Housing the urban poor in post-reform China: Some empirical evidence from the city of Nanjing

Guo Chen *

Department of Geography & Global Urban Studies Program, 211 Geography Building, Michigan State University, East Lansing, MI 48824, United States

ABSTRACT

This paper provides first-hand empirical evidence about the differentiation of housing conditions among China's urban poor families based on a case study of Nanjing. The main findings include: (1) the Hukou family registration system has strong differential effects on poor families' housing conditions; (2) housing conditions among the urban poor are tightly associated with privatization and home ownership, where non-owners face more severe housing difficulties than nominal owners; and (3) resettlement has played a positive role in improving the poor's housing conditions, but its positive effects are only present in cases where work units or the government has taken the responsibility of housing the resettled poor. These findings show that housing the urban poor in post-reform China is largely: (1) path-dependent, (2) privatization-oriented, and (3) development-driven, and a mechanism that can pro-actively ensure the poor's basic right to housing is still lacking.

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Introduction

Housing is an important dimension of urban poverty in contemporary China. Since the launch of urban housing reform in 1979 (Wang & Murie, 1999), China's urban housing system has been reshaped in highly divergent directions. On one hand, the reform has bolstered housing development, alleviated housing shortages in major Chinese cities, and greatly improved housing conditions for many urban Chinese. On the other hand, many disadvantaged groups are facing significant housing difficulties due to the retreat of the state-backed housing allocation (Wang, 2000). As the central goal of China's urban housing reform is to transfer the housing responsibility from the state to individuals and the housing market, how to balance the roles of government, the market, and individuals in order to assure the poor's basic right to housing is a new challenge in today's urban China (Lee, 2000).

In recent years, China's urban housing inequality has been well documented by various studies, e.g. Logan, Bian, and Bian (1990), Wang (2000), Wang (2004), Wu (2001, 2002, 2004), Huang (2003a), Li and Huang (2006), Sato (2006), and Li and Wu (2006), to list only a few. However, China's increasingly alarming-level inequality has made it an urgent task to focus our analytical lens on poor communities and examine the more subtle impacts of relevant policies among the poor. Since the ultimate goal of China's reform is to transform a socialist country founded on egalitarian principles (at least on paper) into a market-oriented system that

respects merits and differential awards, merely recognizing the outcome of material inequalities brought by the housing reform cannot provide the analytical depth required to answer the more fundamental question of social equity. The more important task is to identify the complex institutional and distributional roots of these inequalities, and examine how these factors are embedded into the process of housing marketization to differentiate the poor's housing prospects. From this point of view, an empirical study focused on the housing differentiation among the poor provides more controlled results than those based on the general population, as it compares poor families with poor families. Such fine-scale analyses can help us evaluate the social success (or failure) of China's housing reform and measure the divergent effects of different urban policies on the urban poor.

Generally speaking, China's post reform urban housing transition can be regarded as a special case of actually-existing neo-liberalization (He & Wu, 2009; Lee & Zhu, 2006), where the decentralization of state governance and the deregulation of urban economy are combined with the path-dependent housing marketization to reshape the production and reproduction of urban space (Chen, 2011; Lin, 2007; Ma, 2002). Theoretically, three major forces drive the unequal distribution of China's transitional urban housing system. First, the impact of institutional succession and power conversion, which refers to the fact that unjust elements of the pre-reform institutions, especially those related to Hukou family registration and work-unit housing allocation (Li, 2000; Logan et al., 1999; Wu, 2004), have been carried over through the housing marketization due to the gradualist nature of China's reform. Second, the restructuring of the urban housing tenure system, as

* Tel.: +1 517 3165375.
E-mail address: guochen@msu.edu

the main focus of China's housing reform, especially since the mid-1990s, is to transform the old public rental system into an ownership-based housing model (Huang & Clark, 2002; Li & Yi, 2007). The third is the influence of urban redevelopment, which reflects the growing demands of urban spatial restructuring driven by the continued and accelerated production and reproduction of urban space since the reform (Li & Song, 2009; Lin & Ho, 2005; Wu & He, 2005). Under this context, this paper employs statistical methods to test the housing differentiation among the urban poor from the perspectives of: (1) the Hukou family registration system, (2) housing tenure and housing distribution sources (including sources related to work units, government, and private parties), and (3) housing change and resettlement. In the next section, we provide the necessary background information for this study. Then the following three sections describe the general procedures and present the detailed results of our analysis, after which discussions and conclusions are provided in the final section.

Background

Urban poverty and housing inequality in post-reform China

Although much of China's urban poverty can be eventually attributed to the growing income inequality following the economic marketization (Ma, 2002; Meng, Gregory, & Wang, 2005), it is a complex problem greatly influenced by two inter-related socio-economic processes since the reform: (1) the massive rural-urban transition and (2) the restructuring of urban economy, especially the reform of the public sectors. Since 1978, due to the relaxed control over population mobility and the practical demand for inexpensive labor by the growing urban economy, many Chinese cities have seen a massive influx of migrant workers originating from rural areas (Pannell, 1995). As rural residents are historically poorer than urban populations in general, and because their Hukou status (which does not automatically change with a person's residential shift) restricts them to jobs in lower-paid informal sectors, many rural migrants immediately become members of low-income groups in Chinese cities (Fan, 1999, 2002). Meanwhile, the marketization and privatization introduced by the economic reform have resulted in a dramatic restructuring of the urban economy, where state-affiliated work units increasingly have to operate and compete on market terms. Usually highly redundant in personnel and inefficient in terms of market adaptability, many of these work units faced financial difficulties. Some eventually collapsed or became privatized, and others shed off large numbers of employees in order to survive. As this restructuring process reached a culmination in the late 1990s, it produced a great number of urban residents without a stable income, most of whom are former work unit employees who have been laid off or forced to retire early (Wu & Huang, 2007; Yao, 2004b). These join the low-income rural migrants to form the main forces of poverty in today's urban China (Chen, Gu, & Wu, 2006; Liu, Wu, & He, 2008).

Parallel to these developments has been China's market-oriented housing reform, which aims to replace the old socialist public housing allocation with market-oriented housing distribution. The chief reason for the reform, as noted by many authors, is due to the incapability of the sluggish public housing system to provide urban residents with adequate housing. For example, crowding was a major problem in many Chinese cities in the pre-reform era and earlier years of the economic reform, and it has been exacerbated by the growing urban population due to migration and urbanization (Huang, 2003b). Thanks to the reform, this problem has been steadily alleviated by the booming commodity housing development and a fast-growing real estate

sector (Zhao & Bourassa, 2003). In general, the role of the market-oriented housing reform in improving urban China's overall housing standard is undeniable, although new problems such as affordability have emerged (Chiu, 1996; Mak, Choy, & Ho, 2007). However, the impact of the housing reform on the emerging urban poor is not all positive. Path-dependency has been well recognized as a main characteristic of China's housing transition (as well as the general economic reform). The legacy issues of the old system, including the institutional unbalances such as the divisions of Hukou and the inequity among or within work units, have remained influential factors in most part of the urban housing transition. For example, rural migrants are still left out in most state or employer-sponsored housing programs (Wang, 2000; Wu, 2004). Although local urban Hukou holders can receive significant assistance from their work units, e.g. through price discounts or housing subsidies, such aid is often proportional to the institutional power of work units and individuals' social, political, and/or organizational ranks inherited from the old system (Huang & Clark, 2002; Logan et al., 1999). While higher-ranked employees of powerful work units are able to obtain greater institutional assistance and therefore better housing during the transition, grassroots workers of weaker work units have to live with inferior arrangements, and sometimes are even completely left out due to the severe financial difficulties of their work units (Zhao & Bourassa, 2003). As most public stocks have been eventually converted into dweller-owned housing (usually at discounted prices backed by work units) since the mid-1990s, such institutionally-prescribed inequalities have been transformed into great disparities within the newly-formed urban housing tenure system, which are difficult to overcome by market means. In summary, China's urban poverty and housing inequality are two inter-related problems, as many of the poor are also the most disadvantaged people during the housing transition.

