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Rising Home Ownership among Chinese Migrant workers: Determinants and Differences between Cities

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Abstract

Traditionally, Chinese migrant workers are housed in dormitories or in the private rental sector. In recent years, however, an increasing proportion of the migrant workers has managed to become home owners. This paper further analyzes this trend, which may signify a new phase in the Chinese urbanization process. After a review of the existing literature, we carry out a statistical analysis (binary regression modelling) on the China Migrants Dynamic Survey, thereby focusing on twenty cities in the Yangtze River delta urban region. For these cities, we determine the micro-level (characteristics of individual migrants) as well as of the city level (city size, local migration policies, housing market development) determinants of migrant home ownership, and we assess how these determinants have changed between 2012 and 2017. This will provide insight into changing housing pathways of Chinese migrant workers, and the interaction of these pathways with local policies..

Keywords: homeownership, migrants, China.

1. Introduction

Promoting the urbanization of migrant population has been an important issue for the development of economy and urban society. According to the government report of P. R. China (2019), the urbanization rate of long-term residents (including both migrants and local residents) has maintained the average growth rate of 1 percent per year ever since the 2000. However, due to the special household registration system in China called “hukou”, which records one’s original residential location, internal migrants are differed from original local citizens not only in holding a different hukou (non-local hukou), but also are shut out from certain welfare benefits, including access to local government jobs, access to subsided housing and access to various social services (Deng, Hoekstra and Elsinga 2017). So there has been a large gap in between local urban residents and long-term residents in Chinese cities (44.4% and 60% respectively according to the data of NBS, 2019). In 2019, about 218 million migrant population living in cities would likely to settle down there and demand for adequate housing.

Housing for international and domestic migrants has long been a global challenge for scholars and policy makers. In many countries, migrants are a predominantly disadvantaged group who suffers the most of poor housing conditions including informal housing, over-crowding, lack of basic utilities and services, substandard housing quality, as well as discrimination and marginalization by local policy and society. For example, affordable housing provided or assisted by governments is rare and hard to get for migrants or immigrants, especially in developing countries. Meanwhile, the homeownership rate of migrants is

lower comparing to local residents due to their relatively weak socio-economic position or less willingness of permanent settlement in destination cities (Borjas 2002, Sinning 2009, DeSilva and Elmelech 2012, Painter and Yu 2010). Similar trends are observed in China. Due to the unique hukou registration system, migrants in China are often facing discrimination and disadvantaged treatment in both labor market, housing market and welfare sector. The most common housing tenure choice of migrants in China is private rental, followed by dormitories provided by employers and then owner occupation (Cui, Geertman and Hooimeijer 2016, Huang, He and Gan 2021). The relatively low homeownership rate for migrants can be explained by both the institutional constraints caused by local policy and the socio-economic situations of migrants. Firstly, unstable employment and low salary as well as rising housing prices directly lead to unaffordability of good housing. Secondly, municipalities usually set purchase constrains towards migrants in market and social housing sector in order to take the lead in solving housing problems for local citizens. Thirdly, low-involvement in the housing welfare program hinders the chances of getting lower mortgage rates for housing purchase (Lin and Zhu 2010).

However, despite all the disadvantages, the ratio of homeownership is still growing substantially among migrants. According to the China Migrants Dynamic Survey, which is conducted by the National Health and Family Planning Commission of P. R. China annually, the average home-ownership rates of migrants living in Yangtze River urban delta region has increased from approximately 5.9% in 2011 to 23% in 2017. Thus, it has almost quadrupled during six years.

This paper investigates the trend of growing migrants' homeownership rates in 20 selected cities in Yangtze River delta urban region. The following questions will be addressed:

1. What determinants have contributed to the rising homeownership of migrants?

2. How to explain the heterogeneity among different levels of cities in terms of migrants' homeownership?

The next section of this paper presents a literature review of previous studies on migrants' homeownership (Section 2), then follows a description of the study area and research data (Section 3). Section 4 contains a quantitative comparative study and attempts to answer research question 1, whereas Section 5 tries to answer research question 2 by regression analysis and comparative data analysis. The conclusion and discussion part are presented in Section 6.

