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The Downside of Marketization: A Multilevel Analysis of Housing Tenure and Types in Reform-era Urban China

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Abstract

Based on data from the 2005 National Population Sample Survey and compiled covariates of 205 prefectures, this research adopted principal-component and multilevel-logistic analyses to study homeownership in urban China. Although the housing reform has severed the link between work units and residence, working in state sectors (government, state-owned enterprises and collective firms) remained significant in determining a household's entitlement to reform-era housing with heavy subsidies or better qualities. While the prefecture-level index of marketization reduced local homeownership of self-built housing, affordable housing and privatized housing, its effect is moderated by cross-level interactions with income, education and working in state sectors across different types of housing. Meanwhile, the index of political and market connections promoted all types of homeownership except for self-built housing. By situating the downside of marketization within a context of urban transformation, this research not only challenges the teleological premise of the neoliberal market transition theory but calls for research on institutional dynamics and social consequences of urban transformation in China.

Keywords

Housing tenure; market transformation; persistence of power; urban China

INTRODUCTION

With skyrocketing housing prices in urban China over the past decade, inequality in housing tenure has been thrust into public discourse. Although scholars largely agree that market transformation can promote income growth, property rearrangement, and the rise of

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entrepreneurs (Bian and Logan, 1996, Nee, 1989), one should be cautious in interpreting benefits in these areas as overall benefits during the market transformation. In this regard, the stratification of homeownership deserves attention because it is the most important domain where “commodification of redistributive privileges” strikes (Szelenyi and Manchin, 1987). Whereas household-level characteristics of housing inequality in China’s major cities, such as Beijing, Shanghai and Guangzhou, have been systematically studied (Li, 2000, Wu, 2002, Zhu, et al., 2012), it remains unclear how the overall home ownership in urban China is shaped by both household and local characteristics, especially the latter, in more recent years.

Therefore, this research on housing tenure in urban China mainly addresses two questions. First, are socio-economic indicators (occupation, types of work units, education and income) significantly associated with household-level homeownership in reform-era China? If yes, does the relationship support *the market transition* theory or *the persistence of power* theory (Bian and Logan, 1996, Nee, 1989)? Second, does the macro-level process of market transformation influence prefecture-level housing tenure? If yes, does market transformation promote or reduce local home ownership? Based on micro sample data from the 2005 (1 percent) National Population Sample Survey (NPSS) and compiled macro-level covariates of 205 adjacent prefectures in China’s central and eastern regions, we employ multi-level (multinomial) logistic analyses to illustrate how household socioeconomic status and local contexts of market transformation are relevant to urban housing tenure.

MARKET TRANSFORMATION: THEORIES AND DEBATES

This research draws upon two theoretical perspectives that have greatly influenced recent studies in (post-) socialist societies, the market transition *versus* the persistence of power theories. Based on the argument that social inequalities in socialist states must distinguish between immediate producers and redistributors (Szelenyi, 1983), Nee (1989) posited that a process of market transition, which gradually reward direct producers (e.g., manual workers) more than redistributors (e.g., cadres), would fundamentally change social stratification in socialist China via incentives for production, returns to human capital, the growth of commerce, and alternative paths for social mobility. However, its teleological premise that marketization will lead to an overall improvement of social well-being has been questioned by subsequent studies (Bian and Logan, 1996, Szelenyi, 2002). Different from the neo-liberal proposition that *all boats rise* in a highly marketized society, the persistence of power theory (Bian and Logan, 1996) postulates that the benefits from China’s market transformation spread unevenly such that individuals with positional power and institutional credentials remain better off than others. As long as political power continues to confer control over resources, incumbents, either as agents of the central authority or administrators of local economy, can still claim their benefits in the reform era.

Moreover, it has been demonstrated that social stratification in reform-era urban China is shaped not only by occupation but by work units (workplace or *danwei*), the key institutions through which the state exercised control over the society (Bian and Logan, 1996, Lin and Bian, 1991). As economic and social resources were possessed by state authorities, work units in urban China were primary institutional channels through which both economic

activities and social life were organized (Bian and Logan, 1996, Lin and Bian, 1991): work units not only facilitated the operation of the authoritarian regime via resource allocation, capital production and labor distribution, but also coordinated access to welfare and neighborhood-based resources (Logan, 1993). The institutional power attached to work units operating at different levels of the political hierarchy consequently determined its employees' entitlement to differential social resources, economic benefits and public goods (Lin and Bian, 1991). During the market transformation, the institutional power of work units has not only remained intact but strengthened because the state's emphasis on economic performance in the reform era has transferred substantial decision-making power from government officials to work units (Bian and Logan, 1996, Wu, 2002). For example, as compared with non-state sectors possessing peripheral positions in reform-era China, state sectors (i.e., government agencies and state-owned enterprises, or SOEs) occupying core positions can provide their workers with considerably higher income and more extensive material benefits (e.g., housing and medical care).

Finally, for a socialist state with salient regional variations, students of market transformation cannot fully comprehend who gains and who loses from this consequential transformation unless the role of local characteristics has been seriously examined. With regard to the measures of marketization at the aggregate level, scholars initially attempt to capture the market force by comparing returns to capital at two or multiple time points (Nee, 1989). Subsequent studies measured the market transformation by a concrete variable relevant to economic performance (e.g., Xie and Hannum, 1996), such as GDP or industrial growth. Yet, it is argued that the market transformation is not equivalent to economic growth because the latter can be achieved by a variety of factors (such as technological innovations) other than a move towards a market-oriented economy (Fan and Wang, 2003). Based on this reasoning, we constructed multi-dimensional measures of market transformation by retrieving macro-level data from a varieties of official yearbooks, publications, and databases, which highlight several dimensions of the market transformation, such as labor market, capital market, product market and market environment (Bian and Zhang, 2002, Fan and Wang, 2003).

URBAN HOUSING IN CHINA: MOVING FROM SOCIALIST REDISTRIBUTION TO OPEN MARKET

Urban housing is virtually regarded as a welfare policy under state socialism (Logan, et al., 2002, Szelenyi, 1983). Under such ideology of housing provision, housing property rights in urban China were generally possessed by work units, which accommodate the housing needs of their employees by collecting nominal rents (Li, 2003). While the central government tried to keep its socialist promise that housing was a universal provision, urban housing provision system in pre-reform China illustrated the significance of bureaucratic power and seniority in reproducing social inequality (Huang, 2003, Logan, 1993). For example, whereas people from a work unit usually lived in the same residential compound with homogeneous exteriors, the allocation of housing with better quality (e.g., more number of rooms, favorable orientation of the apartment units, and lower floors on which an apartment was located) favored high-rank officials and senior workers (Lu, 2006). Moreover, an

important problem inherent to this housing welfare policy is serious housing shortage during the pre-reform era (Zhou and Logan, 2002). In the state socialism, the provision of housing, like other consumer goods, generated little revenues for the socialist state but competed for limited capital and labor resources with industrial growth, which was accordingly assigned a low priority by central and local authorities. Hence, the shortage of housing was deeply embedded in this socialist ideology of housing provision. One extreme case was that the floor space per capita in Shanghai was only 4.5 m² (about 48.6 feet²) in 1978 even if old-lane houses were included in the calculation (Wu, 2001). Likewise, after its transition to communism, the rate of housing construction in Hungary from 1950 to 1955 was lower than the rates in 1940s, 1930s and even 1920s (Szelenyi, 1983).