The city of Nanjing

The analyses in this study are based on data collected in 2004 from a survey among poor families of Nanjing. Located on China's east coast, and the capitol city of Jiangsu province, Nanjing is an important regional economic center of the Yangtze River Delta. It is also one of the "super large" cities in China by population size, with a resident population of over three million in the city core (defined by administrative areal units), and a total of nearly seven million in the municipal area, according to the 2005 census. Having been the capital of several historical Chinese states, Nanjing is well known for its rich legacy from ancient history and unique development trajectory in more recent times. Between 1927 and 1949, as the then-capital-city under the nationalist government, Nanjing was home to high-ranking bureaucrats, rich business-men, social elites, as well as poor workers, proletariats, and vagrants, and it recorded one of the highest income inequalities among all Chinese cities at the time (Chen, Gu, & Wu, 2004). After the socialist revolution in 1949, Nanjing underwent a period of under-development due to the reorganization of China's political economy. But since 1978, the city has experienced a new wave of growth as one of the earliest "open" cities in the coastal area of China and the increasing economic prowess of the Yangtze River Delta. Compared with other Chinese cities, Nanjing's unique history has resulted in a highly visible landscape that contrasts post-reform achievements with pre-reform fixtures, pre-revolution landmarks, and historical footprints. In addition, unlike bigger cities such as Beijing, Shanghai, and Guangzhou, the characteristics of which are tightly coupled with the surrounding extended metropolitan regions (Lin, 2001; Sit, 2005; Sun, Li, & Lu, 2009; Zhang & Sit, 2006), the city of Nanjing is not as large and diverse in terms of both geographical area and population composition. Thus its development

is more in line with the conventional concept of central cities, making it a favorite subject of recent studies on China's urban poverty (Chen et al., 2006; He, Liu, Wu, & Webster, 2008; Liu et al., 2008; Wu, 2007). Our data was collected at a time when the city was experiencing the most fervent urban redevelopment in its history to make way for image-promoting events and a metro system. The city's last group of 'native' urban residents, who lived in the southern part of the city, was expecting relocation.

Data collection

In the absence of a complete list of all poor family households, we adopted a multi-stage cluster sampling strategy, which drew sample from a subset of the 193 residents' committees of Nanjing's 62 Jiedao (street block) administrative units. To ensure the representativeness of the sample, we stratified the residents' committees according to our prior knowledge (although informal) of poverty concentration, so that committees with high poverty incidences could be adequately represented. The stratification aimed to encompass low-income groups, migrants and families with a history of unemployment. The survey collected 23 items of information on 281 native and migrant family households and 34 items of information on all 948 household members from these households, through face-to-face interviews between July and August of 2004. Among them, 279 households fell into one of the three categories: (1) household income per capita lower than the 425 yuan/month poverty line; (2) at least one family member with an unemployment history; and (3) at least one family member holds rural or non-local Hukou. Furthermore, 259 of the 279 families had a monthly household income per capita lower than the city's average of 850 yuan. These 259 households constitute the main subjects of analysis in this study (see Fig. 1 for a distribution of the sample).

The following four housing-related variables are used. (1) The first is *total floor size*, which measures the built-up area of a home in square meters. (2) The second is *per capita floor size*, which is generated by dividing total floor size by the number of people in a household. (3) The third is *building type*, which is an ordinal variable scaled from 1 to 4, where 1 indicates flat informal shelter and 4 represents buildings with at least 6 stories. (4) Finally we also measured respondents' self-rating on their housing using a scale of 1 to 7, 1 being the worst and 7 the best. Self-rating incorporates dweller's expectation into the evaluation of housing conditions. The mean values of these variables in our sample are 43.28 M^2 (total floor size), 13.29 M^2/person (per capita floor size), 2.16 (building type), and 3.5 (self-rating). These values are well below the city averages. According to a survey conducted by Nanjing Municipal Statistics Bureau in 2004 (Yao, 2004a), the average floor size for Nanjing's urban residents is 65.1 M^2 and the per capita floor size is 22.7 M^2/person. The rest of the survey variables can be roughly classified into three categories: (1) socio-economic variables such as income and employment status; (2) institutional variables such as Hukou status, party membership, job rank, and employer's administrative rank; and (3) demographic variables such as age, education, and gender. The survey collected data at both the household level and the household member level, and household member data can be aggregated at the household level when necessary.

Framework of analysis

As we have mentioned before, in order to characterize China's institutionally-ascribed, ownership-oriented, and neoliberal-style housing transition, this paper investigates housing differentiation from three perspectives, including those of Hukou, housing tenure, housing distribution sources, and urban resettlement impact on
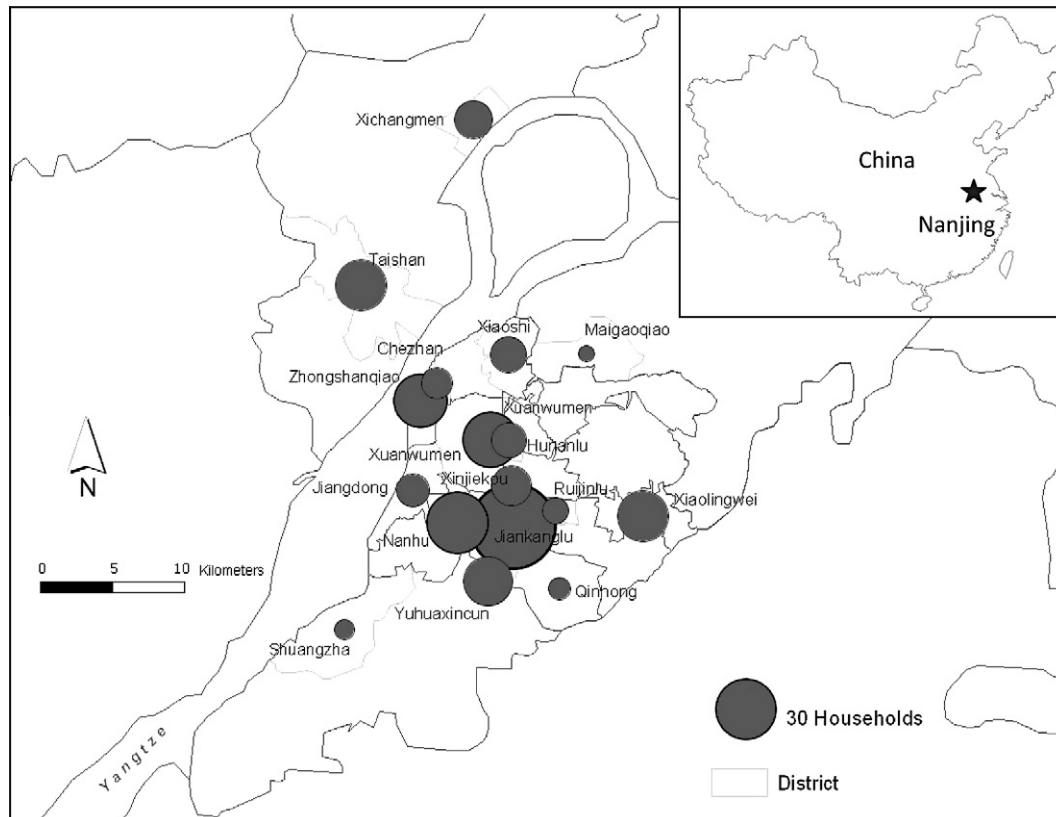

