011 and 2015.

We also use data from the 2010 and 2015 national censuses to study well-being. The Chinese national census takes place every 10 years, among which a one-percent national sample census is conducted every 5 years. In this paper, we call both as national census. These data are all sampled and contain 2,105,260 and 2,003,563 samples, respectively. The data collect all kinds of information about the surveyed individual, such as housing, work, location, family and so on; and especially, each person has a specific address code, so it can clearly identify the community where the individual is located. Therefore, it is possible to inspect whether an individual has undergone in situ urbanization by combining the community code.

In addition, we also use county-level variables in the process of PSM later: the number of students in secondary and primary schools, and the number of beds in medical and health institutions to control public service; the per capita GDP, the balance of savings deposits of urban and rural residents, the total investment in fixed assets, and the general budget revenue and expenditure of local finance to control economic development; the area of the administrative district, the number of registered population at the end of year, and the number of townships to control endowment. The county-level data came from the Chinese Research Data Service Platform (CNRDS), and nominal variables involved are adjusted using the GDP deflator.

3.2. Variable Selection

Based on the national census data, this paper mainly analyzes the impacts of in situ urbanization on residents' well-being from three aspects: housing, mobility and employment. The first focuses on the household while the latter two focus on the individual labor.

In the 2010 and 2015 national census questionnaires, the common questions about the housing conditions include: building area, number of rooms, number of floors, whether there is a private kitchen and a private toilet, and the source of housing. Based on this, we sort out three types of characteristics to reflect housing conditions. The first is the physical properties of housing, including building area, number of rooms, and whether it is a high-rise building. The second is the living conditions of the housing. The dummy variables, whether there is a private kitchen or a private toilet, will be used as indicators. The third is the source of housing. In the census questionnaires, housing sources are divided into four categories: purchase, self-build, lease and others. In situ urbanization often induces farmers to move out of self-built housing to commercial building, so we choose whether live in purchased or self-built housing as dependent variables. Regarding the control variables in housing condition analysis, this paper considers the family size due to the availability of data.

When discussing individuals' employment and mobility, we firstly limit the sample range from 16 to 60 years old, which is usually seen as the working-age in China. At the same time, we excluded unemployed individuals whose reasons are as follows: studying at school, incapacity for work, retirement, doing household chores, and others. When examining in situ urbanization's impacts on mobility, the dependent variables include whether the individual stays in the household registered (hukou) county, whether the individual left household registered county more than half a year, and whether the individual comes from other communities. When examining in situ urbanization's impacts on employment, the

sample includes all the population staying in the county at the time of filling in the national census questionnaires, that is, the population who stayed in the county with local hukou and the migrant population who flowed into the county without local hukou. We inspect the change in employment structure in the county after in situ urbanization. Individual control variables included gender, age, ethnicity, education, marital status, literacy, and family size. Data description of the main variables is shown in Table 2.

Table 2. The definition and data description of variables.

Variables	Definition	Observation	Mean	S.D.	Minimum	Maximum
Area	House area	354,730	103.011	72.384	1	360
Rooms	The number of rooms	354,730	3.239	2.205	1	12
High-rise	1 if family live in the building with more than 3 floors, 0 otherwise	348,069	0.436	0.496	0	1
Kitchen	1 if the house has private kitchen, 0 otherwise	348,069	0.865	0.342	0	1
Toilet	1 if the house has private toilet, 0 otherwise	348,069	0.530	0.499	0	1
Self-built	1 if the family built the house, 0 otherwise	348,069	0.469	0.499	0	1
Bought	1 if the family bought the house, 0 otherwise	348,069	0.156	0.363	0	1
In-county	1 if individual stays in the household registered county, 0 otherwise	682,119	0.904	0.294	0	1
Migrant	1 if the individual left household registered county more than half a year, 0 otherwise	682,119	0.054	0.226	0	1
Inflow	1 if individual comes from other communities in the county, 0 otherwise	682,119	0.303	0.459	0	1
Unemployment	1 if individual loses job, 0 otherwise	682,119	0.050	0.217	0	1
Ind1	1 if individual works in primary industry, 0 otherwise	648,168	0.287	0.452	0	1
Ind2	1 if individual works in secondary industry, 0 otherwise	648,168	0.290	0.454	0	1
Ind3	1 if individual works in tertiary industry, 0 otherwise	648,168	0.403	0.490	0	1
Male	1 if individual is male, 0 otherwise	682,119	0.562	0.496	0	1
Minority	1 if individual is a minority, 0 otherwise	682,119	0.048	0.214	0	1
Education	1 if individual holds junior college degrees or above, 0 otherwise	682,119	0.174	0.379	0	1
Married	1 if individual is married, 0 otherwise	682,119	0.762	0.426	0	1
Literacy	1 if individual is literate, 0 otherwise	682,119	0.989	0.102	0	1
Age	Individual's age	682,119	37.251	10.997	16	60
Familysize	Number of family members	682,119	4.047	1.790	1	10

3.3. Methods

Our research procedure consists of two parts. First, we use Propensity Score Matching (PSM) to construct data that could be used to compare among counties. Second, we apply Differences-in-Difference (DID) to estimate the impacts of in situ urbanization.

3.3.1. Propensity Score Matching (PSM)

To protect individual privacy, the census data does not provide a code that can uniquely identify each person, so we could not match them year by year. Instead, we can only use pooled cross-sectional data for research. Additionally, the rural-urban division code has been published and implemented since 2009, so only the 2010 and 2015 census data can

be used for empirical analysis, and parallel trend tests also cannot be carried out with two-period data. In order to make up for the above deficiencies, this paper refers to Xu et al. and Wan & Li, applying the Propensity Score Matching (PSM) and Differences-in-Difference (DID) method to evaluate [22,40]. Note that counties that implement in situ urbanization are selective in our study. For example, counties with higher economic development level are more likely to implement in situ urbanization because of stronger public service affordability. Hence, we match data based on the county-level characteristics when using PSM.

