

Chapter 10

Urban-Rural Housing Inequality in Transitional China

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10.1 Introduction

Housing is both a substantial part of quality of life and an important dimension of inequality in both rural and urban China. While private housing has been dominant in rural areas since 1949 when the People's Republic of China was founded, urban housing has undergone tremendous changes. From 1956 to 1978, urban China built a socialist system in which public housing was allocated through the employer organization (or *danwei*) as a welfare benefit, rather than a commodity, to urban residents. Some public housing was built by work units and distributed directly to employees as part of a comprehensive welfare provision system, while the rest was constructed and managed by local government housing agencies and allocated to residents whose work units did not have the capacity to build homes for their employees. The 1978 reform and opening-up policy sparked a wave of housing reforms that included rent increases and the sale of public housing units to occupants. Since 1998, the most recent trend has been a large-scale commodification of urban housing. Combined with rapid urbanization, this trend has also affected rural residents whose income and living conditions, by and large, have improved significantly.

The aggregate data of the China 2010 census allows us to analyse inequality in living space, home ownership, rents, and household amenities by type of residence, level of education, and occupational categories in the first decade of the twenty-first century. To supplement this analysis at the aggregate level, this chapter also uses the 2006 Chinese General Social Survey (hereafter 2006 CGSS) to examine the socioeconomic sources of household-level variations in living space in both rural and urban areas. These analyses will be guided by a series of research hypotheses that are derived from a review of relevant research literature, to which we now turn.

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10.2 Literature Review and Research Hypotheses

Housing provision and consumption have changed radically in China since 1949. While private home ownership has always been the predominant housing system in rural areas, urban housing shifted from mostly private rental homes in the early 1950s, into virtually all public rental flats and apartments after the Socialist Transformation (1956–1966) and the Cultural Revolution (1966–1976). The nationwide housing reforms launched in around 1988 then gave rise to the current mixture of increasing home ownership and a shrinking public rental sector (Huang and Clark 2002).

10.2.1 Background and Perspectives

Before the housing reforms were launched in the late 1980s, urban households had to wait for the allocation of public rental housing through their employers (work units, or *danwei*) or local governments (municipal housing agencies) (See Inset 10.1). They paid rents at highly discounted prices or were even housed free of charge. However, they did pay their time as the allocation process could take many years. There has been a rich research literature about this “socialist style” of housing allocation: waiting time and renting discounts were found to vary by industry, ownership, bureaucratic rank,¹ and size of work unit, as well as by sex, seniority, positional power² and personal relationship to allocating authorities within the work units (Whyte and Parish 1984; Walder 1992; Bian and Logan 1996; Bian 1994; Bian et al. 1997; Logan et al 1999; Wang and Murie 2000; Huang and Clark 2002). As compared to market economies, the overall housing inequality in urban China was generally low in the state socialist era.

¹ Under Mao, all collective work units were administered by a given government level (i.e. central, provincial, or municipal) and their assigned bureaucratic rank determined the budget and resource allocation. In general, the higher the bureaucratic rank of a work unit, and the closer it was to the central government, the higher its budget and the more resources it would receive. Thus, a work unit’s bureaucratic rank determined the amount of housing, wages, and other benefits that could be allocated to its employees. Today, non-state entities do not have a clear-cut sense of bureaucratic rank, even if their operating licences are granted by a given level of government. In the state sector, bureaucratic rank is still a meaningful indicator of the budgetary power and strategic position of any organization (Walder 1992; Bian 1994).

² Positional power refers here to the civil service rank of a cadre in the state personnel management system. This system applies to all cadres, before and after the reforms, who work in a government office or a state organization (non-profit and profit-seeking entities). Generally, the higher a cadre’s civil service rank, the larger and better the housing he/she is allocated.

Inset 10.1. Urban Housing Policies from 1949 to 1978

Immediately after the founding of the People's Republic of China in 1949, China's Communist Party confiscated the land and buildings previously owned by the Kuomintang government and corporate capitalists, and established a state-owned property sector. After the Socialist Transformation (1956–1966), and the Cultural Revolution (1966–1976), most urban housing units became state-owned property and the proportion of private housing decreased rapidly. As the policy of the socialist state gave priority to investment in the sphere of production rather than consumption, the provision of public housing for urban dwellers was regarded as the responsibility of the socialist system. Under this system, the government and public entities carried out urban housing construction projects and exercised ownership rights over public housing.