Fig. 1. The geographical distribution of the survey sample.

the poor's housing conditions. All these factors are categorical in nature, and therefore our goal is to find whether there is substantial housing differentiation among the sub-groups. Traditionally, this kind of analyses can be conducted using techniques of Analysis of Variance (ANOVA). However, due to the non-experimental nature of our data, extra caution must be taken in selecting the analytical methods. More specifically, we only use one-way ANOVA to test the existence of between-group differences of housing variables, and once a positive result is obtained, we employ regression methods to generate detailed pairwise comparisons. The length of this paper does not permit a detailed explanation of the methods used, which can be obtained from the author.

We take the following measures to assure the effectiveness and validity of the statistical analyses. (1) First, we use Box-Cox power transformations (Box & Cox, 1964) to rescale dependant variables into normally distributed ones (except in models where the dependant variables are ordinal). The λ value used by the specific power transformation for each variable is estimated by the maximum likelihood method. (2) To address potential problems arising from the clustered nature of the data due to our sampling strategy and the concern of heteroscedasticity, we adopt the Huber-White error measure in significance tests, which has been shown to be robust in these situations (White, 1980). All analyses in this study are conducted in the statistical software package R.

Housing differentiation by Hukou

Generally speaking, there are two types of Hukou-imposed divisions in contemporary China: the rural/urban division and the local/non-local division (Chan, 1994; Wu, 2004). Many important socio-economic benefits are differentiated by these two divisions, including children's schooling, social welfare, and medical care benefits. The rest of this section examines the effects of both types of Hukou divisions as well as their interaction on the poor's housing conditions.

Rural/urban vs. local/non-local

The identification of Hukou-based sub-groups in this study differs from approaches used by some past studies in two respects. First, our data are based on families instead of individuals. It is notable that in China a large part of the migrant population is constituted of the so-called "floating population" (Shen, 2002) with multiple lengths of stay and high individual-driven mobility. Therefore, incorporating all individual migrants into housing comparisons sometimes induces bias, because in such cases migrant groups would be dominated by people who are less motivated to settle down in the first place (Wu, 2002). A family-oriented categorization of Hukou groups helps to compare migrant and non-migrant groups on equal ground. Second, this study identifies the subjects' Hukou status immediately before they shift to their current dwellings. Many studies tend to identify a person's Hukou status at the time of data collection, which introduces another source of bias because such an approach ignores the connection between Hukou changes and housing transitions. In Nanjing, for example, this approach may overlook effects from measures such as the "blue seal" Hukou policy that awards local urban Hukou to qualified home buyers and the conversion of the rural population to urban residents during different stages of urban expansion.

Bearing these concerns in mind, Table 1 lists the means of the four housing variables for different sub-groups defined by the household head's Hukou status at the time of the housing change (if there was a change). For each housing variable, one-way ANOVA tests are conducted for both types of Hukou divisions and their heteroscedasticity-corrected p values are also included in Table 1.

Table 1
One-way ANOVA tests of urban/rural and local/non-local divisions on housing variables.

	Floor size (M²)	Per capita floor size (M²)	Building type	Self-rating
Urban	42.33	**13.31**	**2.25**	3.52
Rural	38.74	**11.94**	**1.68**	3.67
p (ANOVA)	0.131	**0.036**[**]	**<0.001**[***]	0.368
Local	41.82	**13.30**	**2.20**	3.53
Non-local	41.19	**11.27**	**1.81**	3.22
p (ANOVA)	0.473	0.057[*]	0.026[**]	0.163

Significance codes.
[*] $p < 0.1$.
[**] $p < 0.05$.
[***] $p < 0.01$.

Results show that for both types of Hukou divisions, there are significant between-group differences for per-capita floor size and building type, but not on overall floor size and self-reported housing rating. The mean floor size among urban-Hukou households (42.33 M²) is greater than that of rural-Hukou households (38.74 M²), but the difference is not statistically significant due to the large or unbalanced variance of the floor size variable. The effects of per capita floor size become significant for both Hukou divisions mainly because rural/non-local households have more family members than urban/local households. The differences in building type reflect the fact that urban/local families generally live in better quality housing (as measured by building type) than rural/non-local families. Finally, there are no significant differences in self-ratings for both types of Hukou divisions.

Interaction effects of the two Hukou divisions

Perhaps more important information can only be revealed by analyzing the interaction effects of the two types of Hukou divisions. For example, it is hypothesized that rural migrants, i.e. those with non-local rural Hukou, may live in the worst housing conditions, while the housing difficulties of the local urban poor may be relatively less severe. However, traditional two-way ANOVA methods do not work here because even with heteroscedasticity-consistent methods such as the one used above, it is not possible to generate sensible results due to the problem of multicollinearity: the two Hukou factors are highly correlated with each other (e.g. a local household is also likely to be an urban household).

Instead, we use regression techniques to model the interaction effects independently from the main effects, which have already been evaluated in Table 1. First, we use the two Hukou divisions to cross-categorize the poor households into four sub-groups, including families with local urban Hukou, local rural Hukou, non-local urban Hukou, and non-local rural Hukou. Then we code them into dummy independent variables and fit them into regression models for each housing variable, where the housing variable is the dependent variable. For total floor size and per capita floor size, we use linear regression methods with dependent variables rescaled by Box-Cox power transformations. For building type and housing rating, we use proportional odds models, which are essentially logistic regressions on multiple ordinal categories. More specifically, a binomial logistic regression usually contains one intercept term, which can be understood as the baseline "odds" that "divides" the two categories of the dependent variable. The regression coefficients can then be regarded as effects that add to or subtract from these baseline odds. Similar to this, a proportional model of an N-category dependent variable contains $N - 1$ number of "cut points" as the baseline odds, and the regression coefficients represent the increase or decrease effects against these

Table 2
Interaction effects of the two types of Hukou divisions.