Based on the above reasons, this paper, taking 2010 as the base period, matches the counties with in situ urbanization (treatment group) and without (control group) during 2011–2015 by using one-to-one nearest-neighbor logistic model. We also use other matching methods and obtain robust results. The matching results and balancing test are shown in Table 3. We take logarithms on all variables in Table 3 when we run PSM model. As can be seen in Table 3, the p value of each variable after matching is greater than 0.1, indicating that there is no significant difference between the variables in the treatment group and the control group after matching; and the standardized bias is significantly reduced, much less than the threshold value (20%). This indicates that we pass the balancing test, that is, the treatment group and the control group have very close characteristics in all aspects after matching. Finally, the treatment group of this paper consists of 139,245 households and 298,387 individuals in 253 counties, and the control group consists of 205,485 households and 383,732 individuals in 358 counties, as shown in Table 4.

Table 3. PSM results and balancing test.

Variable	Unmatched Matched	Mean		% Bias	% Reduct Bias	t Test		V(T)/V(C)
		Treated	Control			t	p > t	
Number of students in secondary schools	U	10.732	10.777	−5.100	81.600	−0.790	0.432	0.62 *
	M	10.732	10.740	−0.900		−0.150	0.879	0.92
Number of students in primary schools	U	10.743	10.783	−4.100	56.000	−0.640	0.523	0.59 *
	M	10.742	10.760	−1.800		−0.300	0.762	0.92
Number of beds in medical and health institutions	U	7.774	7.929	−14.800	98.900	−2.310	0.021	0.70 *
	M	7.772	7.774	−0.200		−0.030	0.980	0.93
Total investment in fixed assets	U	5.115	5.224	−7.800	69.500	−1.210	0.225	0.75 *
	M	5.114	5.148	−2.400		−0.370	0.713	0.91
General budget expenditure of local finance	U	12.685	12.988	−26.800	99.600	−4.220	0.000	0.85
	M	12.686	12.687	−0.100		−0.010	0.989	0.97
General budget revenue of local finance	U	11.959	12.299	−19.600	86.800	−3.070	0.002	0.80 *
	M	11.959	11.914	2.600		0.400	0.690	0.98
Area of the administrative district	U	8.136	9.025	−52.100	97.800	−8.170	0.000	0.80 *
	M	8.137	8.118	1.100		0.170	0.865	0.87
Number of registered population at the end of the year	U	4.383	4.673	−21.700	70.200	−3.360	0.001	0.54 *
	M	4.383	4.296	6.500		1.120	0.262	0.95
Number of townships	U	3.035	3.177	−24.600	98.600	−3.860	0.000	0.84
	M	3.036	3.038	−0.300		−0.050	0.959	0.96
Balance of savings deposits of urban and rural residents	U	14.272	14.518	−16.600	99.200	−2.590	0.010	0.71 *
	M	14.271	14.269	0.100		0.020	0.983	0.92
Per capita GDP	U	1.814	2.130	−34.500	97.600	−5.420	0.000	0.88
	M	1.815	1.822	−0.800		−0.120	0.902	0.85

Notes: * indicates $p < 0.1$.

Table 4. Description of treatment and control group after PSM.

County	A: 253			B: 358	
	A1	A2	A3	B1	B2
Household	86,685	58,064	4496	153,110	52,375
	Total: 139,245			Total: 205,485	
	A1	A2	A3	B1	B2
Individual	159,188	129,242	9957	261,292	122,440
	Total: 298,387			Total: 383,732	

In addition to studying the direct impacts of in situ urbanization on residents who live in the communities transferred from rural to non-agricultural, we also study the spillover effects, that is, the impacts of in situ urbanization on other residents who live in the urban communities or rural communities that has not transferred. For the convenience of explanation, the counties containing the rural-urban conversion community are referred to as A, and A is divided into urban community A1, rural community A2 without in situ urbanization, and A3, the original rural community that has been transferred into urban community. The counties that do not contain rural-to-urban communities are referred to as B, and B includes urban communities B1 and rural communities B2. Table 4 shows the sample size of each group. The direct and spillover effects of in situ urbanization are explored by using different combinations of treatment and control group.

3.3.2. Differences-in-Difference (DID)

After the PSM, we use the DID model to identify the impacts of in situ urbanization on family housing, individual mobility and employment. The DID model is constructed as follows:

$$Y_{it} = \alpha + \beta D_{it} + \gamma T_{it} + \lambda(D_{it} \times T_{it}) + \delta X_{it} + \varphi_c + \varepsilon_{it} \quad (1)$$

In Formula (1), the subscripts (c , i and t) represent counties, families or individuals, and years, respectively. Y is the outcome variable affected by in situ urbanization, including family housing, individual mobility and employment. Due to the existence of continuous variables in the outcome variables, we use linear probability models for convenience. D represents the binary variable indicating whether the individual or family has undergone in situ urbanization. T is the binary variable of whether in situ urbanization has occurred at the current. The coefficient λ before $D \times T$ is what we pay attention to, which shows the exactly change after in situ urbanization. According to our hypotheses, housing, mobility and employment conditions will be improved after in situ urbanization, so we expect those regression model with positive independent variable would result $\lambda > 0$, vice versa. X represents the control variable. When we analyze the impacts of in situ urbanization on housing, X consists of family size due to the data availability. When we analyze the impacts of in situ urbanization on individual mobility and employment, X consists of gender, age, ethnicity, education, marital status, literacy, and family size. The definition and data description of X could be seen in Table 2. The county fixed effects are controlled by φ , while time fixed effects have been controlled by T because there are only two-year cross-sectional data. It should be noted that the characteristics of cross-sectional data lead to the inability to precisely control the individual fixed effects in the model, and we can only control the fixed effects at a higher level. We choose to control the county fixed effects because this paper focuses on county. And we adopt robust standard errors by clustering to individual or family level to solve the problem of heteroscedasticity in all regressions.

4. Results

4.1. Impacts of In Situ Urbanization on Housing

This section explores the impacts of in situ urbanization on household housing conditions by combining different treatment and control groups, and full regression results are shown in Appendix A, Tables A1–A6. For convenience to compare, we organize the results in Table 5. In the table, the characters in front of “&” represent the treatment group, while in the back represents the control group. For instance, A3&A1A2, means that A3 is the treatment group and A1 and A2 are control group in Formula (1). The following “&” in the table has the same meaning.

Table 5. Impacts of In situ Urbanization on Housing.