2. Literature review

2.1 Housing market development in China and the housing opportunities for migrants

The housing market of China has experienced a sweeping institutional reform since 1980, related to the economic reform and opening-up. Before 1980, urban housing was built by governments or work units, and rented to civil servant and employees at predefined prices. Housing was seen as one of the items of the socialist welfare economy for urban citizens. The results of this housing distribution system depended greatly on the empowerment of one's work unit and one's political affiliation (Deng et al. 2017).

Since 1980, the state began to promote housing reform in order to cut the financial burden for governments and work units as well as to meet the housing needs of citizens. Firstly, private enterprises were permitted to enter housing market. Real estate developers could build commodity dwellings and sell them at market prices on the condition of paying land leasing fees to local municipalities. Secondly, previous welfare housing owned by work units and governments was sold to sitting tenants at highly subsidized prices in order to repatriate construction costs. Thirdly, work units with abundant capital or construction land were encouraged to buy or build more dwellings and sell them to employees at subsidized prices. This dual provision system lasted until 1998 when the state council called for a full freeze of the in-kind housing distribution by work units (State Council, 1998). In the same period, the Housing Provident Fund (HPF) and Economic Comfortable Housing (ECH) provision were launched. The HPF is a housing deposit fund that can be used for personal housing expenditure and to which work units (employers) and employees jointly contribute. ECH is a kind of affordable commodity housing

aiming to meet the housing needs for mid- and low-income households. However, both HPF and ECH are offered to local urban hukou holders only, just as work units' subsidized housing. Rural hukou holders were assigned to a land parcel in their municipality or origin where they could build their own housing (Logan, Fang and Zhang 2009).

After 1998, the construction of commodity housing experienced a rapid development as a result of promoting policies at both the supply and the consumption side. Large amounts of dwellings have been built and housing price have soared in the first decade of the 2000s. As a reaction to this, new regulations were adopted to prevent speculation and housing price bubbles. In terms of the supply side, the proportion construction land for ECH and low- and mid-priced commodity housing construction was raised. New subsidized rental housing schemes of Low-rent Housing (2004) and Public Rental Housing (2010) were adopted. In terms of the consumption side, the required down payment was increased and stricter mortgage loan requirements and purchase limitations were implemented. Targeting restrictions were put forward especially towards the migrant population. People who did not have a local hukou or did not participate in local social security funds for a given number of years were forbidden to purchase local dwellings. Besides, non-local residents were also excluded from Low-rent Housing schemes, which only benefited households with the lowest-incomes and a local hukou (Wu 2007).

Despite the restrictions that were introduced, the homeownership rate in China has skyrocketed since the market reform, reaching more than 90% in 2017 nationwide (87% in urban areas and 96% in rural areas) (Huang et al. 2021).

In 2014, the central government implemented the hukou reform policy in order to encourage migrants to permanently settle down in small- and medium-sized urban cities and better make use of the public services and welfare provisions in urban areas (State council, 2014), including HPF (Zhang and Hoekstra 2020).

In summary, during the reform and development process of the housing market in China, getting access to home ownership was much more difficult for migrants than for residents with a local hukou. Firstly, during the reform period, households employed in work units have gained more capital than households working outside work units such as self-employed people or peasants without an urban hukou. The average price of reformed housing was about one fifth of the price of commodity housing on the open market (Logan et al. 2009). Moreover, households in wealthy work units or more close to decision-makers are the ones who have gained most capital through the housing reform. Secondly, the wealth gap between local residents and migrants widened when housing prices soared after 2000s, particularly disadvantaging rural households (Cui, Deng and Lu 2019). Thirdly, ECH as the biggest source of government subsidized housing for sale, is still forbidden for migrants. As a result, though today in most cities, locals and migrants have equal access to commodity home ownership, the difference in capital accumulation between new arrivers and native households is still large and plays a decisive role in homeownership acquisition. Moreover, some larger Chinese cities still maintain purchasing restrictions for migrants (Xing and Zhang 2017, Li, Cheng and Cheong 2017).