In terms of ownership rights and managerial responsibilities, there were two types of public housing in the cities: (1) municipal public housing that was managed by the local government housing administration, and housing units that were distributed to households whose heads could not get housing via their employers; and (2) work-unit housing that was built and managed by the public employers and distributed to employees and their families. The allocation of public housing was based on a set of non-monetary factors, such as job rank, job seniority, marital status, and household size. Before 1978, this urban housing system was essentially a state-run welfare system.

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The housing allocation system was different in rural areas, even during the state socialist era, as rural villagers were entitled to build their houses on the homesteads allocated to them, provided they could afford the building cost and got approval from the village authorities. Consequently, home ownership rates were extremely high in rural areas. Under Article 10 of the 1982 Constitution of the People's Republic of China and related land laws, homesteads in villages were the property of the village collectivity, and villagers only had usage rights. This means that the homesteads could neither be sold on the market nor used as mortgages for credit (See Inset 10.2). These regulations have survived the post-1980s housing reforms and have prevented villagers' homes from becoming a commodity asset.

Inset 10.2 Homesteads in Rural China

Rural housing policy is closely related to rural land policy. In 1950, the central government issued The Law of Land Reform in the People's Republic of China (*zhonghua renmin gongheguo tudi gaigefa*). That law recognized the private land ownership system, and peasants held titles to the arable lands and homesteads that were allocated to them through the land reforms. After the

agricultural socialist reform (1953–1956), peasants still owned their assigned arable lands, but they were managed by the collective village for agricultural production, and still held title to their homesteads. During the era of the people's communes (starting in 1958), rural land management was based on a three-level ownership system: production team, production brigade, and communes. In this period, homesteads were transferred to collective ownership. Each household had usage rights only, and could not transfer or trade their homestead on the housing market. In the post-reform era after 1979, the basic principle of collective ownership of rural land, including homesteads, remained unchanged. The Constitution of the People's Republic of China (1982) states clearly that unless otherwise declared by law to be state-owned, rural or suburban land that pertains to collective ownership, homesteads, and land or mountains for private use also fall under collective ownership. Only under strict conditions can homesteads be transferred within the same collective organization. The principle of collectivization rules out the sale of rural houses built on homesteads.

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Under China's Constitution, urban land is state property. This was true both before and after the housing reforms. However, a plot of land can be leased to an urban real-estate developer for housing construction under a 70-year lease. A buyer who purchases a home (an apartment within a building complex or a private house) has freehold ownership rights over the home, but not over the land on which the home is built. In other words, the owner can use the home as a residence, lease out the home for rent, or sell the home for a capital gain. All these are legal. When the land lease reaches the 70-year deadline, it is re-examined by the state. Under the Property Law of the People's Republic of China enforced in 2007, the new lease will be granted for another 70 years, which may affect the market values of the homes built on the land, but not the ownership rights of dwellers. Similarly, rural villagers can build their homes on the allocated homesteads (see Inset 10.2), and the homesteads are legally leased by the collective village to the rural villagers. These latter are therefore owners of the house they build, but not of the allocated homesteads. The continuous influx of both capital investments and rural migrants into the cities has contributed to the rapid increase in urban housing prices. In contrast, except for industrialized and commercialized rural areas close to cities and towns, agricultural production is still the main source of income for most Chinese villages and residential housing remains largely a local market confined to the village itself.

The post-1980s housing reforms aimed to commoditize and privatize home ownership in the cities (Davis 2000) (see Inset 10.3). After more than 20 years, urban home prices have skyrocketed and inequalities have widened significantly in both rural and urban areas. In urban areas, a private home is regarded as a desirable asset and a key vehicle for wealth accumulation. Similar trends have also been observed in the countryside, where richer villages boast villas with gardens while poorer ones

have only bungalows and shacks. At the same time, the rural-urban gap has also widened, not just in income but also in housing. According to the National Bureau of Statistics, the rural-urban income ratio was 1:3.33 in 2009.³ In most rural areas, a whole villa can be built for the price of a room with eight square meters of floor space in Beijing. While most household surveys reveal housing inequality in the cities (Logan et al. 1999; Huang 2005; Huang and Jiang 2009), relatively little is known about housing inequalities at the national level.