	(1)	(2)	(3)	(4)	(5)	(6)
	A3&A1A2	A3&A2	A3&B2	A2&B2	A1& B1	A&B
Area	3.032 (2.693)	−0.095 (2.729)	0.085 (2.943)	−1.812 * (0.933)	−4.913 *** (0.669)	−3.654 *** (0.542)
Room number	−0.064 (0.072)	−0.179 ** (0.074)	−0.215 *** (0.078)	−0.073 ** (0.030)	−0.159 *** (0.020)	−0.123 *** (0.017)
High-rise	0.022 ** (0.011)	0.055 *** (0.009)	0.029 *** (0.010)	−0.002 (0.002)	0.008 ** (0.004)	−0.002 (0.003)
Kitchen	0.049 *** (0.011)	0.042 *** (0.012)	0.049 *** (0.012)	−0.007 (0.005)	0.011 *** (0.002)	0.009 *** (0.002)
Toilet	0.095 *** (0.014)	0.079 *** (0.014)	0.086 *** (0.015)	0.009* (0.005)	0.008 ** (0.004)	0.012 *** (0.003)
Self-built	−0.047 *** (0.012)	−0.053 *** (0.011)	−0.040 *** (0.012)	−0.003 (0.003)	−0.012 *** (0.003)	−0.011 *** (0.003)
Bought	0.005 (0.006)	0.013 ** (0.006)	0.005 (0.006)	0.001 (0.001)	0.011 *** (0.004)	0.006 ** (0.003)

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses. Control variables include family size.

The results of column (1) in Table 5 show that, compared with A1 and A2, households in A3 are more likely to move into high-rise buildings after in situ urbanization, and those buildings are less likely built by themselves. In addition, the possibility of households with private kitchens and toilets increases. Changing the control group to A2, we will find that the number of rooms occupied by A3 families has decreased, but the probability of A3 staying in purchased high-rise buildings with better facilities has increased significantly. This is inconsistent with existing studies which indicate that in situ urbanization will reduce the living area but improve living conditions, and verifies out Hypothesis 1. This also indirectly shows that our method of using the transfer of rural-urban division codes to measure in situ urbanization is reasonable.

Then we consider spillover effects. The first is to consider whether other rural communities in the county will be affected by in situ urbanization. The control group was replaced by B2, and the regression results are shown in column (3). We can find that column (3) is basically the same as that of column (2) in coefficient sign and significance, but the coefficients vary, indicating that A2 may have been affected by in situ urbanization. Therefore, we directly compare A2 with B2, and the results are shown in column (4). The housing area and the number of rooms of A2 families have decreased, but there is no significant change in housing floors and housing sources, and their living conditions of housing is hardly improved. This shows that in situ urbanization may compress the living area of other rural communities in the county, but the housing sources and living conditions of other rural

communities will not be significantly affected. The second is to consider spillover effects on urban communities. The results of column (5) show that the housing area and the number of rooms of the A1 families have decreased significantly, but the possibility of living in purchased high-rise buildings with better living facilities has increased significantly. The improvement in living conditions and housing source of A1 is not surprising, but the decline in housing area and number of rooms is somewhat odd. We think the reason behind that is the mobility of the labor. The following analysis of mobility shows that A1 will have more inflows after in situ urbanization, so the demand for housing in A1 will increase, accompanied with a decline in the housing area and the number of rooms. Finally, we study the spillover effects on the entire county. Column (6) shows that after conducting in situ urbanization, the non-self-built housing in counties and the living conditions will improve comparing to B, but the area and number of rooms will decrease.

4.2. Impacts of In Situ Urbanization on Mobility

This section studies the impacts of in situ urbanization on the mobility of residents, full regression results are shown in Appendix A, Tables A7 and A8. It can be found that an individual who is female, unmarried, younger, and well-educated is more likely to leave the hometown and become a migrant worker.

We rearrange the results in Table 6. The results in column (1) show that after in situ urbanization, the probability of A3 farmers staying in the county increases significantly, while the probability of becoming an outflow population decreases significantly. Hypothesis 2 is verified. And similar results are shown in column (2). We need to explain why there are significant differences between A2 and A3 even if they are both farmers with similar qualities. Three reasons lie behind; first is the wealth effect. In situ urbanization is usually accompanied by land expropriation, so A3 residents may reduce motivation to go out to look for jobs after receiving monetary or property compensation. The second is the information advantage. Compared with other labors in the county, A3 residents have more information on the development of counties (such as information about building factories or commercial districts on their occupied land), and they are more likely to return to or stay in their hometowns for employment. The third is the protection for land-losing farmers by local governments. For the sake of farmers' interests and social stability, local governments may require factories or commercial companies occupying A3 land to hire more A3 residents to solve the employment problem of landless farmers.

Table 6. Impacts of In situ Urbanization on Mobility.

	(1)	(2)	(3)	(4)	(5)	(6)
	A3&A1A2	A3&A2	A3&B2	A2&B2	A1& B1	A&B
In-county	0.035 *** (0.009)	0.054 *** (0.009)	0.036 *** (0.010)	−0.027 *** (0.004)	0.003 (0.002)	−0.008 *** (0.002)
Migrant	−0.028 *** (0.007)	−0.037 *** (0.007)	−0.033 *** (0.008)	0.011 *** (0.004)	−0.002 (0.002)	0.003 (0.002)
Inflow	0.014 (0.013)	0.005 (0.013)	0.001 (0.013)	0.001 (0.003)	0.023 *** (0.005)	0.022 *** (0.003)

Notes: *** indicates $p < 0.01$. The standard errors are given in parentheses. Control variables include gender, age, ethnicity, education, marital status, literacy, and family size.

Next the control group of A3 was replaced by B2, and the same conclusion was obtained in column (2) and column (3), but the absolute value of the coefficient in column (2) was larger than that in column (3), so it is reasonable to study spillover effects of in situ urbanization. By comparing A2 and B2 directly, column (4) shows that the probability of A2 residents staying in the county is significantly lower than that of B2, and the probability of going out to become migrant workers is significantly higher. A2 and A3 are both farmers

in essence, which means they may seek similar work in the county. However, there are limited job opportunities for A3 and A2 in the county. When A3 labor increases, both A2 and A3 would face fiercer competition in the job market. And from the reasons we have mentioned above, A3 residents would be more likely to stay in their hometown county with land expropriation compensation even if they are out of work, so A2 farmers would be crowded out and are more likely to become migrant workers compared with B2.