The housing reform in urban China thus constitutes a gradual but fundamental transformation. The first step initiated in 1988 was to specify the central government's attempt of gradually transforming housing from welfare into commodity (Huang and Clark, 2002, State Council, 1988). After 1988, the central government made multiple announcements to raise rents and implemented policies to sell the work-unit housing to existing occupants with heavy discounts (Davis, 2003, Li, 2003). In 1994, the development of commodity housing (*shang ping fang*), a new type of housing built by real estate developers and distributed via the open market, was advocated by the central government as an important way to meet housing needs (State Council, 1994). The introduction of commodity housing somewhat severed the link between work units and residence because housing-tenure choice of a household was no longer subject to welfare provision prescribed by a work unit. At this stage, the market force was still restricted to owner-occupancy, whereas "ownership of housing for profit" in a market-dominated economy was still absent (Szelenyi and Manchin, 1987). It was not until 1998 that China's central government announced to deregulate its urban housing market, which entirely detached housing allocation from a person's work unit or *danwei* (State Council, 1998). The extensive recommodification of housing units after 1998 gave rise to the emergence of a new social stratum, *homeowners*, and an extremely profitable real estate industry in urban China. In a nutshell, the housing reform initiated in 1988 successfully promotes the provision of urban housing, whereas the rearrangements in housing property rights in 1998 result in a highly diversified and increasingly stratified housing market in reform-era urban China. Because the urban housing market allows households to cash in on power and resources that were not distributed evenly in the pre-reform era, the privatization of urban housing *per se* has become an important source of social inequality (Wu, 2002).

According to different mechanisms through which housing property rights were obtained, four major types of housing coexist in reform-era urban China. (1) Self-built housing refers to housing units built and occupied by urban residents themselves (Huang, 2003). Self-built housing in China's context should be distinguished from its Western counterpart, which is self-designed and assembled to satisfy specific needs of middle-class homeowners. In China, self-built housing mainly includes housing units in rural areas, the periphery of urban cities and urban villages where land is collectively owned by households. Self-built housing units also includes these constructed by urban residents in the 70s or 80s to meet housing shortage (Zhang, 1997). In addition, it should be pointed out that very few housing units which were

privately owned prior to the foundation of the People's Republic in 1949 also fall into this category (Logan, et al., 2009, Whyte and Parish, 1985). After the central government tried to rectify its mistakes made in Maoist China, some of these housing units previously occupied by working-class families during political turmoil were gradually returned to previous owners in the early 1980s. Due to inadequate investment, most self-built housing units have inferior quality and inadequate facilities for heating, cooking and sanitation (Logan, et al., 2009). (2) Privatized *danwei* housing units, also known as *danwei-reform* housing or *fang gai fang*, are housing units previously owned by a work unit and sold to their employees at discounted prices. Persons outside the work unit are ineligible for this type of housing. (3) Commodity housing units refer to housing units newly developed by real estate developers and sold in the open market. While commodity housing has overall good quality (gated communities, round-the-clock security systems, gyms, business centers, etc.) as compared with other types of housing, its housing price increased substantially during China's housing reform. As early as the year 2002, it was estimated that the price of an average apartment in Beijing was equivalent to more than 30 times of the average yearly disposable income possessed by a household (Tomba, 2004). (4) Affordable housing targets on low- or medium-income households. As affordable housing is heavily subsidized by the government, it enjoys preferential policies in terms of land allocation, mortgage and infrastructure cost waiver. For example, urban land for building affordable housing is usually allocated by administrative measures instead of market mechanisms, which means that the expenses of land conveyance, or the transfer of land-use rights from local governments to developers, are not included in the price of affordable housing (Ding, 2003, State Council, 1994). Yet, requirements for applicants of affordable housing in China are different from these of government-subsidized housing in Western countries. Qualified applicants of affordable housing usually need to have non-agricultural local *hukou* status and satisfy a series of requirements stipulated by local governments, such as work in state sectors (Huang, 2003).

DATA, VARIABLES AND METHODS

Data

This research is based on China's 2005 1% National Population Sample Survey (2005 NPSS, or China's mini-census) dataset. The total sample size of the NPSS is 17.05 million, which represents 1.325% of China's population at the reference time (State Council and State Statistical Bureau, 2007). Our analysis is based on a 15% random sample (N=2,585,480), which was drawn by the State Statistical Bureau using random interval sampling on the overall 2005 NPSS dataset. The reference time for this survey's target population was set as 0 AM on November 1, 2005 and households were selected by a three-stage stratified cluster proportional sampling. According to the estimation from post-enumeration checks, the non-response rate of the 2005 NPSS is 1.72%, which suggests the reliability of this dataset (Siegel, et al., 2004). Because housing reforms in urban China were not initiated until the year 1988, housing units built in and after 1988 are included in the analyses.

Due to the availability of prefectural-level data, the analysis is restricted to urban areas in China's central and eastern regions. Based on each area's level of urbanization, the State Statistical Bureau divides mainland China into three statistical categories: city (*shi*), town (*zhen*) and village (*xiangcun*). Since the first two categories are officially combined to denote the urban areas, this research excludes households from the *village* area in 2005 NPSS. The eighteen provinces and municipalities (*Beijing, Tianjin, Hebei, Shanxi, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Henan, Hubei, Hunan and Guangdong*) in this research accounted for 71.3% of the country's population and contributed 82.6% of the nation's GDP in 2005 (State Statistical Bureau, 2006). Hence, the eighteen provinces (205 prefectures included) cover the main body of China in a demographic and economic sense. This geographic area of our analyses also covers most regions studied by previous research (Huang and Clark, 2002, Li, 2000, Logan, et al., 2009, Wu, 2002), which allows for possible comparisons between our results and previous findings.

Dependent variables

This research employs two categorical variables to measure access to urban housing in reform-era China: housing tenure and housing types. *Housing tenure* measures whether a household owned (=1) or rented (=0) a house at the reference time of the 2005 NPSS. This dependent variable and the following *housing types* variable are constructed according to household heads' responses to the "housing source" question in the household-level questionnaire. *Housing types* further decomposes *housing tenure* into six categories: self-built housing, commodity purchased housing, privatized *danwei* (purchased) housing, affordable purchased housing (or public housing), public rental housing and commodity (private) rental housing. While different types of homeownership have been addressed previously, the heterogeneity in rental housing deserves attention. Despite the severed link between work units and housing allocation in the reform era, certain work units (e.g., government agencies, universities and state-owned enterprises) possessing a great amount of public housing at their disposal are still capable of providing rental housing to some of their employees at a low cost. These employees who pay discounted rents for their public housing are better off as compared with people who rent housing units from the open market without any subsidies.

Household-level independent and control variables

This research uses characteristics of household heads as household-level variables. This strategy has been frequently adopted by previous studies in this field for two reasons (e.g., Huang and Jiang, 2009, Li, 2003, Logan, et al., 2009). First, among all family members, the socio-economic characteristics of a household head are mostly relevant to these of an entire household in China.¹ Second, such treatment allows for the inclusion of single-person or single-parent families and thus prevents problems resulting from sample (re-)selection. A household head's *age*, *aged-squared*, *sex* (male=1 and female=0) and *marital status* (currently married=1 and otherwise=0) are set as household-level control variables. Given

¹We have also tested the association between characteristics of the spouse of a household head and housing outcomes. All of main findings are replicated.

institutional disadvantages associated with rural migrants (Wu and Treiman, 2007) and their adverse urban housing conditions, *agricultural hukou* (agricultural *hukou*=1 and otherwise=0) and *local hukou* status (registered in the same prefecture=1 and otherwise=0) of a household head are also included as control variables. *Both family generations* (the number of generations living in a household) and *household sizes* (the number of persons living in a household) are considered to account for influence of family structure on housing-tenure choice.