2.2 Determinants of migrants' home ownership in destination cities

Despite all the discriminations and difficulties in house-purchasing for migrants, homeownership is still strongly desired. After all, owning a dwelling in a destination city is considered a sign of integration and entails a rise in social status. On the one hand, becoming home owner will offer migrants access to local public services, for example, access to local public schools. On the other hand, achieving homeownership represents a symbol of success, thus leading to a rise in social class (Fleischer 2007, Huang and Tao 2015).

A lot of researchers have focused on the studies of migrants' housing tenure choices in destination cities. Many studies have focused on explaining the determinants of housing tenure for migrants. Institutional factors, demographic factors and socio-economic status are proven to be the most statistically significant variables (Huang et al. 2013, Wu and Zhang 2018, Clark, Huang and Yi 2019, Tang, Feng and Li 2016, Cui et al. 2016). It has been found that institutional arrangements play a more important role in more

developed cities while socio-economic status is more relevant to homeownership attainment in less developed cities after the hukou reform (Huang et al. 2013, Wu and Zhang 2018). Others have made a comparison between locals and migrants on homeownership attainment. Clark et al. (Clark et al. 2019) found that migrants are much less likely to became homeowners compared to their local counterparts. Also, hukou status remains a dominant hurdle in migrants' homeownership attainment while other institutional factors such as party membership are no longer significant. Cui et al. (Cui et al. 2016) have made a comparison between skilled migrants and local residents with regard to homeownership. They found that skilled migrants enter into homeownership later than their local peers, mainly due to the limited intergenerational wealth transmission, later partnership and restricted knowledge about local housing market.

Some studies also take the characteristics of origin and destination cities into consideration. Cui et al. (Cui et al. 2020) found that regional inequality plays a role with regard to migrants' homeownership in Shanghai, related to both socio-economic development and intergenerational transmission. Migrants form centrally administered cities are the most advantaged group, followed by those from provincial capitals and other cities. Migrants from towns and rural areas are the least likely to enter homeownership. Song and Zhang (Song and Zhang 2019) have analyzed the impact of city size on the willingness of purchasing local dwellings of migrants and found a converted U-shape curve with the expansion of city size. They explained this phenomenon with spatial equilibrium theory, stating that amenities and housing costs have reached the best balance in large cities, while megacities and small cities are less attractive for migrants.

In this paper, we focus on the actual homeownership of migrants. First, we try to determine the main drivers behind the rise in home ownership among migrants between 2012 and 2017. Subsequently, we try to explain why the patterns of home ownership among migrants take a different shape in cities of different cities.

3. Study area and data

3.1 Study areas[1]

The Yangtze River delta urban region spreads over the alluvial plain along the lower reaches of Yangtze River. The whole region has an area over 0.2 million square km (2% of the total territorial area), a total population over 150 million (18% of the total population) and a GDP that equals 23% of the national GDP (2016). It is one of the most developed, wealthy and crowed urban regions in China and it also enjoyed one of the most coordinated regional governance as well as local government autonomy (Li and Wu 2018). The region includes one direct state-controlled municipality (Shanghai), 25 prefectural level cities, 40 county-level cities and a large number of towns, distributed over the provinces of Jiangsu, Zhejiang and Anhui (2016). According to the report on regional migration (National Health Commission 2018), the Yangtze River delta urban region has the biggest migrant population (25.9 million) of all Chinese urban regions. This large migrant population, as well as the great diversity of cities of different sizes, makes the Yangtze River delta urban region a good case study for the purposes of our research.

Of the 66 main cities in the region, 20 have been chosen as the study objects, including 1 national-level city (Shanghai), 11 prefectural-level cities (Nanjing, Hangzhou, Suzhou, Changzhou, Hefei, Wuxi, Shaoxing, Nantong, Huzhou, Jinhua, Chuzhou), and 8 county-level cities (Kunshan, Jiangyin, Yiwu, Jiaxing, Yixing, Zhuji, Ma'anshan, Tongling). The city selection process was based on 3 criteria:

1. The selected cities needed to have a balanced spread over the three provinces.

2. The selected cities needed to represent different population sizes, economic characteristics and

[1] As a follow-up to previous research, the study areas of this paper are in consistent with that of our previous paper: Zhang, Q. & J. Hoekstra (2020) Policies towards Migrants in the Yangtze River Delta Urban Region, China: Does Local Hukou Still Matter after the Hukou Reform? *Sustainability,* 12.

administrative levels.