Inset 10.3 Urban Housing Policies After 1978

Accompanying the post-1978 economic reform was the reform of the urban housing system, with a 30-year process that eventually led to urban housing privatization. Earlier pilot housing reforms did not achieve the expected results because the Constitution and land laws prohibited the transfer of land among public and private developers. In 1988, the Constitution was amended to allow for land transactions. This change provided the necessary conditions for the privatization of housing and laid the foundations for a real-estate market to emerge. In the same year, the State Council issued an “Implementation Plan for a Gradual Housing System Reform in Cities and Towns” (*quanguo chengzhen fenqi fenpi tuixing zhufang zhidu gaige shishi fangan de tongzhi*). This document marked a turning point in urban housing reform, paving the way for nationwide implementation in all urban areas of reforms previously tested in selected cities. Two years later, the State Council issued “Temporary Regulations on the Leasing and Selling of State-Owned Land in Urban Areas” (*chengzhen guoyou tudi shiyongquan churang he zhuanrang zanxing tiaoli*), and land in the affected areas quickly turned into a commodity. In 1998, the State Council issued the “Notice On Further Deepening the Reform of Urban Housing System and Speeding Up Housing Construction” (*guanyu jinyibu shenhua chengzhen zhufang zhidu gaige, jiakuai zhufang jianshe de tongzhi*). Its goal was to introduce market mechanisms to the housing system and to transform urban housing from a welfare benefit to a priced commodity. In 1999, the central government introduced the “Common Housing Accumulation Fund” (*gongjijin*), which was made available to workers whose employers, public or private, made contributions to the fund. In August 2003, the State Council issued the “Notice on Promoting the Sustained and Healthy Development of the Real-Estate Market” (*guanyu cujin fangdichan shichang chixu fazhan de tongzhi*) that turned the real-estate market into a pillar industry. These measures successfully boosted the Chinese housing market, and today, real-estate is one of the most profitable industries in the Chinese economy. Observers and researchers have argued that this real-estate industry is at

³ “Urban-rural income gap widest since reform”. *China Daily*. Available at http://www.chinadaily.com.cn/china/2010-03/02/content_9521611.htm. Accessed 26 Nov 2013.

risk of speculative bubbles. While regional variation is observed in the pace of housing commodification and privatization, the old welfare housing policy has been largely transformed into a market-oriented housing institution.

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Housing inequality is a common phenomenon in market economies. In the United States and the United Kingdom, for example, housing inequality is widely observed and is associated with a range of socioeconomic variables including age, sex, education, occupation, and income, as well as race and ethnicity (HWI 2010). In the former socialist countries, housing inequality was also observed, primarily reflecting the gradient of political power (Szelenyi 1978). How was this socialist style of housing inequality altered by the post-1980s reforms? Here, the “market transition debate” provides a point of departure (Nee 1989, 1991, 1996; Bian and Logan 1996; Xie and Hannum 1996; Zhou 2000). Although this debate has shown no sign of resolution, it provides a framework for analysis of housing inequality (Bian and Liu 2005; Huang and Clark 2002; Huang and Jiang 2009; Hu 2012; He and Xia 2012).

At the centre of the debate is Nee’s market transition theory (Nee 1989, 1991, 1996). It is argued that the transition from redistributive to market coordination shifts sources of power and privilege to favour direct producers relative to redistributors. Consequently, as the process of marketization advances, there will be increasing returns to human capital and entrepreneurship and decreasing returns to political capital and power. While scholars have reached some consensus about the increasing values of human capital during market reforms, they argue that in China, cadres continue to exercise political power over market resources in the enduring Communist party-state (Bian and Logan 1996). Nee’s response is a reformulated technocratic-continuity hypothesis (Cao and Nee 1998): former cadres can depend on their administrative expertise acquired under state socialism to maintain high socioeconomic status in the post-reform era. There is an alternative hypothesis about the conversion of political power into economic assets during the transition: the former cadres can translate their political power and capital into various forms of economic advantage during market transition (Rona-Tas 1994), either through their office capacities (Walder 2003) or cultural capital (Szelenyi and Kostello 1996). In China, indeed, the power still wielded by political elites continues to play an important role in income inequality (Bian and Logan 1996; Zhou 2000; Bian and Zhang 2002; Walder 2003).