With regard to independent variables, *years of schooling* is an ordinal variable constructed using information on household heads' educational attainment, which is constructed according to the following procedures: illiterate=1 year of schooling; elementary education=6 years of schooling; junior secondary education=9 years of schooling; senior secondary education=12 years of schooling; professional tertiary education=15 years of schooling; bachelor degree=16 years of schooling; graduate degree or above=19 years of schooling. *Log earnings* is a continuous independent variable. In the 2005 NPSS, the question concerning earnings inquired about a respondent's monthly income from production, administration and service in October 2005. This excludes any income earned by non-labor factors, such as property, transfers and inheritance (State Council and State Statistical Bureau, 2007). Respondents were asked to report their latest earnings if they failed to obtain earnings in October in 2005 and to report their anticipated earnings if they had not yet received the monthly payment for October 2005.

Work units are types of work units (*danwei*) denoted by a group of dummy variables, with government agencies as the reference group. The other five categories are: (1) *state-owned enterprises* (SOEs); (2) *collective firms*; (3) *individual/household ventures*; (4) *private firms*; and (5) *foreign invested enterprises (FIEs) and others*. Because non-state entities are not allowed to operate in certain industries (e.g., transport, postal services, telecommunications, utilities, tobacco manufacturing, petroleum, petrochemical and chemical industries) that are of paramount importance to national economy, SOEs operating in these industries can derive lucrative profits from their monopoly of these valuable markets (Bian and Zhang, 2002). Consequently, employees in these state monopoly sectors not only have more material benefits than their peers working in open sectors, but also enjoy preferential provision of public goods, such as housing and medical care (Bian and Zhang, 2002, Lin and Bian, 1991). To account for such monopoly profits retained by state monopoly sectors, the SOEs are further divided into state monopoly sectors and open sectors according to whether the investment of foreign capital is forbidden in certain industries, such as tobacco, oil & gas, power supply and banking (National Development and Reform Commission, [1995, 1997, 2002] 2004). Because these "core sectors" maintain closer connections with communist rule (Lin and Bian, 1991), individuals working in government agencies and SOEs, especially state monopoly sectors, are expected to have more benefits over others and are thus combined to denote *state sectors*.

Finally, *Occupations* are denoted by a group of dummy variables, with *manual workers* as the reference group. The other five categories are: (1) *cadres*; (2) *entrepreneurs*; (3) *professionals*; (4) *clerical staff*; and (5) *services*. It should be noted that an *entrepreneur* per se does not necessarily mean that he/she initiated an enterprise, rather, he/she is "an owner

or manager” of a business/company (Bian and Zhang, 2002), which represents a sense of entrepreneurship during market transformation. Likewise, cadres and supporting clerical staff who are deeply involved in the decision-making process and thus determine the allocation of public goods at their work units are believed to have high redistributive power (Bian and Logan, 1996).

Prefecture-level variables

Several prefecture-level variables were retrieved from a series of official publications, i.e. China City Statistical Yearbook, China Statistical Yearbook and China Statistical Yearbook for Regional Economy, to capture prefecture-level local politics and multifaceted market transformation across 205 prefectures. With regard to control variables, *Population density* (persons per square kilometer) is a continuous variable to control for the effect of *de facto* population density in 2005. The following two dummy variables, *Planned Independent Cities* (*jihua danlie shi*) and *municipalities* and *Yangtze/Pearl River Delta districts*, are employed to control for the influence of regional disparity on local housing tenure. *Planned Independent Cities and municipalities* is a dummy variable to measure the effect of government jurisdictions. The administrative ranks of Planned Independent Cities and municipalities are higher than the rest of the prefectures, which are extremely important during their bargains with the central government and can usually bring favorable resources for local uses (Logan, et al., 2002, Shirk, 1993). For instance, 43.6% of prestigious universities receiving intensive national support (“985 project” universities) are concentrated in only nine municipalities and Planned Independent Cities out of 282 cities in China. *Yangtze/Pearl River Delta districts* is a dummy variable to measure the effect of regional development policy. The two delta districts benefit most from China’s regional development policy and in turn their rapid economic development greatly boosts China’s overall economy (Naughton, 2007, Shirk, 1993). In 2005, about 7% of China’s cities located in the Yangtze/Pearl delta districts utilized more foreign capital than the remaining majority of the nation (State Statistical Bureau, 2006). Meanwhile, Yangtze/Pearl River Delta districts provide more opportunities for economic success and upward social mobility, and exhibits different local patterns of housing dynamics (Li, 2000, Logan, et al., 2009, Wu, 2002, Zhu, et al., 2012).

Because different variables have been employed in existing studies to denote macro-level market transformation, a series of variables are retrieved to account for the effect of prefecture-level market transformation on local housing tenure. *GDP per capita in 2005* is a continuous variable denoting a prefecture’s size of Gross Domestic Product in 2005, adjusted by *de facto* population in 2005. *GDP growth rate* is a continuous variable to denote local economic growth in a certain prefecture, adjusted by year-to-year inflation rates. Though the central government announced deregulation of urban housing market in 1998, it was not until December 31, 1998 that this policy began to take effect. Therefore, a prefecture’s GDP growth rate from 1999 to 2005 is used in this research. These two variables were retrieved from three data sources: *China Statistical Yearbook for Regional Economy* (2000–2007), *China City Statistical Yearbook* (2000–2007) and a series of Statistical Yearbooks of different provinces. Although the two variables were previously used to gauge macro-level market transformation (Hauser and Xie, 2005, Xie and Hannum,

1996), it has been previously discussed that the GDP growth rate *per se* is not identical to market transformation as economic growth can also originate from mechanisms other than market expansion, such as the introduction of new technology and capital investment (Bian and Zhang, 2002). Hence, this research employs a series of variables to measure multifaceted market transformation. **Proportion of foreign investment** is a continuous variable to denote the proportion of industrial output invested by foreign capital to overall industrial output. This variable was obtained from *China's Statistical Yearbook for Regional Economy 2006* and it measures the level of marketization in capital market (Bian and Zhang, 2002, Fan and Wang, 2003). **Ratio of non-state vs. state labor** is a continuous variable to denote the ratio of state workers to non-state workers in a certain prefecture. State workers are defined as workers working in SOEs or collective firms. This variable was also obtained from *China's Statistical Yearbook for Regional Economy 2006* and it measures levels of marketization in labor market (Bian and Zhang, 2002, Fan and Wang, 2003). **Proportion of non-government workers** is a continuous variable to denote the proportion of persons working in government and SOEs to the overall workers. This variable was generated directly from the 2005 NPSS dataset and it also measures the level of marketization in labor market (Fan and Wang, 2003). **Value added tax per capita** is a continuous variable to denote the value added tax adjusted by the local *de facto* population size. The quantity of value added tax in a certain prefecture was also obtained from *China's Statistical Yearbook for Regional Economy 2006* and it measures the marketization level in product market (Fan and Wang, 2003). **Proportion of market-related jobs** is a continuous variable to denote the percentage of workers participated in finance-, economy- and law-related jobs in local labor force, such as accountants, auditors, lawyers, notaries and professionals working in banks, securities firms and insurance companies. This variable was generated directly from the 2005 NPSS dataset and measures local market environment (Fan and Wang, 2003).