Some basic information of the selected cities is presented in table 1 and figure 1.

For each city, the city boundary is confined to the scope of the city's urban districts instead of the municipality as a whole. This implies that rural spaces attached to the city administration are eliminated from the study area[2].

Table 1 Names and numbers of 20 study cities

No.	City	No.	City
1	Shanghai	11	Jiangyin
2	Nanjing	12	Yiwu
3	Hangzhou	13	Huzhou
4	Suzhou	14	Jiaxing
5	Changzhou	15	Yixing
6	Hefei	16	Zhuji
7	Wuxi	17	Jinhua
8	Shaoxing	18	Ma'anshan
9	Nantong	19	Tongling
10	Kunshan	20	Chuzhou

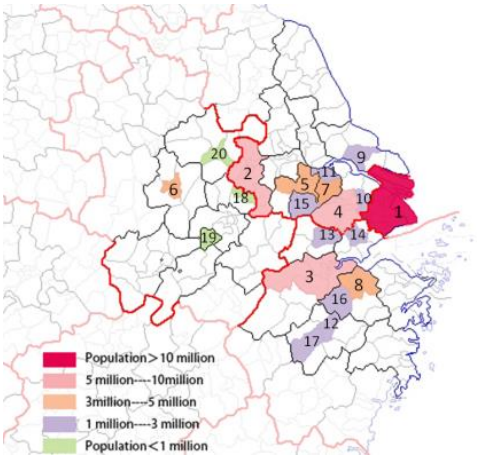

Figure 1 Location and population size of 20 study cities

[2] A more detailed explanation can be found in the article of Chan, K. W. (2007) Misconceptions and complexities in the study of China's cities: Definitions, statistics, and implications. *Eurasian Geography and Economics,* 48**,** 383-412, ibid..

3.2 Data

The data for this study comes from the China Migrants Dynamic Survey (CMDS) 2012 and 2017. The CMDS is an annual survey conducted by National Health and Family Planning Commission of P.R. China. The survey targets migrant population in order to understand their sociodemographic characteristics, the migration and settlement trends, employment and social security, housing and financial situations, health and family planning as well as social integration. The sample size in this survey reaches 200,000 per year, and the survey covers almost all provinces and cities in China using a probability proportional to size sampling method. Respondents are selected by the criteria of non-local hukou holders, living in destination cities for more than one month and aging from 15 to 59. The survey data used in this paper yield a total of 24,146 (2012) and 19,100 (2017) valid questionnaires respectively, covering all 20 study cities. The sample size per city level depends on the population size and is listed in table 2.

Table 2 Sample size of study areas

Level	Population size	City	Sample size (2012/2017)
1	More than 10 millions	Shanghai	14194/7000
2	5-10 millions	Nanjing, Hangzhou, Suzhou	3637/4760
3	3-5 millions	Changzhou, Hefei, Wuxi, Shaoxing	2556/3900
4	1-3 millions	Nantong, Kunshan, Jiangyin, Yiwu, Huzhou, Jiaxing, Yixing, Zhuji, Jinhua,	3159/2920
5	Less than 1 million	Ma'anshan, Tongling, Chuzhou	400/520

Source: CMDS, 2012 and 2017

4. Homeownership changes between 2012 and 2017

In this section, we make a comparison between the homeownership rates of 2012 and 2017 of the 20 study cities according to the CMDS survey data in order to answer the first research question: What determinants have contributed to the rising homeownership rates among migrants?

As table 3 shows, even though private rental is still the most common tenure choice for migrants, more and more migrants have become home-owners in the Yangtze Delta River urban region. The overall homeownership rate of migrants has been more than doubled in five years. Homeownership has exceeded the tenure choice of staying in dormitories and became the second common tenure for migrants in the study area.