	Non-local Rural	Non-local Urban	Local Rural	Local Urban	Group Mean	Group Std.
No. of households	20	8	22	208	N/A	N/A
Floor size (M²)						
Non-local rural	*9.22 (Intercept)*	**−4.39 (p = 0.015******)**	−1.71 (p = 0.287)	**−2.12 (p = 0.091*****)**	34.58	32.24
Non-local urban	**+4.39 (p = 0.015******)**	*13.61 (Intercept)*	+2.68 (p = 0.108)	**+2.27 (p = 0.088*****)**	56.88	25.06
Local rural	+1.71 (p = 0.287)	−2.68 (p = 0.108)	*10.93 (Intercept)*	−0.41 (p = 0.694)	42.34	28.06
Local urban	**+2.12 (p = 0.091*****)**	**−2.27 (p = 0.088*****)**	+0.41 (p = 0.694)	*11.34 (Intercept)*	41.77	16.76
Per capita size (M²)						
Non-local rural	*2.70 (Intercept)*	**−0.81 (p = 0.069*****)**	−0.53 (p = 0.243)	**−0.80 (p = 0.019*****)**	10.40	10.16
Non-local urban	**+0.81 (p = 0.069*****)**	*3.51 (Intercept)*	+0.28 (p = 0.512)	+0.014 (p = 0.964)	13.33	5.74
Local rural	+0.53 (p = 0.243)	−0.28 (p = 0.512)	*3.23 (Intercept)*	−0.27 (p = 0.397)	13.25	9.70
Local urban	**+0.80 (p = 0.019******)**	−0.014 (p = 0.964)	+0.27 (p = 0.397)	*3.50 (Intercept)*	13.30	6.30
Building type						
Non-local rural	*N/A*	−1.04 (p = 0.184)	+0.03 (p = 0.963)	**−1.35 (p = 0.004*******)**	1.68	0.82
Non-local urban	+1.04 (p = 0.184)	*N/A*	+1.07 (p = 0.165)	−0.31 (p = 0.637)	2.13	0.83
Local rural	−0.03 (p = 0.963)	−1.07 (p = 0.165)	*N/A*	**−1.38 (p = 0.002*******)**	1.68	0.84
Local urban	**+1.35 (p = 0.004*******)**	+0.31 (p = 0.637)	**+1.38 (p = 0.002*******)**	*N/A*	2.26	0.78
Self rating						
Non-local rural	*N/A*	−0.47 (p = 0.528)	−0.64 (p = 0.246)	−0.58 (p = 0.175)	3.16	1.07
Non-local urban	+0.47 (p = 0.528)	*N/A*	−0.17 (p = 0.812)	−0.11 (p = 0.858)	3.38	1.06
Local rural	+0.64 (p = 0.246)	+0.17 (p = 0.812)	*N/A*	+0.06 (p = 0.881)	3.55	0.86
Local urban	+0.58 (p = 0.175)	+0.11 (p = 0.858)	−0.06 (p = 0.881)	*N/A*	3.53	1.15

Significance codes.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

baseline odds. The basic assumption of the proportional odds model is that these effects remain the same across different categories.

For each housing variable, we run the corresponding regression model four times, and during each time a different sub-group is set to be the reference group (therefore corresponding to the intercept). This eventually generates a matrix of pairwise comparisons for each housing variable, which are reported in Table 2. As we have mentioned above, each column in Table 2 corresponds to a regression model that uses the sub-group in the column header as the reference group. Here intercepts indicate the mean values of the housing variable for the reference sub-group, while the coefficient in each row represents the difference of means between the row sub-group and the reference sub-group. For example, the first column contains results of the regression where non-local rural households are selected as the reference. For the total floor size variable, the first row (9.22) shows the mean value of the Box-Cox transformed total floor size for non-local rural households, and the second row indicates that the mean value of the dependent variable for non-local urban households is greater than 9.22 by 4.39. Note intercepts for building type and self-rating were not listed in the table because there are more than one intercept in the proportional odds models and they are not essential to our comparisons. All *p* values in the table have been adjusted using heteroscedasticity-consistent variance matrices.

These results confirm that non-local rural (i.e. rural migrants) households constitute the most disadvantaged sub-group of the urban poor, in terms of both total and per capita floor sizes. The differences of housing sizes between local rural households and other sub-groups, on the other hand, are not significant. In contrast, non-local urban households (i.e. urban migrants) have the largest means in total and per-capita floor sizes, which are even significantly larger than that of local urban households. For building type, local urban households live in significantly better buildings than both local and non-local rural households. Finally, no significant differences in self-rating are detected between the four Hukou sub-groups.

Housing differentiation by tenure and distribution types

A notable result of China's housing reform is the restructuring of urban housing tenure. In the pre-reform socialist era, most urban Chinese lived in public housing allocated to them through work units, for which they only needed to pay trivial, nominal rents. There were few migrants and no private market, although a few people still possessed aged private housing obtained before 1949 (Huang & Clark, 2002). Since the reform, the urban housing tenure structure has become more complicated due to the diversified population, increased privatization, and the implementation of new housing policies (Li & Yi, 2007). For urban poor families, it is important to identify the composition of housing tenure and analyze its relationship with their housing conditions.

Classification of housing tenure

Based on a careful evaluation of different variants of housing structure in the sample population, this study categorizes the housing tenure into three major classes, including those of renters, nominal owners, and self-dependent dwellers (see Table 3 for details). This categorization takes into account the particular land and housing institutions in China, according to which all urban land belongs to the state and rural land is collectively owned by peasants. For urban housing development, the state usually grants the "use right" of approved land blocks to developers on lease terms for a period of time (up to 70 years), which can be later transferred to home owners. Therefore, home ownership in China is jointly defined by both land-use right and housing ownership. They are officially certified by: (1) the land-use permit, which certifies the state approval for housing construction on the given land lot, and (2) the housing ownership certificate, which authenticates home owners' property rights to their housing. It should be noted that the above classification is specifically devised to fit the data and goals of this study, and one should avoid over-generalizing this classification

Table 3
Housing tenure classification among Nanjing's poor.

Class and description	Property rights
1. *Renters*: Dwellers who must pay certain forms of rent to other parties, including the government, work units, or private land lords	No land-use permits (LUPs) or housing ownership certificates (HOCs)
2. *Nominal owners*: Dwellers who possess full or partial ownership to housing, obtained from work units, the municipal housing bureau, or the private housing market, including	
2.1. Subsidized work unit housing purchased by employees, including	
(a) *Reform housing*: Old work unit housing purchased by sitting dwellers	LUPs granted after land-use transfer fees are paid either by work units or owners. Only partial housing ownership because of the price discounts. One must pay the "cost rate" or pay off the difference during future transactions to get HOC in hand. Market transaction is forbidden within a few years of initial purchase
(b) *Collectively-funded housing*: New work unit housing built (rarely by poor work units) with a fraction of cost paid by employee	No LUPs because it's built on allocated production land. No HOCs. Dwellers are thought to be "co-owning" the housing with their employers. Resale or transferring to parties other than the given work units' employees prohibited. Due to lack of enforcement, most dwellers do find a way to obtain LUPs and/or HOCs
2.2. *Affordable housing (Jingji Shiyong Fang)*: Miscellaneous welfare housing managed by the government through municipal housing bureau since 1995 as the state's effort to promote middle and lower class ownership, in Nanjing's case, including Anju Fang and Fuli Fang projects	Have HOCs but no LUPs, because land is specially allocated by the state for housing welfare. A normal resale-ban of 5 years, in some special cases up to 10 years after the first purchase, and LUPs can be granted during transaction given all fees paid
2.3. *Housing purchased from the open market*: Commodity housing provided by private developers and second-hand work unit and affordable housing	Have LUPs and HOCs. All restrictions on them have been cleared since they have been sold at least once
3. *Self-dependent dwellers*: Those in housing situations unorthodox to the above mainstream housing system, including	
3.1. *Historical private housing*: A significant amount of privately owned housing that survived the socialist transition and remained possessed by private parties	Though quietly allowed between 1949 and 1982 on both legal and practical terms, the new constitution of 1982 removed the legal basis for this housing by claiming the state's ownership of all urban land. Most had HOCs and were able to obtain LUPs through informal or illegal channels. Many properties were illegally traded and land compensation claimed during resettlement even without LUPs
3.2. *Rural housing*: Housing constructed on rural homestead and built by rural families on urban fringes	Only collective LUPs and no HOCs. Built on rural collectively owned land. Most scheduled to be taken down during urban development
3.3. *Illegal housing on rural land*: Housing constructed on non-homestead agricultural land known as "small-property-rights housing" or "township property housing"	No LUPs or HOCs. Often have HOCs granted by local townships, which are not acknowledged by the state

Table 4
Housing differentiation among different tenure types.