METHODS

To study the influence of both household and prefectural characteristics on housing tenure (owning versus renting) and housing types, this research employs a three-step analysis. At the first step, a principal component analysis (PCA) was conducted on the seven indicators of market transformation (see Appendix 1). This method not only addresses collinearity among these indicators but also produces two meaningful indices (components with eigenvalues greater than 1) for further analyses. The first component, the index of marketization, has higher loadings (greater than 0.3) on all indicators of market transformation except for the proportion of market-related jobs and the proportion of non-government workers. A higher value of this index suggests a higher level of marketization of a prefecture. In contrast, the second component, the index of political and market connections, has higher loadings (greater than 0.3) on the proportion of market-related jobs and the proportion of (non-) government workers. A higher value of this index means that a higher proportion of local population working in state sectors and having finance-, economy- and law-related jobs. Together, the two components explained 65.2% of the variance.

Next, the following two steps use different methods to treat categorical dependent outcomes: multilevel logistic regression for housing tenure and multilevel multinomial logistic

regression for housing types. More specifically, the within-prefecture logistic model for the odds of homeownership is:

$$\log\left(\frac{\text{Prob}(\text{owned}_{ij})}{\text{Prob}(\text{rented}_{ij})}\right) = \beta_{0j} + \sum_{q=1}^{19} \beta_q (X_{qij} - \bar{X}_{qj}) + \varepsilon_{ij} \quad (1)$$

where β_{0j} is the household-level intercept; X_{qij} is the value of household-level covariate q associated with household i in prefecture j ; β_q is the coefficient of that covariate; and $\bar{X}_{qj}$ is the sample mean of covariate q within prefecture j . The household-level error term (ε_{ij}) is assumed to be independently and normally distributed with mean zero and variance σ^2 .

The between-prefecture model for housing tenure is:

$$\beta_{0j} = \gamma_{00} + \sum_{s=1}^5 \gamma_{0s} Z_{sj} + \sum_{t=1}^3 \gamma_{0t} Z_{tj} (X_{tij} - \bar{X}_{tj}) + u_{0j} \quad (2)$$

where γ_{00} is the overall intercept, Z_{sj} is a prefecture-level covariate and γ_{0s} is the coefficient associated with prefecture-level covariate s of prefecture j . γ_{0t} measures the effect of interactions between a specific prefecture-level covariate Z_{tj} and several group-centered household-level covariates X_{tij} . u_{0j} is the prefecture-level error term, which is assumed to be normally distributed with mean zero and variance τ .

Likewise, the within-prefecture multinomial logistic model for the odds of housing types is:

$$\log\left(\frac{\text{Prob}(\text{housing type}_{(m)ij})}{\text{Prob}(\text{private rental housing}_{ij})}\right) = \beta_{0j(m)} + \sum_{q=1}^{19} (\beta_{q(m)} X_{qij(m)} - \bar{X}_{qj(m)}) + \varepsilon_{ij} \quad (3)$$

where the housing type refers to owning self-built housing, owning commodity housing, owning affordable housing, owning privatized *danwei* housing and public rental housing when m equals one to five, respectively. Definitions of other parts of the model are analogous to these in equation (1), except that $\beta_{0j(m)}$, $\beta_{q(m)}$ and $X_{qij(m)}$ refer to intercept, coefficients and covariates associated with the m^{th} housing type. When the value of m is given, $\bar{X}_{qj(m)}$ is the sample mean of covariate q within prefecture j .

The between-prefecture model for housing types is:

$$\beta_{0j(m)} = \gamma_{00(m)} + \sum_{s=1}^5 \gamma_{0s(m)} Z_{sj(m)} + \sum_{t=1}^3 \gamma_{0t(m)} Z_{tj(m)} (X_{tij(m)} - \bar{X}_{tj(m)}) + u_{0j(m)} \quad (4)$$

where $\gamma_{00(m)}$ is the overall intercept, and $\gamma_{0s(m)}$ is the coefficient of the m^{th} housing type associated with prefecture-level covariate s in prefecture j . $u_{0j(m)}$ is the prefecture-level error term, which is assumed to be normally distributed with mean zero and variance $\tau_{(m)}$. $\gamma_{0t(m)}$ measures the effect of interactions between a specific prefecture-level covariate $Z_{tj(m)}$ and several group-centered household-level covariates $X_{tij(m)}$. As suggested by equation (1)–equation (4), random effects enter the two models at the household-level's intercepts. The household-level's covariates are group-centered to yield unbiased within-group estimates and identify meaningful cross-level interactions (Hofmann and Gavin, 1998, Raudenbush

and Bryk, 2002). All multilevel logistic models are estimated by PROC GLIMMIX of SAS 9.3 (Littell, et al., 2006).

Built upon an utility function of housing tenure and types, it has been shown that the choice of statistical methods for analyzing housing tenure is heavily influenced by an underlying conceptual difference: whether a tenure decision is made before a household chooses from housing types bounded by a prior preference of housing tenure (owning versus renting) or a household simultaneously chooses from a series of available housing types regardless of housing tenure (Skaburskis, 1999). Meanwhile, multinomial logistic modeling would be preferred over binary logistic modeling if policy makers regard alternatives in housing market as independent and distinct (McFadden, 1974). Although homeownership is strongly and culturally favored by Chinese households (Huang, 2003), a household's choice space of housing tenure and types in a highly segmented housing market varies according to family income, types of work units and *hukou* status. In this regard, scholars have yet to understand to what extent housing tenure and types are *choices* made by Chinese households and whether the types of housing are selected before tenure decisions are made. To provide a comprehensive examination of housing stratification in urban China, both binary and multinomial logistic models are employed to investigate housing outcomes.

RESULTS

Descriptive analyses of household-level covariates across different housing types are shown in Table 1. In general, most household heads were middle-aged married males. Homeowners of commodity housing tended to be younger, female and single as compared with other homeowners, whereas tenants of public rental housing were older than these in private rental housing. Among occupants of all types of housing, homeowners of self-built housing and tenants of private rental housing had higher proportions of agricultural *hukou* status. Meanwhile, homeowners were more likely to be local residents as compared with tenants. As expected, homeownership (especially for self-built housing) instead of tenancy is associated with more family generations and sizes.

In terms of occupation, higher proportions of homeowners from commodity housing, economic affordable housing and privatized *danwei* housing were cadres, entrepreneurs, professionals and clerical staff, whereas the majority of self-built housing units and rental housing units were occupied by workers in business service and manual laborers. Homeowners of commodity housing, affordable housing and privatized *danwei* housing also had higher income and years of schooling than other homeowners and tenants. With regard to work units, the majority (about 83%) of homeowners of self-built housing were people working in collective firms, individual/household ventures, private firms and foreign-invested enterprises. In other words, while a great share of commodity housing, economic affordable housing and privatized *danwei* housing were owned by household heads working in state sectors, workers from non-state sectors made up the majority of tenants and homeowners of self-built housing. As compared with tenants living in private rental housing, a greater proportion of tenants of public rental housing were workers from state sectors. For prefecture-level variables, Planned Independent Cities & municipalities and prefectures located at Yangtze/Pearl River Delta districts accounted for 3.9% and 12.2% of

the 205 prefectures studied, respectively. The average size of economy in the 205 prefectures increases by 111.5% from 1999 to 2005, adjusted by inflation rates. Meanwhile, there is considerable variance in other indicators of market transformation across regions.