Besides spillover effects on the mobility of other agricultural communities, in situ urbanization can also affect the mobility of residents in non-agricultural communities. The results in column (5) show that after the in situ urbanization, the probability of A1 citizens leaving the county did not change significantly, but the population flowing into A1 from other communities increased significantly. Moreover, the results in column (6) show that the total population remaining in the county A decreases, and this is resulted from the population outflow in A2 exceeds the population return in A3.

4.3. Impacts of In Situ Urbanization on Employment

This section studies the impacts of in situ urbanization on the employment of residents in the county. The sample in this section consists of all the labor, including local residents and migrants in the county. Appendix A, Tables A9–A11 show the regression results. We can find that ethnic minorities are more engaged in primary production because of differences in language and culture, and younger men are more likely to work in non-agricultural industries, especially in the secondary industry compared with women. Moreover, well-educated laborers appeal more to jobs in the tertiary industry.

Table 7 shows the abbreviated regression results. Column (1) in Table 7 shows that compared with other labors in the county, the probability of A3 residents engaging in the primary industry has decreased significantly, while the probability of engaging in the tertiary industry has increased significantly. Hypothesis 3 is verified. The results of column (2) show that the A2 and A3 populations who stay in the county have no significant difference in their working industries, which is in line with the above point of view, that is, A2 and A3 are farmers with similar qualities and compete for employment. When the control group is replaced by B2, A3 labors are less likely to engage in the primary industry, while are more likely to engage in the tertiary industry.

Table 7. Impacts of in situ Urbanization on Employment.

	(1)	(2)	(3)	(4)	(5)	(6)
	A3&A1A2	A3&A2	A3&B2	A2&B2	A1& B1	A&B
Unemployment	0.008 (0.006)	−0.001 (0.006)	0.004 (0.007)	0.004 * (0.002)	−0.004 * (0.002)	0.001 (0.002)
Ind1	−0.051 *** (0.013)	0.013 (0.014)	−0.031 ** (0.015)	−0.050 *** (0.006)	−0.025 *** (0.003)	−0.053 *** (0.003)
Ind2	0.014 (0.014)	−0.015 (0.014)	−0.022 (0.015)	−0.003 (0.005)	−0.002 (0.004)	0.007 ** (0.003)
Ind3	0.030 ** (0.013)	0.011 (0.013)	0.041 *** (0.014)	0.038 *** (0.005)	0.010 ** (0.005)	0.027 *** (0.004)

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses. Control variables include gender, age, ethnicity, education, marital status, literacy, and family size.

Then we examine the spillover effects. Taking A2 as the treatment group and B2 as the control group, the results in column (4) show that the unemployment probability of A2 farmers has increased compared with that of B2 farmers. This comes from the crowding out effect which has not yet been fully “digested”, that is, the unemployed A2 workers do not have enough time to leave the county for work. Moreover, the probability of A2 engaging in the primary industry has relatively decreased, while the probability of engaging in the tertiary industry has relatively increased. For non-agricultural communities, the unemployment rate of A1 will drop slightly compared to B1, and the probability of

engaging in the tertiary industry will increase significantly. This implicates the development of non-agricultural industries in the county, especially in A1.

On the whole, column (6) shows that the employment structure of the county has shifted from the primary industry to the secondary and tertiary industries. This paper argues that such a shift consists of the following two parts: one is the increase in the population flowing into the A1 community, and the other is the mobility of A2 and A3 farmers. Specifically, the results of column (5) show that there is no significant difference between A1 and B1 in the probability to engage in the secondary industry, but the results in the previous part show that labor will flow into A1. Although the probability remains the same, the total of labor in A1 increases, so the number of people engaged in the secondary industry will also increase after the in situ urbanization. It is obvious that the tertiary industry attracts more laborers because the results of A1&B1 show that the coefficient of Ind3 is significant while Ind2 is not. In addition to that, the shift also consists of internal change among rural labors, that is, due to A3 labors are more likely to stay in the county so the secondary and tertiary industry in the county will attract more A3 and less A2 relatively.

5. Conclusions and Implications

In situ urbanization can be considered as beneficial to the local community, and thus is an example of sustainable urbanization in China. Existing studies about in situ urbanization place emphasis on empirical cases and ignore the spillover effects on other residents in the county. This paper first finds a suitable measure: the transfer of rural-urban division codes to identify in situ urbanization. On this basis, combined with the 2010 and 2015 census data, we study the impacts of in situ urbanization on farmers' well-being from the perspective of housing, mobility and employment. Moreover, we explore the spillover effects of in situ urbanization on residents of other rural and urban communities by combining different treatment and control groups. The main conclusions of this paper are as follows:

First, farmers are more likely to move into non-self-built high-rise buildings after in situ urbanization, and their living conditions will be improved, while their housing area and number of rooms will decrease. Furthermore, similar results could be observed for the other rural community without in situ urbanization and urban community in the county, with advancing living conditions and decreasing living areas.

Second, the probability of farmers becoming migrant workers after in situ urbanization decreases, while the probability of other farmers in the county increases. Due to the wealth effect, information advantages and the protection by local governments, farmers after in situ urbanization would become more "sticky" to their hometowns, and farmers in other communities with similar qualities are more likely to go out for work due to fiercer job competition. Moreover, in situ urbanization will attract laborers inflowing non-agricultural communities in the county due to the non-agricultural industrial development.

Third, in situ urbanization will promote the shift of employment structure in the county from the primary to the secondary and tertiary industries, of which the tertiary industry is the main direction of the shift. Such a shift consists of two major parts. One comes from the urban community with more people inflowing and being engaged in secondary and tertiary industries. The other comes from the internal change between farmers with in situ urbanization and the other farmers without in the county.

Overall, our study shows that in situ urbanization can improve residents' well-being from the perspective of housing, mobility and employment. Concluded from this, in situ urbanization in China is an integrated development of land and human urbanization. Although in situ urbanization in China is always initiated by government, which is different from classic urbanization processes, it leads to similar results; i.e., urbanization provides more non-agricultural job opportunities for residents, attracts rural people flowing, and promoting structural transformation [41–44].

Our research has two theoretical contributions. First, we use an appropriate indicator to measure in situ urbanization. Second, we not only study the effects of in situ urbanization on farmers, but also spillover effects of in situ urbanization on other residents in the county.