	Rent	Own	Self	Group Mean	Group Std.
No. of households	151	85	22	N/A	N/A
Floor size (M²)					
Rent	*10.18 (Intercept)*	−2.92 (**p < 0.001*****)	−2.74 (**p = 0.090***)	35.97	17.45
Own	**+2.92** (**p < 0.001*****)	*13.10 (Intercept)*	+0.18 (p = 0.910)	52.57	17.39
Self	**+2.74** (**p = 0.090***)	−0.18 (p = 0.910)	*12.92 (Intercept)*	60.36	66.09
Per capita size (M²)					
Rent	*3.15 (Intercept)*	−0.71 (**p < 0.001*****)	−0.56 (**p = 0.082***)	11.28	6.09
Own	**+0.71** (**p < 0.001*****)	*3.86 (Intercept)*	+0.15 (p = 0.654)	15.94	6.93
Self	**+0.56** (**p = 0.082***)	−0.15 (p = 0.654)	*3.71 (Intercept)*	16.82	11.28
Building type					
Rent	N/A	−1.68 (**p < 0.001*****)	+1.87 (**p < 0.001*****)	1.99	0.83
Own	**+1.68** (**p < 0.001*****)	N/A	**+3.57** (**p < 0.001*****)	2.67	0.47
Self	**−1.87** (**p < 0.001*****)	**−3.57** (**p < 0.001*****)	N/A	1.27	0.46
Self rating					
Rent	N/A	−0.99 (**p < 0.001*****)	−0.12 (p = 0.762)	3.30	1.11
Own	**+0.99** (**p < 0.001*****)	N/A	**+0.87** (**p = 0.046****)	3.90	1.05
Self	+0.12 (p = 0.762)	**−0.87** (**p = 0.46****)	N/A	3.36	1.05

Significance codes.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

scheme to the general population or other cities. In the analyses, partial and full owners are put in one category because in our sample they share similar housing conditions and tenure security.

In the following, we first examine housing condition differentiation among the three tenure types, and then we introduce housing distribution (i.e. distribution by work units, distribution by the government through the municipal housing bureau, and distribution by the private market) as a second factor for classification to analyze its interaction effects on renters and owners.

Self-dependent dwellers are excluded in the latter analysis due to the limited number of cases in that category, and that they reflect distribution paths outside the mainstream urban housing system.

Housing differentiation among tenure types

Table 4 presents the results of regression-based comparison among the tenure types, where the group mean and standard

Table 5
Interaction effects of housing tenure and distribution types.

	Own			Rent		
	Housing bureau	Work unit	Open market	Housing bureau	Work unit	Open market
No. of households	30	46	9	76	45	28
Floor size (M²)						
Housing bureau	13.40 (Intercept)	+0.58 (p = 0.323)	−0.18 (p = 0.853)	10.67 (Intercept)	−0.40 (p = 0.484)	+1.42 (p = 0.112)
Work unit	−0.58 (p = 0.323)	12.82 (Intercept)	−0.76 (p = 0.436)	+0.40 (p = 0.484)	11.07 (Intercept)	**+1.82 (p = 0.050***)**
Open market	+0.18 (p = 0.853)	+0.76 (p = 0.436)	13.61 (Intercept)	−1.42 (p = 0.112)	**−1.82 (p = 0.050***)**	9.25 (Intercept)
Group mean	55.33	51.54	55.75	37.88	39.84	32.35
Group Std.	16.25	15.37	21.06	15.64	14.89	23.25
Per capita size (M²)						
Housing bureau	4.06 (Intercept)	+0.29 (p = 0.128)	−0.13 (p = 0.716)	3.29 (Intercept)	−0.00 (p = 0.997)	**+0.49 (p = 0.043****)**
Work unit	−0.29 (p = 0.128)	3.77 (Intercept)	−0.42 (p = 0.233)	+0.00 (p = 0.997)	3.29 (Intercept)	**+0.49 (p = 0.061***)**
Open market	+0.13 (p = 0.716)	+0.42 (p = 0.233)	4.20 (Intercept)	**−0.49 (p = 0.043****)**	**−0.49 (p = 0.061***)**	2.80 (Intercept)
Group mean	17.42	14.96	19.07	11.85	11.93	9.80
Group Std.	6.96	5.67	9.25	5.54	6.56	7.29
Building type						
Housing bureau	N/A	+0.22 (p = 0.684)	+0.78 (p = 0.316)	N/A	−0.09 (p = 0.826)	**+0.88 (p = 0.053***)**
Work unit	−0.22 (p = 0.684)	N/A	+0.56 (p = 0.441)	+0.09 (p = 0.826)	N/A	**+0.97 (p = 0.051***)**
Open Market	−0.78 (p = 0.316)	−0.56 (p = 0.441)	N/A	**−0.88 (p = 0.053***)**	**−0.97 (p = 0.051***)**	N/A
Group mean	2.72	2.67	2.50	2.18	2.25	1.84
Group std.	0.46	0.48	0.53	0.85	0.83	0.72
Self rating						
Housing bureau	N/A	−0.11 (p = 0.814)	−0.15 (0.838)	N/A	+0.22 (p = 0.590)	−0.16 (p = 0.702)
Work unit	+0.11 (p = 0.814)	N/A	−0.04 (0.959)	−0.22 (p = 0.590)	N/A	−0.38 (p = 0.436)
Open market	+0.15 (p = 0.838)	+0.04 (p = 0.959)	N/A	+0.16 (p = 0.702)	+0.38 (p = 0.436)	N/A
Group MEAN	3.92	3.97	4.00	3.40	3.25	3.38
Group std.	1.04	1.14	0.76	1.01	1.30	1.13

Significance codes.
* $p < 0.1$.
** $p < 0.05$.

deviation of each variable are also reported in the last two columns of the table. On one hand, owner and self-dependent dwellers have larger housing than renters in terms of both total and per capita floor sizes. But the differences between owned and self-dependent housing in these two variables are insignificant. On the other hand, while owned housing has the best building types, self-dependent housing's quality is the worst among the three, even worse than the rentals. In other words, it seems that the poor end of the self-dependent category suffers the most severe disadvantage in terms of quality (as measured by building type). This is attributed to the fact that self-dependent housing occupied by the poor is mostly aged private housing, sub-standard rural housing, and low-quality illegal housing. One should note that in fact there is some good-quality housing in the self-dependent category, e.g. building units belonging to historically wealthy families or commodity housing recently developed on rural land (though illegal). But such housing is not reported in the sample. Finally, the results for our last housing variable, self-rating, show that owners rate their housing significantly better than renters or self-dependent dwellers.

Interaction of housing distribution and tenure

Further, the interaction of housing distribution and tenure type produced some interesting results, which are reported in Table 5. For the ease of interpretation, Table 5 only presents comparisons within the owner and renter categories, because for all three types of housing distribution, owners have strong advantages over renters in all four housing variables. Therefore, the structure of Table 5 is slightly different than Tables 2 and 4. For example, the first column compares owners of housing bureau with owners of work unit and private market housing, while the fourth column compares renters of housing bureau with renters of work unit and private market housing.