Results from multilevel logistic models for housing tenure are shown in Table 2. With regard to household-level characteristics, older, married and male household heads were more likely to obtain homeownership; age had a curvilinear effect on housing tenure (Model 1 in Table 2). Household heads with agricultural or non-local *hukou* status tended to be tenants. More family generations or sizes are significantly associated with the odds of homeownership.

Compared with manual workers, household heads who were cadres, entrepreneurs, professionals and clerical staff had better odds ratios of achieving homeownership, whereas those who participated in business service were more likely to be tenants (Model 2 in Table 2). Although both entrepreneurs and professionals were also better off during China's urban housing reforms, the advantage of cadres and supporting clerical staff over direct producers in homeownership supports the persistence of power theory. When the years of schooling and earnings of household heads were taken into account (Model 3 in Table 2), the advantage of cadres, entrepreneurs, professionals and clerical staff over manual workers greatly diminished and the sex disparity in housing tenure disappeared (non-significant at the 0.05 level). Moreover, the advantage of cadres and professionals over manual workers in homeownership was no longer significant if types of work units were included in Model 4, while the effect of clerical staff on homeownership further diminished. These results not only pointed to the significance of earnings, education and work units in determining the access to urban housing but suggested that economic capital, human capital and institutional credentials were the channels through which cadres capitalizing their political privilege in the urban housing market. In terms of work units, household heads from government agencies, SOEs (state monopoly sectors) and collective firms were more likely to obtain homeownership as compared with households working in foreign-invested enterprises and others.

In terms of prefecture-level characteristics, the population density has non-significant effect on housing tenure, while Planned Independent Cities & municipalities and prefectures located at the Yangtze/Pearl River Delta districts were significantly associated with lower local homeownership (Model 5 in Table 2). The index of marketization significantly reduced local homeownership, whereas the index of political and market connections promoted local homeownership (Model 6 in Table 2). As results in Model 4 highlight the importance of earnings, education and work units in urban housing market, the cross-level interactions between the three socio-economic indicators and the marketization index are also considered.² Because the advantage of working in government agencies and state-monopoly enterprises are demonstrated from Model 4 to Model 6, these two work-unit categories are

²We also tested the interactions between the index of political and market connections and the three SES indicators but only the interaction with education is significant. Further multinomial logistic analyses showed that such significant interaction between the index of political and market connections and education is primarily achieved by significantly reducing the odds of owning self-built housing and mildly increasing the odds of affordable housing. Due to space limit and research focus, these results are not reported but available upon request.

combined to denote state sectors for the test of cross-level interactions. As suggested by Model 7 in Table 2, high levels of marketization significantly promotes returns to earnings and education in the housing market but significantly reduces the return to working in state sectors.

Between-prefecture variance components τ^2 stayed around 0.78 when only household-level covariates were included (Model 1 to Model 4). The inclusion of prefecture-level covariates substantially reduced τ^2 from 0.798 in Model 4 to 0.656 in Model 6, which illustrates the importance of these prefecture-level covariates in explaining prefecture-level variations in homeownership across prefectures.

Meanwhile, because the changes in both τ^2 and the size of effect of the marketization index from Model 6 and Model 7 were mild, readers should be cautious in evaluating the relevance of cross-level interactions to prefecture-level housing outcomes. Finally, moderate pseudo intraclass correlation coefficients across models support the use of multilevel modeling (Snijders and Bosker, 2012).³

As the dichotomous *housing tenure* variable concealed a great deal of variation in housing stratification, we next conducted multilevel multinomial logistic analyses of housing types to further examine heterogeneity in housing tenure. When private (commodity) rental housing was set as the reference group in the multinomial logistic analyses (Table 2), older and married household heads still tended to own all types of housing. The association between male and owning self-built housing was significantly positive but a reverse association held for other types of housing. Agricultural *hukou* status was positively associated with owning self-built housing but negatively associated with owning other types of housing and renting public housing. Local residents or households with more generations were more likely to achieve homeownership or rent public housing. Larger household sizes were positively associated with the odds of achieving homeownership of self-built housing and commodity housing but negatively associated with the odds of public rental housing. As compared with manual workers, clerical staff and entrepreneurs were more likely to own commodity housing, whereas workers in service sectors were less likely to achieve other types of homeownership. Because the multilevel binomial logistic analyses (Model 2 to 4 in Table 2) has demonstrated that the effect of cadres and professionals on housing tenure could be mediated by education, earnings and types of work units, these mediating socio-economic indicators deserve further attention in multilevel multinomial logistic regression. Although household heads with more years of schooling were less likely to own self-built housing, more years of schooling and higher earnings were significantly associated with owning commodity housing, affordable housing and privatized *danwei* housing. More years of schooling were also positively associated with the tenancy of public housing. In terms of work units, the advantage of working in state sectors was well illustrated. When household heads working in foreign-invested enterprises and other uncategorized occupations were set as reference, household heads working in government agencies, SOEs and collective firms

³The intraclass correlation coefficients for multilevel logistic models are *pseudo* in the sense that the within-group residual variance is fixed. As compared with empirical examples given elsewhere, sizes of these coefficients are moderate (see Snijders and Bosker 2012: 303–313).

were not only much more likely to own commodity housing, affordable housing and privatized housing but tended to access public rental housing.

With regard to prefecture-level characteristics, Planned Independent Cities and municipalities and prefectures located at Yangtze/Pearl Delta districts were significantly associated with lower homeownership in affordable housing and privatized housing, net of other effects. The index of marketization significantly reduced local homeownership of self-built housing, affordable housing and privatized *danwei* housing, whereas the index of political and market connections significantly promoted local homeownership of commodity housing, affordable housing, privatized *danwei* housing and the odds of renting public rental housing. By breaking homeownership and tenancy into different categories of housing types, cross-level interactions of multinomial logistic models (private rental housing as reference) revealed a somewhat different picture from these yielded by binary logistic models with tenancy as reference. While high levels of marketization remained enhancing returns to earnings in the odds of owning commodity housing and suppressing returns to earnings in the odds of renting public housing, returns to education in owning self-built housing and affordable housing were significantly lower in prefectures having higher levels of marketization. Moreover, previous negative interactions between the marketization index and working in state sectors in Model 6 from Table 2 is explained by the finding that household heads working in state sectors having better access to public rental housing in more marketized regions, which supports persistence of power during China's urban transformation. Again, substantial shares of between-group variance explained by the inclusion of prefecture-level variables as well as the moderate levels of pseudo intraclass correlation coefficients corroborated the use and specification of multilevel modeling.

CONCLUSIONS AND DISCUSSIONS

Based on China's 2005 1% National Population Sample Survey and prefecture-level covariates retrieved from a series of statistical yearbooks, this research adopted a three-step analysis strategy to examine the association between indicators of market transformation and homeownership at both household and prefecture levels. At the household level, multilevel logistic analyses revealed that cadres and supporting clerical staff were more likely to achieve homeownership than manual workers did. More importantly, it is found that economic and social institutions established in pre-reform era China continue to influence housing tenure. As suggested by results from multinomial logistic models, both non-agricultural *hukou* status and working in state sectors, especially governments and SOEs operating at state monopoly sectors, confer benefits in obtaining reform-era housing with heavy subsidies or better qualities (commodity housing, affordable housing, privatized *danwei* housing and public rental housing). When education and earnings were taken into account, the advantage of redistributors (cadres) over direct producers (manual workers) in homeownership could be explained by work units. These results point to the significance of economic capital, human capital and institutional credentials, especially the latter, in shaping China's reform-era urban housing market.