As for the practical implication, we suggest that moderate promotion for urbanization by government is beneficial for developing countries. Existing studies show that urbanization in developing countries could shift labor from agricultural sectors to non-agricultural sectors, promoting non-agricultural development and reducing poverty [42,43]. But urbanization needs some conditions to trigger, which may be difficult or need long time to meet for developing countries. Therefore, some promotions should be made by governments, such as the in situ urbanization conducted by the government in China. Of course, we should pay attention to the phenomenon that “urbanization of people lags behind urbanization of land”, that is, the welfare of people was ignored during the planned urbanization. Establishing a sound and fair social security system, including medical care, education, pension and so on, is the responsibility and obligation of the government during urbanization.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Impacts of In situ Urbanization on Housing (A3&A1A2).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area	Rooms	High-Rise	Kitchen	Toilet	Self-Built	Bought
D	13.335 *** (1.274)	0.338 *** (0.035)	−0.198 *** (0.006)	−0.034 *** (0.007)	−0.134 *** (0.008)	0.193 *** (0.007)	−0.090 *** (0.003)
T	23.876 *** (0.415)	0.773 *** (0.013)	0.045 *** (0.002)	0.059 *** (0.002)	0.177 *** (0.002)	0.000 (0.002)	0.012 *** (0.002)
D × T	3.032 (2.693)	−0.064 (0.072)	0.022 ** (0.011)	0.049 *** (0.011)	0.095 *** (0.014)	−0.047 *** (0.012)	0.005 (0.006)
Familysize	13.351 *** (0.126)	0.389 *** (0.004)	−0.028 *** (0.001)	0.022 *** (0.001)	−0.000 (0.001)	0.059 *** (0.001)	−0.008 *** (0.000)
Constant	59.426 *** (0.449)	1.985 *** (0.014)	0.414 *** (0.003)	0.760 *** (0.003)	0.416 *** (0.003)	0.378 *** (0.003)	0.156 *** (0.002)
County Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	149,245	149,245	146,925	146,925	146,925	146,925	146,925
adj. R ²	0.237	0.254	0.336	0.144	0.297	0.399	0.082

Notes: ***, ** respectively, indicate $p < 0.01$, $p < 0.05$. The standard errors are given in parentheses.

Table A2. Impacts of In situ Urbanization on Housing (A3&A2).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area	Rooms	High-Rise	Kitchen	Toilet	Self-Built	Bought
D	6.379 *** (1.333)	0.020 (0.037)	0.030 *** (0.004)	0.011 (0.008)	0.045 *** (0.007)	−0.070 *** (0.006)	0.015 *** (0.003)
T	25.839 *** (0.644)	0.858 *** (0.021)	0.006 *** (0.001)	0.063 *** (0.003)	0.180 *** (0.003)	0.002 (0.002)	0.002 *** (0.001)
D × T	−0.095 (2.729)	−0.179 ** (0.074)	0.055 *** (0.009)	0.042 *** (0.012)	0.079 *** (0.014)	−0.053 *** (0.011)	0.013 ** (0.006)
Familysize	12.055 *** (0.174)	0.367 *** (0.006)	−0.002 *** (0.000)	0.020 *** (0.001)	0.016 *** (0.001)	0.015 *** (0.001)	−0.001 *** (0.000)
Constant	70.547 *** (0.715)	2.509 *** (0.023)	0.025 *** (0.002)	0.696 *** (0.004)	0.076 *** (0.004)	0.888 *** (0.003)	0.007 *** (0.001)
County Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	62,558	62,558	61,622	61,622	61,622	61,622	61,622
adj. R ²	0.282	0.255	0.142	0.206	0.344	0.201	0.049

Notes: ***, ** respectively, indicate $p < 0.01$, $p < 0.05$. The standard errors are given in parentheses.

Table A3. Impacts of In situ Urbanization on Housing (A3&B2).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area	Rooms	High-Rise	Kitchen	Toilet	Self-Built	Bought
D	- -	- -	- -	- -	- -	- -	- -
T	27.386 *** (0.672)	0.924 *** (0.022)	0.009 *** (0.001)	0.070 *** (0.004)	0.171 *** (0.003)	0.005 ** (0.002)	0.001 (0.001)
D × T	0.085 (2.943)	−0.215 *** (0.078)	0.029 *** (0.010)	0.049 *** (0.012)	0.086 *** (0.015)	−0.040 *** (0.012)	0.005 (0.006)
Familysize	10.521 *** (0.173)	0.338 *** (0.005)	−0.003 *** (0.000)	0.020 *** (0.001)	0.011 *** (0.001)	0.018 *** (0.001)	−0.001 *** (0.000)
Constant	65.407 *** (0.724)	2.198 *** (0.023)	0.032 *** (0.002)	0.690 *** (0.005)	0.083 *** (0.004)	0.865 *** (0.003)	0.009 *** (0.001)
County Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	56,857	56,857	55,871	55,871	55,871	55,871	55,871
adj. R ²	0.268	0.272	0.188	0.191	0.328	0.194	0.101

Notes: ***, ** respectively, indicate $p < 0.01$, $p < 0.05$. The standard errors are given in parentheses.

Table A4. Impacts of In situ Urbanization on Housing (A2&B2).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area	Rooms	High-Rise	Kitchen	Toilet	Self-Built	Bought
D	-	-	-	-	-	-	-
T	27.440 *** (0.672)	0.925 *** (0.022)	0.009 *** (0.001)	0.070 *** (0.004)	0.171 *** (0.003)	0.005 ** (0.002)	0.001 (0.001)
D × T	-1.812 * (0.933)	-0.073 ** (0.030)	-0.002 (0.002)	-0.007 (0.005)	0.009 * (0.005)	-0.003 (0.003)	0.001 (0.001)
Familysize	10.919 *** (0.126)	0.346 *** (0.004)	-0.002 *** (0.000)	0.019 *** (0.001)	0.013 *** (0.001)	0.014 *** (0.000)	-0.000 *** (0.000)
Constant	68.715 *** (0.520)	2.377 *** (0.017)	0.021 *** (0.001)	0.697 *** (0.003)	0.071 *** (0.003)	0.895 *** (0.002)	0.005 *** (0.001)
County Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	110,435	110,435	108,605	108,605	108,605	108,605	108,605
adj. R ²	0.277	0.264	0.107	0.202	0.328	0.130	0.013

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses.