10.2.2 *Related Hypotheses*

In an increasingly marketized China, which nonetheless remains under the governance of a durable Communist party-state, one lesson from the market transition debate is that both market and non-market mechanisms are at work to generate outcome inequalities. Four of these mechanisms are of particular relevance to hous-

ing inequality: socioeconomic status, place of *hukou* registration, work unit, and political power. Socioeconomic status is a combination of education, occupation, and income, and, in the context of market transition, these are the rising forces of the market institution. Therefore, if housing inequality is strongly influenced by measures of socioeconomic status, then the result can be interpreted as indicating the increasing significance of market forces in the provision and consumption of housing in a fast-changing China. On the other hand, place of *hukou* registration, work unit, and political power are the factors that, by and large, represent the legacies of China's state socialist era, and thus their influences on housing inequality will help us gain a sense of institutional continuity from the past. For each of these factors, we formulate a research hypothesis to guide our data analysis.

10.2.2.1 The “Socioeconomic Status” Hypothesis

With the understanding that socioeconomic status is a combination of education, occupation, and income, this hypothesis is straightforward: a person with a higher socioeconomic status is more likely to own a home of a larger size than his/her counterpart with a lower socioeconomic status. While the hypothesis is derived from the market transition theory, some scholars have found no effect of education on home tenure type (Huang and Clark 2002; Huang 2004). However, Li and Li (2006) found that the higher the level of education, the more likely a person is to become a homeowner. In addition to home tenure, living space and amenities also can be used to gauge housing inequality. Two recent studies using different data sets have demonstrated that education has a positive effect on living space and amenities in urban areas (Hu 2012; Huang and Jiang 2009). In terms of income effect, Logan et al. (1999) found that income has a positive effect on living space. However, a recent study by Hu (2012) shows that no such effect exists. While scholars report small or mixed effects of occupational status on housing from city-based surveys (Li 2000a, 2003; Huang 2004; Li and Li 2006), analysis of the 2000 census by Bian and Liu (2005) showed that households headed by managerial and professional elites are more likely to have larger and higher-quality homes than non-elites. We will analyse both the 2010 census and the CGSS 2006 to test the socioeconomic status hypothesis at the national level for urban and rural China.

10.2.2.2 The “*Hukou* Inequality” Hypothesis

Signifying the rural-urban divide, the *hukou* system is one of the most important institutions in China. It limited a person's access to a range of redistributive benefits in the past, and is still today a defining structural constraint that prevents rural peasants from obtaining market opportunities and rewards, including housing (Chan 1994; Cheng and Selden 1994; Logan et al 2009). An analysis of recent data by Huang and Jiang (2009) demonstrated that people with a local non-agricultural *hukou* tend to have better housing conditions than those without it. Local urban

residents are also more likely to own a home than other groups (Logan et al. 2009). When a city-based household survey considers a person's category of permanent *hukou* (agricultural vs. non-agricultural) and his/her place of work (local vs. non-local), individuals can be divided into four groups: local residents with non-agricultural *hukou* (local urban residents), local residents with agricultural *hukou* (suburban peasants), migrants with non-agricultural *hukou* registered in another city or town (urban migrants), and migrants with agricultural *hukou* registered elsewhere (rural migrants). Under current housing policies in China, only the residents who have local non-agricultural *hukou* and meet certain criteria of household type and income are entitled to purchase government-subsidized housing. Despite more than two decades of housing reforms, rural migrants with rural *hukou* status still face enormous discrimination.

10.2.2.3 The “Work Unit (*danwei*) Inequality” Hypothesis

Work units, or place of employment, were one of the most important institutions until the 1990s, as they allocated economic resources, organized political activities, and exercised social control over employees and their families (Walder 1992; Bian 1994; Wu 2002). Before the housing reforms, a great majority of urban residents lived in the housing owned and run by the work unit of one of the family members. One of the goals of the housing reforms was to detach work units from urban housing provision. This has largely succeeded, but not without legacies. At present, work units still influence housing provision in several ways: some of them sell work-unit housing to their employees at a substantively discounted price, others lease work-unit housing to their employees at a below-market rent, and still others build subsidized commodity homes for their employees. The State Council called for an end to welfare allocation of housing in 1998, so most households have to buy or rent an apartment through the market. In China, employees and their work units both contribute to a common “housing accumulation fund” (*gongjijin*). Employees put a share of their salaries into the fund and the work units match the amounts; this is the fund that employees later use to purchase private homes. As should be clear, inequality in this fund varies with personal income and with the financial health of the work units. If a work unit is under the jurisdiction of a government agency, state institution, or state-owned enterprise, employees of this work unit are more likely to save more common accumulation funds than those with non-state employers. While variations in work units' capacity to influence their employees' housing conditions can be measured in several ways (Walder 1992; Logan et al. 1999; Huang and Jiang 2009), our CGSS 2006 enables us to assess the inequality in living space between employees of state work units and non-state employers.