At the prefecture-level, two meaningful indices — the index of marketization and the index of political and market connections — are generated by a principal component analysis of

prefectural covariates to investigate the effect of macro-level market transformation on local housing tenure. An interesting finding, which has not been reported elsewhere, is that the index of marketization reduced local homeownership but the index of political and market connections enhanced it. A closer examination of housing types using multilevel multinomial logistic analyses suggested that the index of marketization only reduced the local homeownership of self-built housing, affordable housing and privatized *danwei* housing but not that of commodity housing. In contrast, the index of political and market connections promoted all types of homeownership except self-built housing, and has significantly positive association with the odds of renting public housing. Although the inclusion of cross-level interactions hardly contributed to explanatory power of models, meaningful cross-level interactions did exist. In prefectures with higher levels of marketization, household heads having higher earnings, more years of schooling or working in state sectors appeared to be better off in urban housing market (e.g., easier access to owning commodity housing or renting public housing).

We interpret these household-level results of both housing tenure and types as evidence for the persistence of power theory in lieu of the market transition theory. Given that institutional power (e.g., state sectors and non-agricultural *hukou* status) still shape, if not determine, a household's entitlement to homeownership and subsidized rental housing, the allocation of housing in reform-era China remains a social problem because it reinforces the "perpetuation of social privileges and social disadvantages" (Szelenyi, 1983). In particular, as advantages of cadres, professionals and supporting clerical staff in achieving homeownership have been (partially) explained by education, earnings and work units, this research also suggests that occupational benefits are giving way to benefits attached to more fundamental socio-economic determinants, in particular, the type of a person's work units. Substantial advantages associated with working at state sectors well illustrate that institutional power of work units, the primary institutional mechanisms through which social life and economic activities in Maoist China were organized, has not only remained intact but has been consolidated due to the state's increasing emphasis on economic performance in recent years. Whereas economic decentralization, which is a byproduct of pursuing economic growth, has transferred substantial decision-making power from the central command system to work units, reforms in the early 1990s greatly reduced the size of and support to SOEs occupying peripheral positions in China's economy to enhance SOEs' performance in the market economy (Bian and Logan, 1996, Wu, 2002). Subsequently, benefits are now concentrated in the remaining state sectors (governments and SOEs in state monopoly sectors) which are vital to Communist rule and of paramount importance to China's economy.

The mismatch between prefectural-level results and the teleological premise of the neoliberal market transition theory prompts scholars to reflect on the downside of market transformation. Contrary to the neoliberal belief that a rising tide lifts all boats, marketization clearly failed to facilitate local homeownership, an essential indicator of social well-being in reform-era China (Huang, 2003, Li, 2003). Although market transition has been widely advocated as a solution to existing socialist problems, it is preposterous to believe that a country's overemphasis on market mechanism can lead to prosperity. To

debulk the myth of market transition, it has been shown that any society exclusively organized through a single economic order (either market or hierarchy or network) is inherently fragile (Stark, 2009). From a comparative perspective, it has also been argued that capitalism and socialism tend to be a mirror image of each other such that a dominant economic mechanism (the market mechanism in capitalism and the redistributive mechanism in socialism) is responsible for the rise of social inequality (Szelenyi, 1983). After an initial attempt of market reforms reduced social inequality and promoted social well-being, marketization tended to be accepted by once-skeptical officials as a normative agenda instead of an analytical tool. As multiple impacts of marketization are unfolding over time and begins to exert negative impact on social wellbeing with the gradual establishment of a market-oriented economy, the long-term influence of marketization and social-wellbeing deserves continuous attention.

Moreover, this downside of market transformation is interwoven with rationales driving local finance (Fu and Lin, 2013, Lin, 2009, Wu, 2002). Given that the fiscal link between local finance and the development of commodity housing has been greatly strengthened through fevered transfers of land-use rights from local state to real estate developers (or land conveyance), especially in more marketized regions, it is not surprising that self-built housing, affordable housing and privatized *danwei* housing, which generated little revenues for local governments but occupied precious urban land in highly marketized cities, are making way for the development of commodity housing as local officials reclaim their authority over urban territory through massive land seizures and (re)development (Ding, 2003, Hsing, 2010). When forcible land seizures and frequent displacement of existing housing units are fueled by fiscal pursuit of localities, rising housing prices and increasing revenues from land conveyance possessed by local governments are flip sides of a coin. Figure 2 shows that the average commodity housing prices and revenues from land conveyance has not only increased dramatically after China fully deregulated its urban housing market in 1998 but also strongly correlated with each other since then (the Pearson correlation coefficient is 0.955). As the fiscal coalition between local governments and real estate development perpetuates and magnifies itself, there is an even more radical increase in urban housing price in recent years. Consequently, we expect that it is increasingly difficult for residents in highly marketized prefectures to achieve homeownership after the 2005 NPSS was conducted.

Meanwhile, the positive effect of the index of political and market connections on local homeownership suggests the role of local occupational structure in a stratified housing market. As both political and market connections are associated with a household's access to commodity housing, privatized *danwei* housing and affordable housing, the prefecture-level homeownership can be driven by the proportion of local population having access to different types of urban housing (Li, 2000, Huang and Clark, 2002). Moreover, the increasing proportions of local residents who have either market or political connections may also be beneficial from a social justice perspective, since their existence "may force or enable the state sector to behave in a socially more just way" (Szelenyi and Manchin 1987:4).

Finally, we should realize that the cross-sectional dataset precludes definitive answers to some of the questions we tried to address in this paper. First, since the 2005 NPSS only targeted on the housing outcomes at the survey's reference time, we are unable to investigate China's urban housing market in more recent years despite a radical increase in housing price since the year 2005. Second, we lack a full understanding about the specific mechanisms through housing property rights are created, obtained and transferred in reform-era urban China. In particular, it is less clear how family members other than household heads are relevant to the choice of housing tenure. Given the fact that about 11.1% of homeowners of self-built housing were government officials, it is worthwhile to study how these officials obtained their housing property rights and whether a sub-category of self-built housing exists. It is also likely that households who were surveyed at their residence could have a second house somewhere else, which is not uncommon in China. Third, due to data unavailability, our measures of the multifaceted market transformation and local politics were far from exhaustive. Fourth, because our dataset was drawn by State Statistical Bureau from the 2005 NPSS for scholarly use, it is possible that bias can be introduced by this official re-sampling procedure. Given these limitations, subsequent studies bridging China's urban reforms and market transformation are mandated.

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Appendix 1

Principal components analysis of measures of market transformation

Variable	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Component 7
GDP per capita in 2005	0.493	0.231	0.006	0.153	−0.394	0.095	0.719
GDP growth rates	0.381	0.047	−0.526	0.534	0.531	0.020	−0.097
Proportion of foreign investment	0.423	−0.213	0.420	−0.147	0.319	−0.686	0.071
Ratio of non-state vs. state labor	−0.338	0.207	0.555	0.726	0.054	−0.059	0.043
Value added tax per capita	0.483	0.227	0.154	0.119	−0.459	0.012	−0.683
Proportion of market-related jobs	0.112	0.683	0.268	−0.357	0.471	0.316	−0.006
Proportion of non-government workers	0.271	−0.582	0.379	0.043	0.164	0.645	−0.008
Eigenvalue	3.111	1.451	0.830	0.614	0.498	0.354	0.142

Note: the first two components (the index of market transformation and the index of political and market connections) account for 65.2% variance.