Table A5. Impacts of In situ Urbanization on Housing (A1&B1).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area	Rooms	High-Rise	Kitchen	Toilet	Self-Built	Bought
D	-	-	-	-	-	-	-
T	26.998 *** (0.408)	0.869 *** (0.013)	0.061 *** (0.002)	0.043 *** (0.001)	0.166 *** (0.002)	0.012 *** (0.002)	0.007 *** (0.002)
D × T	-4.913 *** (0.669)	-0.159 *** (0.020)	0.008 ** (0.004)	0.011 *** (0.002)	0.008 ** (0.004)	-0.012 *** (0.003)	0.011 *** (0.004)
Familysize	10.900 *** (0.108)	0.295 *** (0.003)	-0.017 *** (0.001)	0.027 *** (0.000)	0.011 *** (0.001)	0.055 *** (0.001)	0.004 *** (0.001)
Constant	53.842 *** (0.340)	1.723 *** (0.010)	0.666 *** (0.002)	0.803 *** (0.002)	0.609 *** (0.002)	0.074 *** (0.002)	0.214 *** (0.002)
County Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	239,795	239,795	235,010	235,010	235,010	235,010	235,010
adj. R ²	0.196	0.197	0.268	0.098	0.185	0.343	0.067

Notes: ***, **, respectively, indicate $p < 0.01$, $p < 0.05$. The standard errors are given in parentheses.

Table A6. Impacts of In situ Urbanization on Housing (A&B).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area	Rooms	High-Rise	Kitchen	Toilet	Self-Built	Bought
D	-	-	-	-	-	-	-
T	27.516 *** (0.352)	0.892 *** (0.011)	0.048 *** (0.002)	0.051 *** (0.001)	0.168 *** (0.002)	0.010 *** (0.002)	0.006 *** (0.002)
D × T	-3.654 *** (0.542)	-0.123 *** (0.017)	-0.002 (0.003)	0.009 *** (0.002)	0.012 *** (0.003)	-0.011 *** (0.003)	0.006 ** (0.003)
Familysize	11.383 *** (0.082)	0.336 *** (0.002)	-0.025 *** (0.000)	0.021 *** (0.000)	0.000 (0.000)	0.056 *** (0.000)	-0.005 *** (0.000)
Constant	57.176 *** (0.283)	1.862 *** (0.008)	0.504 *** (0.002)	0.777 *** (0.002)	0.474 *** (0.002)	0.284 *** (0.002)	0.169 *** (0.001)
County Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	354,730	354,730	348,069	348,069	348,069	348,069	348,069
adj. R ²	0.223	0.244	0.405	0.140	0.318	0.482	0.090

Notes: ***, **, respectively, indicate $p < 0.01$, $p < 0.05$. The standard errors are given in parentheses.

Table A7. Impacts of In situ Urbanization on Mobility (A3&A12; A3&A2; A3&B2).

	A3&A1A2			A3&A2			A3&B2		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	In-County	Migrant	Inflow	In-County	Migrant	Inflow	In-County	Migrant	Inflow
D	0.005 (0.005)	-0.001 (0.004)	-0.037 *** (0.007)	0.038 *** (0.006)	-0.020 *** (0.005)	0.088 *** (0.007)	-	-	-
T	-0.010 *** (0.002)	0.011 *** (0.001)	-0.008 *** (0.003)	-0.030 *** (0.003)	0.020 *** (0.003)	0.002 (0.002)	-0.002 (0.003)	0.009 *** (0.003)	0.000 (0.002)
D × T	0.035 *** (0.009)	-0.028 *** (0.007)	0.014 (0.013)	0.054 *** (0.009)	-0.037 *** (0.007)	0.005 (0.013)	0.036 *** (0.010)	-0.033 *** (0.008)	0.001 (0.013)
Male	-0.024 *** (0.001)	0.022 *** (0.001)	0.007 *** (0.001)	-0.040 *** (0.002)	0.035 *** (0.001)	-0.005 *** (0.001)	-0.028 *** (0.002)	0.025 *** (0.001)	-0.004 *** (0.001)
Minority	0.013 *** (0.004)	-0.010 *** (0.003)	0.081 *** (0.007)	0.018 ** (0.007)	-0.017 *** (0.005)	0.072 *** (0.008)	-0.008 (0.006)	0.008 (0.005)	-0.009 (0.007)
Education	0.003 * (0.002)	-0.004 *** (0.001)	0.005 (0.004)	-0.086 *** (0.007)	0.050 *** (0.006)	0.050 *** (0.007)	-0.075 *** (0.008)	0.045 *** (0.006)	0.078 *** (0.009)
Married	0.034 *** (0.002)	-0.025 *** (0.002)	0.073 *** (0.003)	0.040 *** (0.003)	-0.030 *** (0.003)	0.051 *** (0.002)	0.050 *** (0.003)	-0.039 *** (0.003)	0.052 *** (0.002)
Literacy	-0.058 *** (0.004)	0.036 *** (0.003)	-0.036 *** (0.006)	-0.065 *** (0.005)	0.043 *** (0.004)	-0.021 *** (0.004)	-0.051 *** (0.005)	0.033 *** (0.004)	-0.010 ** (0.005)
Age	0.004 *** (0.000)	-0.003 *** (0.000)	-0.006 *** (0.000)	0.007 *** (0.000)	-0.004 *** (0.000)	-0.002 *** (0.000)	0.006 *** (0.000)	-0.003 *** (0.000)	-0.002 *** (0.000)
Familysize	-0.017 *** (0.001)	0.010 *** (0.000)	-0.033 *** (0.001)	-0.016 *** (0.001)	0.010 *** (0.001)	-0.005 *** (0.001)	-0.014 *** (0.001)	0.009 *** (0.001)	-0.008 *** (0.001)

Table A7. Cont.

	A3&A1A2			A3&A2			A3&B2		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	In-County	Migrant	Inflow	In-County	Migrant	Inflow	In-County	Migrant	Inflow
Constant	0.838 *** (0.005)	0.095 *** (0.004)	0.597 *** (0.008)	0.698 *** (0.008)	0.172 *** (0.006)	0.160 *** (0.008)	0.718 *** (0.008)	0.161 *** (0.006)	0.167 *** (0.008)
County Fixed Effects	YES								
N	298,387	298,387	298,387	139,198	139,198	139,198	132,392	132,392	132,392
adj. R ²	0.150	0.132	0.273	0.176	0.152	0.192	0.152	0.127	0.198

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses.

Table A8. Impacts of In situ Urbanization on Mobility (A2&B2; A1&B1; A&B).