10.2.2.4 The “Political Power” Hypothesis

Learning from the power persistence thesis (Bian et al. 1997) and power conversation thesis (Rona-Tas 1994), political power over the distribution of market and

non-market resources is an important dimension of institutional continuity in China's transition towards a market economy. Therefore, we expect cadres, or those who hold office authority in government agencies, state institutions, and state enterprises, to have a significant advantage over non-cadre masses in terms of living space, home ownership, and housing quality. How political power works for housing distribution may differ before and after the housing reforms. In the pre-reform era, cadres could make formal rules of housing allocation favourable to themselves (Whyte and Parish 1984). Following the housing reforms, high-ranking cadres continue to enjoy the allocation of public housing by the government, others can convert their pre-reform allocated housing units into privately owned homes at very low prices, and still others can use their official power to influence the discounted and commodity housing markets in their favour (Logan et al. 1999; Li 2000b; Pan 2004). Using the 1995 China 1% Population Survey and the 2000 census data for Beijing, Huang and Jiang (2009) concluded that households with more officials of higher rank still occupied larger and better dwellings in 1995, but this was no longer the case in 2000. Our analysis of the 2010 census and the 2006 CGSS will provide an updated answer to the question of whether political power still plays a role in housing inequality in the first decade of the twenty-first century.

10.3 Variations at the Aggregate Level: Analysis of the Census Data

This chapter aims at accomplishing two analytical tasks. The first is to provide an assessment of overall housing inequality at the national level. The available aggregate data gives the general levels of living space and housing quality for the entire country as well as for cities, towns, and villages separately. These analyses will give us an empirical understanding of housing inequalities between rural and urban areas. The second task is to analyse selected housing indicators within the urban areas. Here, we will show variations of these selected housing indicators by level of education and occupational category with a view to testing the socioeconomic status hypothesis at aggregate levels.

10.3.1 Overall Housing Conditions and Rural-Urban Inequality in China

Table 10.1 presents the statistical results of the analysis of aggregate data from the 2010 census. There are four measures of housing provision and quality that can be used to measure inequalities: per capita living space, housing tenure, monthly rents, and household amenities.

Table 10.1 Indicators of housing provision and quality by residential locality in 2010

	China	Urban ^d	Rural areas
1. <i>Per capita living space (m²)</i> ^a	30.41	30.07	30.72
2. <i>Average monthly rents per household (yuan)</i> ^b	425.14	447.30	234.34
3. <i>Housing tenure (%)</i>			
Home ownership ^c	85.4	74.9	96.3
Self-built housing	62.3	31.5	94.2
Purchased commodity housing	11.3	21.8	0.6
Purchased existing housing	2.7	4.6	0.8
Purchased affordable housing	2.2	4.1	0.2
Purchased public housing	6.8	12.9	0.5
Home rental	12.0	21.1	2.5
Rented public housing	1.5	2.5	0.4
Rented other housing	10.5	18.6	2.1
Other	2.7	4.1	1.2
4. <i>Household amenities (%)</i>			
Independent kitchen	82.0	87.1	76.8
Shared kitchen	2.6	2.9	2.3
No kitchen	15.3	10.0	20.9
Independent toilet	66.1	77.9	54.0
Shared toilet	6.4	6.5	6.2
No toilet	27.5	15.6	39.8
Tap water	64.6	86.7	41.8
No tap water	35.4	13.4	58.3
Shower with water heater	54.4	71.8	36.4
No heater shower	45.6	28.2	63.6

^a Per capita living space measures construction area, which includes all areas within a housing unit and some shared common areas such as stairs and common corridors

^b Average rents are the sum of the product of the midpoint price and the percentage of households falling in each category. The midpoint of the price range is treated as the “average” price for the range. For the last open-ended category, 4500 is used as the midpoint of the range of 3000+ and 50 is used for 100 and below

^c Rate of homeownership is the sum of self-build housing, purchased commodity housing, existing housing, affordable and public housing

^d Urban indicators are calculated from combined city and town data.