- At the household level, institutional power affected housing tenure in urban China.
- At the prefecture level, the index of marketization mainly reduced homeownership.
- The index of political and market connections promoted homeownership.
- Cross-level interactions between marketization and socioeconomic variables exist.
- These findings are possibly related to institutional changes in urban

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Figure 2.

Trends in average commodity-housing prices and revenues from land conveyance in urban China, 1998 to 2011

Note: Data are retrieved from *China Land and Resources Statistics Yearbooks* (1999–2012) and *China Real Estate Statistics Yearbooks* (1999–2012).

Table 1

Household- and prefecture-level covariates for analyzing housing tenure and types in urban China

Household-level variables	Self-built housing			Commodity housing			Economic affordable housing			Privatized <i>Danwei</i> housing			Public rental housing			Commodity (private) rental housing		
	Mean	S.D.		Mean	S.D.		Mean	S.D.		Mean	S.D.		Mean	S.D.		Mean	S.D.	
Age	42.7	9.1		39.1	8.6		40.6	8.1		43.2	8.1		39.2	9.6		33.1	8.7	
Male	93.7%			81.1%			83.6%			83.1%			79.7%			79.4%		
Married	95.9%			92.2%			94.9%			94.1%			85.5%			78.6%		
Agricultural <i>hukou</i>	62.0%			12.2%			7.5%			2.2%			24.7%			73.2%		
Local prefectural <i>hukou</i>	98.0%			84.7%			93.8%			94.5%			71.6%			22.8%		
Family generations	1.9	0.6		1.7	0.6		1.7	0.6		1.7	0.5		1.6	0.6		1.3	0.5	
Household sizes	3.0	1.3		2.6	1.0		2.6	0.9		2.5	0.9		2.2	1.0		2.0	1.0	
Occupation																		
Cadre	1.8%			2.1%			3.3%			2.8%			1.1%			0.3%		
Entrepreneur	3.7%			9.1%			4.7%			5.1%			4.0%			4.3%		
Professional	8.9%			23.3%			24.2%			24.8%			18.8%			6.9%		
Clerical	7.6%			17.7%			19.0%			22.8%			12.9%			5.4%		
Service	29.8%			23.8%			19.6%			15.4%			31.5%			40.5%		
Manual workers	47.5%			23.6%			28.7%			28.9%			31.3%			42.3%		
Years of schooling	9.2	2.7		12.5	3.0		12.4	2.9		12.7	2.9		11.4	3.1		9.8	2.9	
Log of earnings	6.8	0.6		7.3	0.7		7.0	0.6		7.1	0.6		7.0	0.6		7.0	0.6	
Work Units (types of <i>danwei</i>)																		
Government	11.1%			25.4%			32.4%			32.4%			18.5%			3.0%		
SOEs: state-monopoly sector	2.1%			9.4%			13.7%			18.2%			8.7%			1.3%		
SOEs: open sector	4.1%			14.4%			20.8%			26.2%			19.9%			3.6%		
Collective firm	6.0%			5.3%			5.1%			4.3%			5.2%			3.0%		
Individual/household venture	39.7%			18.5%			12.6%			6.2%			22.0%			41.6%		
Private firm	18.4%			16.9%			9.2%			7.8%			14.5%			29.5%		
Foreign-invested enterprise and others	18.5%			10.1%			6.2%			5.0%			11.1%			18.0%		
Number of observations (households)	26,605			28,188			7,512			15,266			5,427			20,838		
Prefecture-level variables (Number of prefectures=205)																		
Population density (people per square	555.572	640.188		--			--			--			--			--		

	Self-built housing	Commodity housing	Economic affordable housing	Privatized <i>Danwei</i> housing	Public rental housing	Commodity (private) rental housing
Planned Independent City & municipality	3.9%	--	--	--	--	--
Yangtze/Pearl River Delta districts	12.2%	--	--	--	--	--
GDP per capita in 2005 (<i>yuan</i>)	16602.5	11681.2	--	--	--	--
GDP growth rates	1.115	0.267	--	--	--	--
Proportion of foreign investment	0.183	0.191	--	--	--	--
Ratio of non-state vs. state labor	3.179	2.847	--	--	--	--
Value added tax per capita (10,000 <i>yuan</i>)	0.018	0.021	--	--	--	--
Proportion of market-related jobs	0.034	0.013	--	--	--	--
Proportion of non-government workers	0.596	0.138	--	--	--	--

Note: One US dollar was approximately equivalent to eight China *yuan* in 2005.

Table 2

Results from multilevel binary logistic models on housing tenure ^{a b}

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Household-level variables (N= 103,836)							
Age	0.131(.008)***	0.130(.008)***	0.114(.008)***	0.114(.008)***	0.114(.008)***	0.114(.008)***	0.119(.008)***
Square of age ^c	-0.011(.001)***	-0.011(.001)***	-0.008(.001)***	-0.008(.001)***	-0.008(.001)***	-0.008(.001)***	-0.008(.001)***
Male	0.110(.027)***	0.087(.028)**	-0.042(.028)	-0.030(.029)	-0.030(.029)	-0.030(.029)	-0.028(.029)
Married	0.251(.035)***	0.235(.035)***	0.242(.035)***	0.232(.035)***	0.232(.035)***	0.232(.035)***	0.262(.036)***
Agricultural hukou	-1.097(.021)***	-0.888(.022)***	-0.617(.025)***	-0.529(.026)***	-0.529(.026)***	-0.529(.026)***	-0.509(.026)***
Local prefectural hukou	2.395(.023)***	2.385(.023)***	2.444(.024)***	2.435(.024)***	2.433(.024)***	2.433(.024)***	2.435(.024)***
Family generations	0.631(.026)***	0.629(.026)***	0.646(.026)***	0.636(.026)***	0.635(.026)***	0.635(.026)***	0.630(.027)***
Household sizes	0.120(.014)***	0.129(.014)***	0.120(.015)***	0.132(.015)***	0.132(.015)***	0.132(.015)***	0.135(.015)***
Occupation: manual workers as contrast							
Cadre		0.667(.104)***	0.268(.105)*	0.136(.108)	0.137(.108)	0.138(.108)	0.127(.109)
Entrepreneur		0.600(.047)***	0.183(.049)***	0.265(.049)***	0.264(.049)***	0.264(.049)***	0.187(.049)***
Professional		0.435(.033)***	0.071(.036)*	-0.010(.038)	-0.010(.038)	-0.010(.038)	-0.047(.038)
Clerical		0.536(.037)***	0.278(.038)***	0.177(.040)***	0.177(.040)***	0.177(.040)***	0.157(.040)***
Service		-0.375(.024)***	-0.394(.024)***	-0.241(.025)***	-0.241(.025)***	-0.241(.025)***	-0.254(.026)***
Years of schooling				0.049(.004)***	0.049(.004)***	0.049(.004)***	0.026(.005)***
Log of earnings				0.490(.019)***	0.490(.019)***	0.490(.019)***	0.307(.023)***
Types of <i>dantai</i> : Foreign-invested enterprises and others as contrast							
Government				0.194(.045)***	0.195(.045)***	0.196(.045)***	0.375(.051)***
SOEs: state monopoly sectors				0.378(.054)***	0.379(.054)***	0.381(.054)***	0.537(.059)***
SOEs: open sectors				-0.004(.042)	-0.003(.042)	-0.003(.042)	0.047(.042)
Collective firm				0.172(.054)**	0.173(.054)**	0.172(.054)**	0.225(.054)***
Individual/household venture				-0.412(.033)***	-0.412(.033)***	-0.412(.033)***	-0.374(.033)***
Private firm ^c				0.002(.035)	0.005(.035)	0.007(.035)	0.352(.035)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Prefecture-level variables (N=205)							
Population density ^d					0.008(.090)	0.116(.087)	0.110(.087)
Planned Independent City & municipality					−0.931(.273)***	−0.643(.288)*	−0.646(.288)*
Yangtze/Pearl River Delta districts					−0.857(.164)***	−0.264(.201)	−0.266(.202)
The index of marketization						−0.178(.044)***	−0.172(.044)***
The index of political and market connections						0.172(.041)***	0.171(.041)***
Cross-level interactions							
Marketization X earnings							0.082(.007)***
Marketization X schooling							0.009(.001)***
Marketization X state sectors							−0.044(.012)***
Intercept	0.603(.063)***	0.622(.064)***	0.635(.065)***	0.647(.065)***	0.796(.076)***	.647(.078)***	0.632(.078)***
Between-prefecture variance component τ^2	0.777(.042)***	0.786(.042)***	0.793(.043)***	0.798(.043)***	0.710(.039)***	0.656(.037)***	0.657(.037)***
Pseudo intraclass correlation	19.1%	19.3%	19.4%	19.5%	17.8%	16.6%	16.6%