Table 3 Migrants' housing tenure changes between 2012 and 2017

Tenure type	2012	2017	Change rate
Home-ownership	11.8%	26.0%	14.2%
Private rental	65.1%	59.7%	-5.3%
Dormitories	17.2%	12.4%	-4.8%
Others	5.9%	1.9%	-4.0%

Source: CMDS, 2012 and 2017

Previous studies have pointed out that demographic factors (gender, marital status, age, education, family size, duration of stay), socio-economic factors (income, employment, occupation category, local interaction) and institutional factors (local migration policy, housing price, hukou type, hukou location) are closely related to migrant's homeownership rates (Huang et al. 2013, Wu and Zhang 2018, Clark et al. 2019, Tang et al. 2016, Cui et al. 2016). To further understand the changing patterns of homeownership among migrants, the aforementioned variables are compared for 2012 and 2017 as table

4 shows.

Table 4 Variable changes between 2012 and 2017

Number	Variables	2012	2017	Change rate
1	Gender (male)	49.7%	51.3%	8.4%
2	Marital status (married)	77.3%	83.8%	6.5%
3	Age (years)	33.3	35.7	7.2%
4	Education (years)	10.09	10.71	6.9%
5	Family size (persons)	2.97	3.19	7.4%
6	Local migration duration (years)	5.5	6.6	20%
7	Monthly income (yuan)	6474.6	10026.2	54.9%
8	In employment (employee)	61.6%	62.6%	1.0%
9	Occupation category (Professionals)	11.7%	13.1%	1.8%
10	Hukou type (agricultural-hukou)	80.9%	77.7%	-3.2%
11	Hukou location (intra-region)[3]	15.1%	24.1%	9.0%
12	Local interaction (with locals)	27.3%	24.2%	-3.1%
13	Average housing price (yuan)	5430	7614	40.2%
14	Migration policy index[4]	9.09	9.93	9.2%

Source: CMDS, 2012 and 2017

Line 1 to 6 shows the changes of demographic features of migrants in study areas. In general, migrants tend to be older, more male over female, more married, more well-educated, more family-accompanied and stay longer in destination cities from 2012 to 2017. All these variables have the same growth trend as the variable of homeownership. Monthly income of migrants increased greatly along time. The employment and occupation structure, however, did not change much between years of 2012 and 2017.

Compared to 2012, study cities attracted more migrants with non-agricultural hukou and migrants that came from other urban regions or provinces (hukou location: intra-region). The hukou access policy in 20 study cities actually became stricter and the housing price soared within those five years. Increasing housing price can cause two consequences: depressing the homeownership rate, especially for low income and young families, or pushing people to purchase a house as early as they can in case of a continuous rise in housing price (Li and Zhang 2011). In the case of our study, the increasing housing price promoted the housing purchase of migrants. Furthermore, by comparing the growth rate of average income and housing price, it can be found that the growth of income outpaced the growth of housing price. This may also explain the growing homeownership for migrants since housing actually became more affordable for them.

5. Homeownership change among different city sizes

5.1 Introduction and regression analysis

This section deals with the second research question: How to explain the heterogeneity among different levels of cities in terms of migrants' homeownership? In order to answer this question, we first carried out a binary logistic regression model on the homeownership of migrants using the 2017 CMDS data. Then, we compared the related variables based on 5 different city size levels to better observe the

[3] Intra-regional migrants represent those whose original hukou location are within Yangtze River delta urban region, while inter-regional migrants indicate that these migrants are come from other parts of China.

[4] Migration index is a way to quantitatively measure the stringency of local hukou registration policy. The migration index value we used here comes from: Zhang, J., R. Wang & C. Lu (2019) A quantitative analysis of Hukou reform in Chinese cities: 2000-2016. *Growth and Change,* 50**,** 201-221.

changing patterns.

Figure 2 shows the relationship between homeownership and 5 different city sizes. The figure shows that more than half of migrants living in small cities (level 5) has become homeowners, followed by level 3 (3-5 million population) and level 1 (more than 10 million population) cities. While migrants living in level 2 (5-10 million population) cities and level 4 cities (1-3 million population) has the least ratio to purchase their own dwellings. In summary, a W-shape curve can be used to generalize the distribution features of migrants' homeownership change according to city size.