According to Table 5, the interactive effects are most pronounced among poor renters. First, when total floor size is considered, there are no significant differences among owners of the three types of housing distribution. However, renters see significant differences among themselves. In particular, renters of work unit housing live in significantly larger dwellings than renters of private market housing (as indicated by the last column). Second, results for per capita floor size basically illustrate the same effects, except housing bureau renters also have a significantly positive coefficient when compared to private market renters. Moreover, when building type is concerned, there are no significant differences for owners, but for renters, housing units rented from work unit and housing bureau are significantly better than those from private market housing. Finally, results for the variable of self-rating are all insignificant.

Housing differentiation among renters is not a surprise. Many would attribute this to the path dependency of China's housing reform—although new public housing allocation officially terminated in 1998, the government has continued to allow work units or the housing bureau to offer rental options to those who cannot afford to buy, and the rent remains substantially lower than market rates. In other words, for the same amount of money, those who rent from work units or the housing bureau can obtain housing of much larger size and better quality than those who rent from the open market. However, given that the goal of reform is to gradually eliminate public housing allocation, the benefits offered by work units or government to the urban poor may only serve as 'intermediate' solutions, i.e. not sustainable in the absence of new measures of housing welfare targeting the poor.

The impact of housing change and resettlement

One of the most interesting issues is how the urban poor, which mostly emerged after the economic reform, have been affected by the changes in their housing after the reform, especially the massive resettlement processes in the city due to urban renewal, municipal expansion, and real estate development. Note again that our survey was conducted at a time when the city was experiencing the most dramatic overhaul, which provides us with a prime case to explore this dimension of housing condition differentiation among the urban poor. Specifically, we use the information about housing transition in the survey data to derive households that changed their primary dwellings after 1979. The differentiation effects that housing changes produce on the poor's housing conditions, as well as their interaction with categories of housing tenure and housing distribution, are examined in this section.

Housing changes since the reform

According to the survey data, 190 of the total of 259 poor households changed their primary dwellings after 1979. In the survey, we asked interviewees about their primary reasons for housing changes, and the answers are summarized in Fig. 2. As shown in the figure, 76 of the households (40%) changed their housing due to resettlement. Housing allocation is another important reason, accounting for 60 (31%) of the 190 households. This refers to housing changes resulting from allocation activities initiated by their employers or the local government without resettlement goals or specific personal motivations on the dwellers' side, e.g. simply because there is an opportunity to offer housing. Personal choices, including work-related considerations (e.g. living closer to the work place), household changes (e.g. marriage), other family-related concerns (e.g. child education), and individual preferences constitute the third largest sub-group of housing changes, reported by 43 (23%) households. Although one can hypothesize that the timing for the change in housing may have some impact on housing conditions, in our data we did not find any evidence of that.

Since we are most interested in the impact of resettlement on housing, we divide the 190 households into two sub-groups: those who changed their housing because of resettlement and those who did so for other reasons. The mean values of the four housing variables for each sub-group plus the results of one-way ANOVA tests are listed in Table 6. It is evident that the resettlement sub-group's housing conditions are significantly better than non-resettlement sub-group, as reflected by ANOVA tests on all four variables. This indicates that resettlement, although sometimes involving bitter conflicts between dwellers and developers, has positive effects on the urban poor's housing conditions.

However, a simple comparison between resettled and non-resettled groups may not completely reveal the housing differentiation among the poor. In previous studies such as Li (2003) and Li and Yi (2007), resettlement housing has been categorized under the same classification hierarchy with work units or housing from municipal housing bureaus. In the city of Nanjing, however, this is not a preferable approach because resettlement can be a complex process driven by multiple forces. For instance, during the 1980s a large scale urban renewal effort was launched by the municipal government, which resettled many people living in the old inner city at the time. In the 1990s and during more recent years after 2000, private urban development has become more often the main driver of resettlement. During these waves of redevelopment, work units sometimes can play an important role because in many situations the government would ask the relevant work unit to assist the management of the resettlement and/or even share some costs. Therefore, it is not appropriate to treat housing obtained after
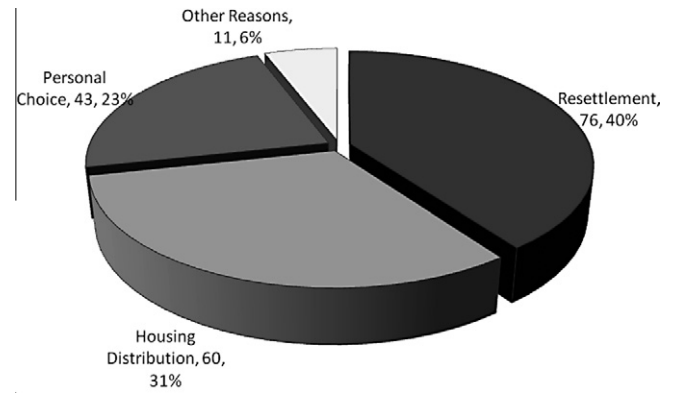

Fig. 2. Reasons of housing changes.

Table 6
Housing differentiation between resettlement/non-resettlement sub-groups.

	Floor size (M^2)	Per capita floor size (M^2)	Building type	Self-rating
Resettlement	47.99	14.72	2.58	3.76
Non-resettlement	40.18	12.28	2.17	3.46
p (ANOVA)	0.001***	0.003***	<0.001***	0.070*

Significance codes.
* $p < 0.1$.
*** $p < 0.01$.

resettlement as a category side by side with those distributed by work units or housing bureau. Instead, we regard housing distribution and housing change as two factors, the interaction of which can produce more subtle effects on the poor.

Interaction of resettlement and housing distribution

The interaction effects produced by housing change and distribution are reported in Table 7, which are produced using the same regression-based method employed before. The structure of Table 7 is similar to Table 2, as all sub-groups generated by the interaction are compared in a pairwise way.

First, resettlement housing distributed by work units and housing bureau is significantly larger in total floor size than almost all types of non-resettlement housing. This is illustrated by the first two columns of Table 7, as all three housing distribution sub-groups in the non-resettlement category have significant negative coefficients when compared with housing bureau or work unit housing in the resettlement category (with the exception of non-resettlement work unit housing). Private-market housing in the resettlement category, on the other hand, does not have the same kind of advantage (as shown in column 3). For non-resettlement housing, which is compared in columns 4, 5, and 6, we can see that housing distributed by work units is significantly larger than those distributed by the housing bureau and the private market.

Second, a similar pattern is observed for per capita floor size, where, in the resettlement category, housing from work unit and housing bureau are significantly larger than almost all types of non-resettlement housing, and work unit housing in the non-resettlement category is significantly larger than other non-resettlement housing.

Third, when building type is examined, resettlement housing managed by the housing bureau or work units is generally better than non-resettlement housing. On the contrary, private market housing in the resettlement category elicits considerable negative

Table 7
Interaction effects of housing changes and housing distribution.