	A2&B2			A1&B1			A&B		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	In-County	Migrant	Inflow	In-County	Migrant	Inflow	In-County	Migrant	Inflow
D	-	-	-	-	-	-	-	-	-
T	-0.003 (0.003)	0.009 *** (0.003)	0.000 (0.002)	0.005 *** (0.001)	0.003 *** (0.001)	-0.036 *** (0.003)	0.001 (0.001)	0.006 *** (0.001)	-0.027 *** (0.002)
D × T	-0.027 *** (0.004)	0.011 *** (0.004)	0.001 (0.003)	0.003 (0.002)	-0.002 (0.002)	0.023 *** (0.005)	-0.008 *** (0.002)	0.003 (0.002)	0.022 *** (0.003)
Male	-0.035 *** (0.001)	0.031 *** (0.001)	-0.005 *** (0.001)	-0.003 *** (0.001)	0.006 *** (0.000)	0.016 *** (0.001)	-0.018 *** (0.001)	0.017 *** (0.000)	0.007 *** (0.001)
Minority	-0.001 (0.005)	-0.000 (0.004)	0.016 *** (0.005)	0.003 * (0.002)	-0.001 (0.001)	0.050 *** (0.005)	-0.003 (0.002)	0.003 * (0.002)	0.016 *** (0.004)
Education	-0.087 *** (0.006)	0.052 *** (0.005)	0.063 *** (0.006)	-0.013 *** (0.001)	0.004 *** (0.001)	-0.096 *** (0.002)	-0.004 *** (0.001)	-0.001 (0.001)	-0.035 *** (0.002)
Married	0.045 *** (0.002)	-0.035 *** (0.002)	0.049 *** (0.002)	0.018 *** (0.001)	-0.014 *** (0.001)	0.073 *** (0.002)	0.030 *** (0.001)	-0.023 *** (0.001)	0.074 *** (0.002)
Literacy	-0.061 *** (0.004)	0.039 *** (0.003)	-0.012 *** (0.003)	-0.029 *** (0.003)	0.013 *** (0.002)	-0.144 *** (0.009)	-0.060 *** (0.003)	0.036 *** (0.002)	-0.051 *** (0.004)
Age	0.006 *** (0.000)	-0.004 *** (0.000)	-0.002 *** (0.000)	0.001 *** (0.000)	-0.001 *** (0.000)	-0.009 *** (0.000)	0.004 *** (0.000)	-0.002 *** (0.000)	-0.007 *** (0.000)
Familysize	-0.015 *** (0.001)	0.010 *** (0.001)	-0.005 *** (0.001)	-0.014 *** (0.000)	0.006 *** (0.000)	-0.042 *** (0.001)	-0.016 *** (0.000)	0.008 *** (0.000)	-0.036 *** (0.001)
Constant	0.706 *** (0.006)	0.167 *** (0.005)	0.140 *** (0.006)	0.975 *** (0.004)	0.026 *** (0.003)	1.057 *** (0.011)	0.885 *** (0.003)	0.072 *** (0.003)	0.691 *** (0.006)
County Fixed Effects	YES								
N	251,679	251,679	251,679	420,480	420,480	420,480	682,119	682,119	682,119
adj. R ²	0.166	0.142	0.140	0.075	0.074	0.198	0.137	0.123	0.266

Notes: ***, *, respectively, indicate $p < 0.01$, $p < 0.1$. The standard errors are given in parentheses.

Table A9. Impacts of In situ Urbanization on Employment (A3&A1A2; A3&A2).

	A3&A1A2				A3&A2			
	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3
D	−0.014 *** (0.002)	0.058 *** (0.008)	0.020 ** (0.008)	−0.075 *** (0.007)	0.000 (0.002)	−0.096 *** (0.008)	0.058 *** (0.008)	0.037 *** (0.007)
T	0.018 *** (0.001)	−0.098 *** (0.002)	−0.030 *** (0.003)	0.091 *** (0.003)	0.024 *** (0.002)	−0.157 *** (0.004)	−0.000 (0.003)	0.101 *** (0.004)
D × T	0.008 (0.006)	−0.051 *** (0.013)	0.014 (0.014)	0.030 ** (0.013)	−0.001 (0.006)	0.013 (0.014)	−0.015 (0.014)	0.011 (0.013)
Male	−0.002 *** (0.001)	−0.080 *** (0.001)	0.090 *** (0.002)	−0.028 *** (0.002)	−0.003 *** (0.001)	−0.107 *** (0.002)	0.080 *** (0.002)	0.007 *** (0.002)
Minority	−0.009 *** (0.003)	0.022 *** (0.006)	0.021 *** (0.006)	−0.042 *** (0.007)	−0.009 *** (0.003)	0.025 ** (0.010)	−0.001 (0.008)	−0.025 *** (0.009)
Education	−0.004 ** (0.001)	−0.171 *** (0.002)	−0.110 *** (0.003)	0.279 *** (0.004)	0.038 *** (0.005)	−0.257 *** (0.009)	−0.066 *** (0.009)	0.331 *** (0.011)
Married	−0.057 *** (0.001)	−0.062 *** (0.002)	0.021 *** (0.003)	0.041 *** (0.003)	−0.045 *** (0.002)	−0.027 *** (0.004)	0.019 *** (0.004)	0.006 * (0.003)
Literacy	0.003 (0.003)	−0.144 *** (0.006)	0.043 *** (0.006)	0.099 *** (0.006)	−0.004 * (0.002)	−0.058 *** (0.007)	0.020 *** (0.005)	0.036 *** (0.004)
Age	−0.001 *** (0.000)	0.008 *** (0.000)	−0.004 *** (0.000)	−0.004 *** (0.000)	−0.001 *** (0.000)	0.008 *** (0.000)	−0.005 *** (0.000)	−0.004 *** (0.000)
Familysize	−0.001 *** (0.000)	0.016 *** (0.001)	0.001 (0.001)	−0.016 *** (0.001)	0.000 (0.000)	−0.004 *** (0.001)	0.002 * (0.001)	0.001 (0.001)
Constant	0.108 *** (0.004)	0.264 *** (0.008)	0.366 *** (0.008)	0.374 *** (0.008)	0.095 *** (0.004)	0.500 *** (0.010)	0.299 *** (0.009)	0.211 *** (0.008)
County Fixed Effects	YES							
N	264,057	252,677	252,677	252,677	114,047	111,389	111,389	111,389
adj. R ²	0.034	0.375	0.171	0.195	0.049	0.306	0.202	0.116

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses.