Figure 2 Homeownership rate in 5 different city sizes
Source: CMDS, 2017

Table 5 shows the variables selected for regression analysis. The dependent variable is the home ownership of migrants in current destination cities (1=yes, 0=no). City level and 12 other independent variables referring to individual characteristics of migrants are selected based on previous literatures. The percentages or means of each variable can also be seen in table 5.

Table 5. Descriptive statistics of variables.

Variables		Number of cases	Percentage (%)/Mean
Dependent variables			
Homeownership	Yes	6180	32,4
	No	12920	67,6
Independent variables			
City level based on population	level 1 (more than 10 million)	7000	36.6
	level 2 (5-10 million)	4760	24.9
	level 3 (3-5 million)	3900	20.4
	level 4 (1-3 million)	2920	15.3
	level 5 (less than 1 million)	520	2.7
Gender	Male	9804	51.3
	Female	9296	48.7

Age	15 to 30 years old	6395	33.5
	30 to 45 years old	9124	47.8
	45 years old and above	3581	18.7
Marital status	Married	15999	83.8
	Not married	3101	16.2
Education	Junior high and below	10665	55.8
	Secondary school/ senior	4010	21.0
	College and above	4425	23.2
Family size in	-	19100	3.19
Hukou type	Agricultural hukou	14830	77.7
	Non-agricultural hukou	4263	22.3
Migration scope	Inter-province	14505	75.9
	Intra-province	4595	24.1
Local migration duration (years)	Less than 3 years	6252	32.7
	3 to 10 years	7793	40.8
	More than 10 years	5055	26.5
Monthly family income	< 4000 yuan	2233	11.7
	4000-8000 yuan	8528	44.6
	8000-12000 yuan	4647	24.3
	> 12000 yuan	3692	19.3
Employment status	Self-employed or employer	4370	22.9
	Employee	12100	63.4
	Unemployed	2630	13.8
Occupation category	Low-skill workers	5543	29.0
	Business and service sector	7746	40.6
	Professionals and public	2501	13.1
	Unemployed and others	3309	17.3
Homestead	Homestead in possession	12650	66.2
	No homestead in	6450	33.8
Local interaction	With local friends	4614	24.2
	With non-local friends	9964	52.2
	Rarely interacts with others	4522	23.7

Source: CMDS, 2017

Table 6 shows the results of the binary regression analysis that were carried out, these results are presented and interpreted as below.

Firstly, in line with the results figure 2 showed above, the binary logistic regression model revealed a statistically significant relationship of a W-shape curve between homeownership of migrants and 5 different city sizes. The homeownership rate in small cities is highest, followed by level 3 cities and level 1 cities. Xing and Zhang (Xing and Zhang 2017) also found that migrants had a preference for larger cities, even though their income may be lower. Their explanation for this phenomenon is that larger cities may provide better work and life opportunities as well as a more migrant-friendly social environment. In our previous research, we also observed that migrants are most willingly to settle in megacities like Shanghai or smallest cities like Ma'anshan compared to other cities (Zhang and Hoekstra 2020). We assumed that the hukou access criteria standard and the corresponding welfare benefits attached to local hukou may also play a role in migrants' settlement decision-making process. Largest cities like Shanghai can offer not only better career and income opportunities, but also better social

benefits such as medical care and education for children. Small cities, on the other hand, owes to its inexpensive living cost, closer location to home village and comparatively decent social benefits.

Socio-demographic features, like gender, generation, education, marital status and hukou type are of significance in becoming homeowners. The model shows that female migrants, older migrants, more educated migrants, married migrants and migrants with a bigger family accompanied are more likely to become homeowners. This is consistent with the work of Huang et al. (Huang et al. 2013) and Song and Zhang (Song and Zhang 2019) whose studies also observe that human-capital accumulation can increase the homeownership of migrants. Compared with migrants owning a non-agricultural hukou, those with an agricultural hukou are less likely to purchase dwelling in destination cities. This is possibly related to the wealth accumulation gap of previous and present generation caused by different hukou types (Cui et al. 2020). Migration scope and length also turned to be statistically significant factors. Migrants coming from same provinces as the destination city and migrants that have a longer migration duration are more likely to purchase homes in cities (Wu and Zhang 2018).