Source: PCO (2012)

The national average per capita living space was 30.41 square meters in 2010, and the urban (30.07) and rural (30.72) averages are very similar.⁴ These figures reflect a substantial improvement with respect to 1978, the first year of China’s market reforms. In that year, the national averages of per capita living space were extremely low for both cities (3.6) and rural areas (8.1) (NBS 1998).

Another useful indicator is housing tenure type — i.e. whether or not a household owns or rents its home. As shown in Table 10.1, the national average home

⁴ The 2010 census reports data in three separate categories: cities, towns, and villages. In the present chapter, the data for the cities (*chengshi*) and towns (*zhen*) are merged into the combined category of “urban”, while village population is qualified as “rural” (living in the areas excluding *chengshi* and *zhen*).

ownership rate in 2010 was 85.4%, with a significant difference in urban (74.9%) and rural (96.3%) averages. For urban areas, the rate of home ownership has risen spectacularly, from just 24% in 1990 (Bian and Liu 2005). As indicated by the 2010 census, an urban household acquires a home either by purchasing new commodity housing⁵ in the market (21.8%), purchasing a public housing unit previously rented from the work unit or local government real estate (12.9%), self-building (31.5%), purchasing an affordable home from government projects (4.1%), or purchasing an existing market-priced housing unit (4.6%). Clearly, privatization of urban housing has occurred through both the transfer of public housing into private ownership and the emerging private housing market. By contrast, home ownership in towns, and in villages especially, relies on home building by the households themselves.

Nationally, the rental market accounts for 12% of homes as of 2010, and the census reveals significant differences in home renting rates between urban (21.1%) and rural (2.5%) areas. The government (1.5%) plays a much smaller role in rental markets than private real-estate companies (10.5%), and this applies to both rural and urban areas. As shown in Table 10.1, the average monthly rents are 447.3 yuan per household in urban areas and 234.3 yuan per household in rural areas. The rural-urban disparities in home rental prices reflect differences in land and labour prices between the cities, towns, and villages, which are also reflected in income inequalities across the three types of residential locality in China.

A set of measures of housing quality is available from the 2010 census, including information on household amenities: independent kitchen, independent toilet, tap water, and heater shower. Nationally, homes differ significantly in these quality measures as not all homes have an independent kitchen, independent toilet, tap water, or heater shower. Rural-urban inequalities in household amenities are very large: homes in the cities are generally better equipped and more comfortable as a greater majority of homes have an independent kitchen (87.1%, versus 76.8% in rural areas), an independent toilet (77.9%, versus 54.0%), and tap water (86.7%, versus 41.8%); 71.8% of homes are equipped with a heater shower (versus 36.4% in rural areas). Homes in the towns, and especially the villages, are less likely to have these amenities.

In sum, the results of Table 10.1 suggest three tentative conclusions about overall housing conditions in China. First, after 30 years of market reforms, there has been a significant improvement in terms of living space and home ownership. Second, while there is not much variation in living space between urban and rural areas, there are significant disparities in the ways in which a household becomes a homeowner. Third, household amenities are generally much better in the cities than in villages. Overall, these findings support our *hukou* inequality hypothesis: rural dwellers tend to be more disadvantaged in terms of housing conditions than their urban counterparts.

⁵ In the official statistics, “commodity housing” refers to private homes that are sold by real-estate developers and purchased by households, who then have full ownership rights.

Table 10.2 Selected indicators of housing inequality by education and occupation, urban in 2010

Education	Per capita living space (m ²)	Home ownership rate (%)	Purchased commodity housing rate (%)	Purchased public housing rate (%)	Average monthly rent (yuan)
<i>Education</i>					
Illiterate	30.59	81.5	7.0	11.2	264.34
Primary school	29.40	78.0	9.1	9.4	327.42
Middle school	28.12	69.9	15.1	10.3	393.73
High school	30.30	75.1	28.8	17.3	503.35
Vocational	34.80	80.3	42.4	17.7	647.06
College	37.45	81.4	47.5	17.9	855.55
University	39.55	77.0	46.2	16.1	1193.64
<i>Occupation</i>					
Cadres/officials	38.05	78.22	41.83	9.46	895.65
Professional and technical personnel	35.15	78.64	40.87	14.77	639.41
Clerks and other related personnel	34.58	78.77	38.06	16.05	569.59
Commerce/services	30.06	60.32	22.91	7.14	568.39
Production/equipment operators	27.86	61.45	15.57	8.90	299.25
Agricultural workers	32.61	95.77	2.75	1.11	260.52
Others	29.83	68.51	21.56	9.10	389.03

See Table 10.1 and its notes for interpretations of the indicators

Source: Authors' calculations based on PCO (2012)

10.3.2 *Housing Inequality by Education and Occupation in the Cities*

In the data files on cities, several important housing indicators were selected to examine housing inequality by level of education and occupational category of the household head. The results are presented in Table 10.2.