Table A10. Impacts of In situ Urbanization on Employment (A3&B2; A2&B2).

	A3&B2				A2&B2			
	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3
D	-	-	-	-	-	-	-	-
T	0.021 *** (0.001)	−0.104 *** (0.004)	0.001 (0.003)	0.062 *** (0.003)	0.021 *** (0.001)	−0.105 *** (0.004)	0.002 (0.003)	0.062 *** (0.003)
D × T	0.004 (0.007)	−0.031 ** (0.015)	−0.022 (0.015)	0.041 *** (0.014)	0.004 * (0.002)	−0.050 *** (0.006)	−0.003 (0.005)	0.038 *** (0.005)
Male	−0.002 ** (0.001)	−0.079 *** (0.002)	0.060 *** (0.002)	0.004 ** (0.002)	−0.002 *** (0.001)	−0.095 *** (0.002)	0.069 *** (0.001)	0.009 *** (0.001)
Minority	0.000 (0.002)	0.036 *** (0.008)	−0.018 *** (0.007)	−0.013 ** (0.006)	−0.003 (0.002)	0.034 *** (0.006)	−0.014 *** (0.005)	−0.017 *** (0.005)
Education	0.042 *** (0.006)	−0.338 *** (0.010)	−0.017 (0.011)	0.361 *** (0.012)	0.046 *** (0.004)	−0.318 *** (0.007)	−0.027 *** (0.008)	0.351 *** (0.009)
Married	−0.048 *** (0.002)	0.001 (0.004)	−0.002 (0.003)	0.002 (0.003)	−0.046 *** (0.001)	−0.011 *** (0.003)	0.009 *** (0.002)	0.003 (0.002)

Table A10. Cont.

	A3&B2				A2&B2			
	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3
Literacy	−0.000 (0.002)	−0.068 *** (0.006)	0.023 *** (0.004)	0.042 *** (0.004)	−0.002 (0.002)	−0.060 *** (0.005)	0.021 *** (0.004)	0.037 *** (0.003)
Age	−0.001 *** (0.000)	0.006 *** (0.000)	−0.003 *** (0.000)	−0.003 *** (0.000)	−0.001 *** (0.000)	0.007 *** (0.000)	−0.004 *** (0.000)	−0.003 *** (0.000)
Familysize	0.001 *** (0.000)	−0.001 (0.001)	0.002 (0.001)	−0.001 (0.001)	0.001 *** (0.000)	−0.003 *** (0.001)	0.002 ** (0.001)	0.001 (0.001)
Constant	0.084 *** (0.004)	0.605 *** (0.010)	0.228 *** (0.008)	0.175*** (0.008)	0.089 *** (0.003)	0.572 *** (0.007)	0.252 *** (0.006)	0.185 *** (0.006)
County Fixed Effects	YES							
N	111,886	109,303	109,303	109,303	208,344	203,672	203,672	203,672
adj. R ²	0.058	0.345	0.239	0.132	0.054	0.305	0.209	0.109

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses.

Table A11. Impacts of In situ Urbanization on Employment (A1&B1; A&B).

	A1&B1				A&B			
	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3	(1) Unemployment	(2) Ind1	(3) Ind2	(4) Ind3
D	-	-	-	-	-	-	-	-
T	0.016 *** (0.001)	−0.019 *** (0.002)	−0.056 *** (0.003)	0.068 *** (0.003)	0.018 *** (0.001)	−0.047 *** (0.002)	−0.038 *** (0.002)	0.067 *** (0.002)
D × T	−0.004 * (0.002)	−0.025 *** (0.003)	−0.002 (0.004)	0.010 ** (0.005)	0.001 (0.002)	−0.053 *** (0.003)	0.007 ** (0.003)	0.027 *** (0.004)
Male	−0.003 *** (0.001)	−0.031 *** (0.001)	0.095 *** (0.001)	−0.076 *** (0.001)	−0.002 *** (0.001)	−0.062 *** (0.001)	0.089 *** (0.001)	−0.040 *** (0.001)
Minority	−0.001 (0.002)	0.003 (0.003)	0.018 *** (0.005)	−0.018 *** (0.005)	−0.004 ** (0.002)	0.052 *** (0.004)	−0.003 (0.004)	−0.045 *** (0.004)
Education	−0.021 *** (0.001)	−0.057 *** (0.001)	−0.109 *** (0.002)	0.161 *** (0.002)	−0.012 *** (0.001)	−0.130 *** (0.001)	−0.094 *** (0.002)	0.220 *** (0.002)
Married	−0.079 *** (0.001)	−0.028 *** (0.001)	0.016 *** (0.002)	0.015 *** (0.003)	−0.066 *** (0.001)	−0.044 *** (0.001)	0.020 *** (0.002)	0.026 *** (0.002)
Literacy	−0.000 (0.005)	−0.145 *** (0.009)	0.041 *** (0.010)	0.100 *** (0.011)	0.007 *** (0.002)	−0.155 *** (0.005)	0.043 *** (0.004)	0.108 *** (0.004)
Age	0.000 *** (0.000)	0.004 *** (0.000)	−0.002 *** (0.000)	−0.002 *** (0.000)	−0.000 *** (0.000)	0.006 *** (0.000)	−0.003 *** (0.000)	−0.003 *** (0.000)
Familysize	−0.000 (0.000)	0.012 *** (0.000)	0.005 *** (0.001)	−0.017 *** (0.001)	−0.001 *** (0.000)	0.018 *** (0.001)	0.002 ** (0.001)	−0.019 *** (0.001)
Constant	0.120 *** (0.006)	0.124 *** (0.010)	0.323 *** (0.011)	0.549 *** (0.012)	0.108 *** (0.003)	0.265 *** (0.005)	0.304 *** (0.005)	0.431 *** (0.006)
County Fixed Effects	YES							
N	399,762	372,402	372,402	372,402	616,906	584,590	584,590	584,590
adj. R ²	0.034	0.257	0.130	0.147	0.039	0.436	0.161	0.232

Notes: ***, **, *, respectively, indicate $p < 0.01$, $p < 0.05$, $p < 0.1$. The standard errors are given in parentheses.

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