Financial aspects also play an important role in statistically explaining home ownership. In this respect, family income is a significant variable. The higher the income, the more likely it is that migrants become homeowners. This is related to the fact that purchase a dwelling in the destination city may not be a feasible option for low income migrants who can barely make ends meet (Wu and Zhang 2018). Also, migrants who work as low-skill workers are the least likely group to become homeowners. The possession of homestead also have a statistically significant influence on the homeownership in destination cities. Same conclusion is also found by Wang et al. (Wang, Liu and Ming 2020). However, self-employed migrants and migrants who work for an employer dose not showed a statistically significance in homeownership attainment.

Finally, the integration of migrants in the destination city is of clear importance. Frequent interaction with local people effectively encourages the homeownership of migrants. This finding is consistent with the research of Song and Zhang (Song and Zhang 2019), since interactions with locals also may provide more information on local housing markets to migrants.

Table 6. Predictors of migrants' homeownership in a binary logistic regression analysis.

Variables	b	P	Exp(b)
City level (ref: Level 5)		0.000	
Level 1	-1.176	0.000	0.309
Level 2	-2.374	0.000	0.093
Level 3	-1.015	0.000	0.362
Level 4	-1.158	0.000	0.314
Gender (ref: male)	0.176	0.000	1.192
Age (ref: less than 30)		0.000	
30-45	0.244	0.000	1.276
More than 45	0.526	0.000	1.692
Education (ref: junior high and below)		0.000	
Secondary school/senior high	0.661	0.000	1.936
College and above	1.348	0.000	3.848
Marital status (ref: not married)	0.655	0.000	1.925
Family size	0.219	0.000	1.244
Hukou type (ref: agricultural hukou)	0.132	0.031	1.141
Migration scope (ref: inter-province)	1.161	0.000	3.192
Local migration duration (ref: less than 3 years)		0.000	
3-10 years	0.844	0.000	2.325
10 years and more	1.290	0.000	3.634

Monthly family income (ref: < 4000 yuan)		0.000	
4000-8000 yuan	0.443	0.000	1.557
8000-12000 yuan	0.955	0.000	2.598
>12000 yuan	1.622	0.000	5.061
Employment status (ref: Self-employed/employer)		0.000	
Employee	0.046	0.430	1.047
Unemployed	0.584	0.000	1.794
Occupation category (ref: low-skill workers)		0.000	
Service and business	0.383	0.000	1.467
Professionals	0.525	0.000	1.691
Others and unemployed	0.690	0.000	1.993
Homestead (ref: homestead in possess)	0.573	0.000	1.774
Local interaction (ref: Local friends)		0.000	
Non-local friends	-0.865	0.000	0.421
Rarely interacting with others	-0.637	0.000	0.529
Constant	-4.016	0.000	0.018
Nagelkerke R-square	0.445 (p<0.001)		
Number of valid cases	19100		

Source: CMDS, 2017

5.2 Comparison among different city sizes

To further understand the cohort differences of migrant homeowners among different city sizes, comparison of related variables is made in table 7 below.

Table 7 Features of migrant homeowners in different city sizes

Number	Variables	Level 1	Level 2	Level 3	Level 4	Level 5
1	Gender (male)	41.8%	45.3%	49.8%	48.6%	49.7%
2	Marital status (married)	92.3%	92.0%	96.6%	90.9%	93.4%
3	Age (years)	39.2	36.3	34.6	36.3	35.2
4	Education (years)	13.5	12.7	11.5	11.0	10.0
5	Family size (persons)	3.49	3.34	3.40	3.70	3.33
6	Local migration duration (years)	10.4	7.7	6.8	8.3	5.6
7	Monthly income (yuan)	18682.1	14289.1	9682.2	10911.8	6128.9
8	Employmen (employer or self-employer)	16.5%	25.5%	23.6%	31.6%	29.4%
9	Occupation category (Professionals)	28.1%	23.1%	12.6%	15.9%	8.5%
10	Hukou type (agricultural-hukou)	36.8%	71.8%	83.8%	78.7%	90.2%
11	Local interaction (with locals)	45.9%	45.1%	40.4%	36.0%	59.8%