	Resettlement			Non-resettlement		
	Housing bureau	Work unit	Open market	Housing bureau	Work unit	Open market
No. of households	51	17	8	34	54	26
Housing size (M²)						
Resettlement Housing bureau	12.52 (Intercept)	−0.50 (p = 0.449)	+2.06 (p = 0.202)	**+2.46 (p < 0.001***)**	+0.64 (p = 0.191)	**+2.30 (p = 0.10**)**
Resettlement Work unit	+0.50 (p = 0.449)	13.02 (Intercept)	+2.55 (p = 0.128)	**+2.95 (p < 0.001***)**	**+1.14 (p = 0.09*)**	**+2.79 (p = 0.005***)**
Resettlement Open market	−2.06 (p = 0.202)	−2.55 (p = 0.128)	10.46 (Intercept)	+0.40 (p = 0.811)	−1.42 (p = 0.383)	+0.24 (p = 0.893)
Non-resettlement Housing bureau	**−2.46 (p < 0.001***)**	**−2.95 (p < 0.001***)**	−0.40 (p = 0.811)	10.06 (Intercept)	**−1.82 (p = 0.006***)**	−0.16 (p = 0.873)
Non-resettlement Work unit	−0.64 (p = 0.191)	**−1.14 (p = 0.09*)**	+1.42 (p = 0.383)	**+1.82 (p = 0.006***)**	11.88 (Intercept)	**+1.66 (p = 0.068*)**
Non-resettlement Open market	**−2.30 (p = 0.010**)**	**−2.79 (p = 0.005***)**	−0.24 (p = 0.893)	+0.16 (p = 0.873)	**−1.66 (p = 0.068*)**	10.22 (Intercept)
Group mean	48.25	51.38	39.13	35.15	44.66	37.46
Group std.	14.45	15.54	29.03	19.22	16.14	23.71
Per capita size (M²)						
Resettlement Housing bureau	3.78 (Intercept)	+0.07 (p = 0.737)	+0.60 (p = 0.185)	**+0.66 (p < 0.001***)**	**+0.27 (p = 0.068*)**	**+0.66 (p = 0.011**)**
Resettlement Work unit	−0.07 (p = 0.737)	3.71 (Intercept)	+0.52 (p = 0.271)	**+0.59 (p = 0.016**)**	+0.20 (p = 0.356)	**+0.59 (p = 0.051*)**
Resettlement Open market	−0.60 (p = 0.185)	−0.52 (p = 0.271)	3.18 (Intercept)	+0.06 (p = 0.895)	−0.33 (p = 0.470)	+0.07 (p = 0.890)
Non-resettlement Housing bureau	**−0.66 (p < 0.001***)**	**−0.51 (p = 0.016**)**	−0.06 (p = 0.895)	3.12 (Intercept)	**−0.39 (p = 0.041**)**	+0.01 (p = 0.980)
Non-resettlement Work unit	**−0.27 (p = 0.068*)**	−0.20 (p = 0.356)	+0.33 (p = 0.470)	**+0.39 (p = 0.041**)**	3.51 (Intercept)	+0.39 (p = 0.132)
Non-resettlement Open market	**−0.66 (p = 0.011**)**	**−0.59 (p = 0.051*)**	−0.07 (p = 0.890)	−0.01 (p = 0.980)	−0.39 (p = 0.132)	3.11 (Intercept)
Group mean	15.09	14.67	12.43	11.07	13.25	11.84
Group std.	6.22	6.95	9.92	6.18	6.02	8.40
Building type						
Resettlement Housing bureau	N/A	+0.50 (p = 0.398)	**+2.56 (p < 0.001***)**	**+2.64 (p < 0.001***)**	**+0.85 (p = 0.034**)**	**+1.77 (p < 0.001***)**
Resettlement Work unit	−0.50 (p = 0.398)	N/A	**+2.06 (p = 0.013**)**	**+2.14 (p < 0.001***)**	+0.35 (p = 0.533)	**+1.27 (p = 0.046**)**
Resettlement Open market	**−2.56 (p < 0.001***)**	**−2.06 (p = 0.013**)**	N/A	+0.08 (p = 0.910)	**−1.71 (p = 0.015**)**	−0.79 (p = 0.289
Non-resettlement Housing bureau	**−2.64 (p < 0.001***)**	**−2.14 (p < 0.001***)**	−0.08 (p = 0.910)	N/A	**−1.79 (p < 0.001***)**	**−0.88 (p = 0.090*)**
Non-resettlement Work unit	**−0.85 (p = 0.034**)**	−0.35 (p = 0.533)	**+1.71 (p = 0.015**)**	**+1.79 (p < 0.001***)**	N/A	**+0.92 (p = 0.047**)**
Non-resettlement Open market	**−1.77 (p < 0.001***)**	**−1.27 (p = 0.046**)**	+0.79 (p = 0.289)	**+0.88 (p = 0.090*)**	**−0.92 (p = 0.047**)**	N/A
Group mean	2.73	2.53	1.75	1.76	2.46	2.08
Group std.	0.45	0.72	0.71	0.85	0.61	0.84
Self rating						
Resettlement Housing bureau	N/A	**−0.89 (p = 0.087*)**	−0.62 (p = 0.340)	+0.34 (p = 0.385)	+0.23 (p = 0.536)	+0.26 (p = 0.551)
Resettlement Work unit	**+0.89 (p = 0.087*)**	N/A	+0.27 (0.715)	**+1.23 (p = 0.024**)**	**+1.11 (p = 0.033**)**	**+1.15 (p = 0.047**)**
Resettlement Open market	+0.62 (p = 0.340)	−0.27 (p = 0.715)	N/A	+0.96 (p = 0.150)	+0.84 (p = 0.194)	+0.88 (p = 0.206)
Non-resettlement Housing Bureau	−0.34 (p = 0.385)	**−1.23 (p = 0.024**)**	−0.96 (p = 0.150)	N/A	−0.12 (p = 0.765)	−0.08 (p = 0.865)
Non-resettlement Work unit	−0.23 (0.536)	**−1.11 (p = 0.033**)**	−0.84 (p = 0.194)	+0.12 (p = 0.765)	N/A	+0.04 (p = 0.931)
Non-resettlement Open market	−0.26 (0.551)	**−1.15 (p = 0.047**)**	−0.88 (p = 0.206)	+0.08 (p = 0.865)	−0.04 (p = 0.931)	N/A
Group mean	3.61	4.12	4.00	3.47	3.50	3.38
Group std.	1.11	0.99	0.53	0.93	1.30	1.17

Significance codes.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

effects, as it is not only worse than the other two types of resettlement housing, but also worse than the work unit housing in the non-resettlement category. Moreover, attention should be paid to

the non-resettlement housing from the housing bureau, because although managed by the government, its building type is the worst among all non-resettlement housing. In fact non-resettlement

Table 8
Interaction effects of resettlement and housing tenure types.