^aNote: The results were estimated from unit-specific models with robust standardized errors using FLM 6.0 (Raudenbush and Bryk, 2002)

^bStatistical significance

* p < 0.05

** p < 0.01

*** p < 0.001 (two-tailed tests)

^cThe coefficients and robust standard errors were multiplied by 10

^dThe coefficients and robust standard errors were multiplied by 1,000.

Table 3

Results from multilevel multinomial logistic models on types of housing (private rental housing as reference) ^{a b}

	Self-built housing	Commodity housing	Affordable housing	Privatized housing	Public rental housing
Household-level variables (N= 103,836)					
Age	0.167(.010) ***	0.102(.010) ***	0.203(.014) ***	0.280(.013) ***	0.079(.013) ***
Square of age ^c	-0.012(.001) ***	-0.008(.001) ***	-0.017(.002) ***	-0.022(.002) ***	-0.005(.002) **
Male	0.592(.041) ***	-0.238(.034) ***	-0.142(.046) **	-0.140(.041) ***	-0.045(.047)
Married	0.194(.051) ***	0.335(.042) ***	0.357(.067) ***	0.169(.056) **	-0.139(.058) *
Agricultural hukou	0.394(.032) ***	-1.327(.031) ***	-1.573(.052) ***	-2.495(.058) ***	-0.888(.046) ***
Local prefectural hukou	4.151(.046) ***	1.902(.032) ***	2.322(.055) ***	2.489(.047) ***	1.268(.045) ***
Family generations	0.840(.034) ***	0.673(.033) ***	0.730(.044) ***	0.705(.039) ***	0.475(.049) ***
Household sizes	0.141(.018) ***	0.117(.018) ***	0.035(.025)	-0.030(.023)	-0.102(.028) ***
Occupation: manual workers as contrast					
Cadre	0.062(.146)	-0.121(.144)	-0.275(.157)	-0.586(.149) ***	-0.496(.200) *
Entrepreneur	-0.155(.065) *	0.372(.056) ***	-0.029(.081)	-0.196(.071) **	-0.056(.093)
Professional	-0.211(.051) ***	0.027(.046)	-0.151(.058) **	-0.324(.053) ***	-0.004(.064)
Clerical	-0.161(.055) **	0.287(.050) ***	0.080(.062)	0.053(.056)	0.076(.068)
Service	-0.483(.032) ***	0.003(.031)	-0.196(.045) ***	-0.320(.041) ***	0.031(.045)
Years of schooling	-0.063(.007) ***	0.098(.007) ***	0.099(.009) ***	0.116(.008) ***	0.034(.010) ***
Log of earnings	0.005(.029)	0.438(.030) ***	0.279(.037) ***	0.352(.035) ***	-0.054(.043)
Types of <i>dantai</i> : Foreign-invested enterprises and others as contrast					
Government	0.660(.070) ***	0.922(.067) ***	1.150(.083) ***	1.287(.077) ***	0.948(.091) ***
SOEs: state monopoly sectors	0.114(.087)	1.039(.080) ***	1.446(.095) ***	1.901(.089) ***	1.120(.104) ***
SOEs: open sectors	-0.251(.061) ***	0.727(.054) ***	1.111(.073) ***	1.505(.065) ***	1.155(.072) ***
Collective firm	0.287(.068) ***	0.536(.066) ***	0.621(.091) ***	0.643(.082) ***	0.477(.093) ***
Individual/household venture	-0.440(.040) ***	-0.259(.041) ***	-0.564(.066) ***	-0.867(.062) ***	-0.292(.062) ***
Private firm	-0.033(.043)	0.187(.041) ***	0.161(.068) *	0.157(.060) **	0.031(.064)
Prefecture-level variables (N=205)					

	Self-built housing	Commodity housing	Affordable housing	Privatized housing	Public rental housing
Population density ^d	0.177(.091)	-0.030(.103)	0.129(.112)	-0.030(.128)	-0.090(.119)
Planned Independent City & municipality	-0.957(.303)**	-0.307(.342)	-1.134(.374)**	-1.058(.430)*	0.095(.376)
Yangtze/Pearl River Delta districts	-0.089(.212)	-0.423(.239)	-1.399(.266)***	-1.139(.301)***	-0.785(.268)**
The index of marketization	-0.312(.046)***	-0.057(.052)	-0.187(.057)**	-0.160(.065)*	-0.029(.059)
The index of political and market connections	-0.053(.044)	0.343(.049)***	0.544(.054)***	0.628(.061)***	0.212(.056)***
Cross-level interactions					
Marketization X earnings	0.013(.009)	0.047(.008)***	0.002(.013)	0.009(.011)	-0.040(.013)**
Marketization X schooling	-0.017(.002)***	0.001(.002)	-0.011(.003)***	-0.001(.002)	0.007(.003)*
Marketization X state sectors	-0.013(.018)	-0.016(.016)	0.036(.020)	0.033(.018)	0.061(.021)**
Intercept	-0.638(.086)***	-0.206(.094)*	-1.149(.107)***	-0.810(.117)***	-0.925(.111)***
Between-prefecture variance τ^2	0.685(.038)***	0.781(.043)***	0.843(.048)***	0.983(.054)***	0.847(.050)***
Percentage in τ^2 explained by prefecture-level variables	18.1%	12.1%	27.6%	19.8%	11.4%
Pseudo intraclass correlation	17.2%	19.2%	20.4%	23.0%	20.5%

^aNote: The results were estimated by PROC GLIMMIX using SAS 9.3

^bStatistical significance

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$ (two-tailed tests)

^cThe coefficients and robust standard errors were multiplied by 10

^dThe coefficients and robust standard errors were multiplied by 1,000.