Source: CMDS, 2017

Firstly, demographic features of migrant homeowners including gender, age, education and local duration differed according to city size changes. Female migrants, older migrants, more educated migrants and migrants stayed longer in destination cities tend to choose to purchase housing in larger cities, while the other way around. Demographic features of marital status and family size remain basically stable. Secondly, monthly income and employment status differed greatly of migrant homeowners in different city sizes. The average income of migrant homeowners of level 1 cities is 3 times than migrant homeowners of level 5 cities. And it is easier for migrants working for themselves to become homeowners in smaller cities. Thirdly, migrants with rural hukou are more likely to become homeowners in smaller cities while urban migrants prefer larger cities.

Table 8 Price/income ratio of migrant homeowners in different city sizes

Variables	Level 1	Level 2	Level 3	Level 4	Level 5
Monthly income (yuan)	18682.1	14289.1	9682.2	10911.8	6128.9
Housing price (yuan /m2)	24866.1 (Shanghai)	18272.9 (Suzhou)	9788.1 (Wuxi)	7343.2 (Jiangyin)	4943.4 (Ma'anshan)
Price/income ratio	1.33	1.28	1.01	0.67	0.80

Source: Year book of each city, 2018

Table 8 compared the difficulty of housing purchase for migrants though price-income ratio. It proves that buying a house in level 1 city is the most difficult while in level 4 and level 5 cities are much more affordable. Anyway, becoming homeowners in larger cities are more difficult to achieve for migrants. It will take more years and ask for better education and earnings as well as family supports (Clark et al. 2019). On the other hand, purchasing dwellings in smaller cities requires less financial and occupational supports.

6. Conclusion and discussion

Migrant population has long been depicted as a group of low-skilled, low-paid rural to urban labor workers and lived in inferior dwellings such as urban villages, overcrowded dormitories and poor neighborhoods locating in urban fringe. However, migrants nowadays have becoming more diverse and heterogenous, they tend to have higher education and occupational class as well as stronger willingness and propensity to consume, desiring for better living quality and housing conditions, and much stronger intention to stay and integrate into the destination cities. By studying the homeownership of 20 different cities in the Yangtze River delta urban region, this paper shed some lights on the homeownership changes as long as determinants of migrants. Based on our analysis, three main conclusions may be drawn.

Firstly, it has become clear that the homeownership rate of migrants has increased substantially in spite of the soaring housing price. Both the private rental and dormitories sector has been declined in 20 study cities. On the one hand, this shows a growing interest of integration into urban life. On the other hand, it indicates the potential consumption power of migrant population.

Secondly, we observed that the different sizes have an influence on the homeownership of migrants. According to our analysis, a W- shape curve can be used to illustrate the relation between homeownership and city size. Migrants living in level 5 cities are most likely to become homeowners, followed by migrants living in level 3 and level 1 cities. Migrants living in level 4 and level 2 cities are the least to become homeowners. We assume that the varied homeownership rate may be explained as

follows: firstly, housing price and price/income ratio in level 5 cities is relatively low and small cities have the advantage of low living cost and comparatively decent public services. Secondly, level 1 cities contain the largest amount of urban to urban migrants who enjoy better household wealth accumulation so that quite a few of them can afford to buy a house there regardless of the unaffordable housing price. Plus, better income and career opportunities, superior public services and greater concentration of talents is also the reason why migrants would to permanently settle in level 1 cities.

Thirdly, we compared the features of migrant homeowners based on different city sizes and found that it is much easier for migrants to purchase dwellings in level 5 and level 4 cities. And becoming homeowners in level 1 cities tend to be the most unaffordable and difficult. However, lots of migrants still has a preference for larger cities.

Based on our study of 20 cities in the Yangtze River delta urban region, we believe that migrants in different cities have different housing choices and needs. So it is important to make different housing policy for migrants in order to not only boost the homeownership of migrants but also to influence their long-term stay through fulfilling the different housing needs in different city sizes.

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