	Resettlement		Non-resettlement		Group	Group
	Rent	Own	Rent	Own	Mean	Std.
No. of households	39	37	79	35	N/A	N/A
Housing size (M²)						
Resettlement Rent	*11.68* (Intercept)	**−1.52** ($p = 0.012$**)	**+1.81** ($p = 0.002$***)	**−1.75** ($p = 0.005$***)	43.65	16.31
Resettlement Own	**+1.52** ($p = 0.012$**)	*13.19* (Intercept)	**+3.32** ($p < 0.001$***)	−0.23 ($p = 0.691$)	52.56	16.18
Non-resettlement Rent	**−1.81** ($p = 0.002$***)	**−3.32** ($p < 0.001$***)	*9.87* (Intercept)	**+3.55** ($p < 0.001$***)	34.00	17.23
Non-resettlement Own	**+1.75** ($p = 0.005$***)	+0.23 ($p = 0.691$)	**+3.55** ($p < 0.001$***)	*13.42* (Intercept)	54.13	16.47
Per capita size (M²)						
Resettlement Rent	*3.50* (Intercept)	**−0.42** ($p = 0.024$**)	**+0.47** ($p = 0.004$***)	**−0.43** ($p = 0.016$**)	13.23	6.15
Resettlement Own	**+0.42** ($p = 0.024$**)	*3.91* (Intercept)	**+0.89** ($p < 0.001$***)	−0.02 ($p = 0.923$)	16.28	7.13
Non-resettlement Rent	**−0.47** ($p = 0.004$***)	**−0.89** ($p < 0.001$***)	*3.02* (Intercept)	**−0.91** ($p < 0.001$***)	10.52	6.13
Non-resettlement Own	**+0.43** ($p = 0.016$**)	+0.02 ($p = 0.923$)	**+0.91** ($p < 0.001$***)	*3.93* (Intercept)	16.26	6.22
Building type						
Resettlement Rent	*N/A*	−0.42 ($p = 0.374$)	**+1.44** ($p < 0.001$***)	−0.35 ($p = 0.465$)	2.49	0.72
Resettlement Own	+0.42 ($p = 0.374$)	*N/A*	**+1.86** ($p < 0.001$***)	+0.07 ($p = 0.880$)	2.68	0.47
Non-resettlement Rent	**−1.44** ($p < 0.001$***)	**−1.86** ($p < 0.001$***)	*N/A*	**−1.78** ($p < 0.001$***)	1.95	0.81
Non-resettlement Own	+0.35 ($p = 0.465$)	−0.07 ($p = 0.880$)	**+1.78** ($p < 0.001$***)	*N/A*	2.66	0.48
Housing rating						
Resettlement Rent	*N/A*	−0.46 ($p = 0.278$)	**+0.71** ($p = 0.051$*)	−0.57 ($p = 0.193$)	3.62	1.09
Resettlement Own	+0.46 ($p = 0.278$)	*N/A*	**+1.17** ($p = 0.002$***)	−0.11 ($p = 0.807$)	3.92	1.01
Non-resettlement Rent	**−0.71** ($p = 0.051$*)	**−1.17** ($p = 0.002$***)	*N/A*	**−1.27** ($p = 0.001$***)	3.22	1.11
Non-resettlement Own	+0.57 ($p = 0.193$)	+0.11 ($p = 0.807$)	**+1.27** ($p = 0.001$***)	*N/A*	4.00	1.11

Significance codes.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

housing from the housing bureau joins private market housing in the resettlement category to constitute the bottom two sub-groups in building type.

Finally, the results for self-rating show that those living in resettlement housing through work unit rate their housing significantly higher than all other sub-groups except those living in resettlement housing through private market. This is interesting as it seems in contradiction with the fact that private market housing in the resettlement category ranks near-bottom in housing type. A possible explanation is that self-rating is a factor heavily influenced by personal expectations, and poor households living in private market resettlement housing have the highest satisfactions level relative to their expectation.

So far, we can summarize two major observations. (1) Resettlement in general does yield positive effects on the housing conditions of the urban poor. (2) However, the positive effects of resettlement are only present when work units or the government (through the housing bureau) takes the responsibility of housing after the resettlement. Those left out by work units and the government during resettlement, as represented in the sub-group of those resettled through private market, are suffering the worst housing conditions among the poor. Note these are not necessarily families taken care of by private developers – they may include any families

who fail to be taken care of by work units or the government (and therefore have to seek private housing options) during various public or private relocation processes.

Interaction of housing transition and tenure

Next we investigate the interaction effects jointly induced by resettlement and housing tenure type. As we mentioned previously, we exclude the self-dependent cases because there are too few of them. Results of the regression-based comparison are described in Table 8.

Such an analysis leads to several further observations. First, according to the results for both total and per capita floor sizes, owners are living in significantly larger housing than renters, no matter whether they are resettled or not. Second, while there are no significant differences between resettled and non-resettled owners, renters in the resettlement category are living in significantly larger housing than renters in the non-resettlement category. Third, as reflected by the results for building type, non-resettlement renters are living in the worst dwellings, with a mean building type significantly inferior to all other sub-groups. Similarly, the ratings by non-resettlement renters on their housing are significantly lower than those from other sub-groups. In

summary, these findings suggest that housing differentiation caused by resettlement is mainly occurring with poor renters, and non-resettlement renters seem to be the most disadvantaged sub-group among the poor households in all aspects of housing conditions.

Discussion and conclusion

In summary, this study examines the variation of housing conditions among Nanjing's poor households from the perspectives of Hukou, housing tenure and distribution, and housing change. Our results are certainly limited by the specificity of the city, and hence cannot be over interpreted. However, as one of the few attempts by scholars to capture the housing condition of the poor, based on a considerably large random sample (around 1000 households) and a multi-criteria screening process to select the poor for face-to-face interview, it provides important insights into China's housing conditions for the urban poor from three perspectives. We examine these to explore the housing differentiation among the poor in Chinese cities, based on the context of several driving forces of housing changes in china. *First*, in regard to the impact of Hukou, we have found that those with local urban Hukou generally have better conditions than other families, although non-local urban households (urban migrants) have the largest (but not the best-quality) housing. In particular, rural migrants, i.e. those with non-local rural Hukou, suffer the most severe housing difficulties. *Second*, as for housing tenure, both owners and self-dependent dwellers live in considerably larger housing than renters, but only owners have better housing quality. Owners also rate their housing higher. The interaction of housing tenure and housing distribution shows that poor renters' housing conditions are largely dependent on whether they can obtain housing from work units or the municipal housing bureau. Those renting from the private market live in the worst conditions among the poor. *Finally*, as a survey conducted during the heyday of the latest round of urban redevelopment in Nanjing, this study, though not able to include the housing change information of the respondents who were then still negotiating a compensation package, very well captures the impact of the major rounds of housing change on the urban poor living inside the city. Resettlement is found to be a major reason for housing change, and housing conditions for those who resettled after 1979 are better than those who changed their housing for other reasons. However, resettlement has a negative impact on poor families without housing support from work units or the municipal government. For non-resettlement groups, work unit is the best source of housing distribution, while the government, represented by municipal housing bureau, is not competent in housing provision. While resettlement does not differentiate the housing conditions of owners, it greatly impacts renters. Renters who have not resettled since the reform live in worse conditions among the poor.

This study reveals that the urban poor's housing in today's China features the following characteristics. It is (1) path-dependent, as elements of the old institutions such as Hukou and work unit housing allocation remain influential factors in housing; (2) privatization-oriented, since private owners have access to better housing than non-owners; and (3) development-driven, because resettlement can usually lead to better housing. In detail, *first*, thirty years into the reform, there is no sign that unfair institutional divisions are waning. *Second*, the differentiation among various tenure types can be hardly hailed as progress: since even poor owners' housing standards are well below the city's average, their "advantages" over non-owners are more likely due to the worsening of housing conditions for those who cannot own, rather than a positive improvement brought by privatization. *Finally*, the effects of resettlement indicate a lack of housing welfare provision,

and the government struggles to provide housing to the poor without the backing of profit-driven or well-funded development projects. It is notable that the central government has recently started to press local governments in curbing housing prices and developing alternative (public) housing sources for lower-income classes. How significant this new 'public' housing sector is in affecting the poor's housing differentiation and prospects has yet to be studied. In fact, our study shows that poor families that are still under the influence of the old system, e.g. those living in work unit housing, seem to be suffering less housing difficulties than those more exposed to the reform, e.g. poor families who have to seek housing in the private market. This is an indicator that the current housing reform in China, which aims to gradually eliminate the old system, has been actually undermining the housing prospects of the urban poor due to the lack of a working housing welfare system. A housing provision system that can pro-actively assure the poor's basic right to housing is urgently needed.

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