The first section of Table 10.2 gives a general sense that housing conditions in urban areas improve as the educational level of the household heads increases. Per capita living space, for example, increases from 28.12 m² for middle school level to 39.55 m² for university. Private home ownership rates increase from 69.9% for middle school education to 81.36% for college education. The ability to purchase a commodity housing unit from the market increases significantly from illiterate (7.0%) to college (47.5%) and university (46.2%) educational levels. While the percentages fluctuate across levels of education for purchasing an existing home, rents increase steadily from 264.34 yuan for no formal school to 1193.64 yuan for university. The results for rents contradict an earlier report that education had no clear effect on rents (Huang 2005).

We must remember, however, that level of education is associated with sex and especially age, so the results for housing inequality by educational level shown in Table 10.2 are no more than tentative. For example, we know that illiterates tend to be in older age groups and the university-educated in younger ones. We can obtain a better assessment of the educational effects from multiple regression analysis based on the CGSS dataset, in which household heads' age, sex, and education are simultaneously included as predictors of living space.

The second section of Table 10.2 displays the results for housing inequality by occupational category of household head. Confined to the census data file, there are seven occupational categories. Following Huang (2005), we classify these occupations into three groups. The first group includes the households that are headed by cadres/officials, professional and technical personnel, and clerks and other related personnel. This group of households tends to have more per capita living space, higher home ownership rates, greater ability to purchase commodity homes, and greater ability to pay higher rents than the other two groups. The second group includes commerce/service workers and production/equipment operators, who comprise the great majority of the urban working classes in both state and non-state sectors. As compared to the first group, households in this second group have less per capita living space, lower home ownership rates, less ability to purchase commodity homes, and pay lower rents. The two groups have similar rates for converting their previously rented housing units into privately owned homes. The third group includes agricultural workers (here mostly farmers living on the outskirts of expanding cities) and "other" workers. We suspect that a significant number of people in this "other" category are migrant workers with unskilled jobs. Compared to the other two groups, this group of households show mixed results in terms of housing conditions with one exception: agricultural workers have extremely high home ownership rates and extremely low rates of purchased commodity homes.

The above results for variations in housing conditions by education and occupation suggest the following tentative conclusions. First, compared to 10 years ago (Huang 2005; Bian and Liu 2005), urban households in 2010 are more likely to purchase commodity housing and hence to become private home owners, and this is true across all levels of education and occupational categories. Housing privatization has been largely successful. Second, there is some indication of educational variation in urban housing. With increasing level of education of the household head, urban households tend to have more living space and find it easier to own or rent a home. This can be interpreted as the result of market forces that value education. Finally, there is a clear sign that those occupational classes which benefited most from the state socialist era continue to enjoy advantages on the housing market. This institutional continuity translates, as well as reinforces, the pattern of housing inequality carried over from the pre-reform era into the post-reform era of a mixed economy. This generally lends support to our socioeconomic status hypothesis.

10.4 Household-Level Variations: Analysis of the CGSS

10.4.1 Data and Variables

The analysis of the census file so far has shown housing inequalities at aggregate levels, and the analysis of the CGSS 2006 in this part will help us both verify the validity of the aggregate results and more systematically test our four hypotheses at household levels. The 2006 CGSS contains a critical variable of housing inequality: respondent household's per capita living space at the time of the survey. In addition, the variables that measure hypothesized mechanisms of housing inequality are also included in the 2006 CGSS.

The CGSS is a national representative household survey. It was conducted annually from 2003 to 2006, and after two biennial surveys in 2008 and 2010 the project has since returned to an annual survey arrangement. As in other years, the 2006 CGSS survey used a multistage, stratified probability sampling method. We expect to find cluster effects at the neighbourhood level with this sampling method, which might violate the assumption of independent observations in the ordinary least square regression that we will use. In addition, China's large interregional variations in levels of development and marketization imply unequal housing prices across the localities. For all these reasons, we conduct a multilevel analysis to examine contextual and individual-level effects on per capita living space in urban and rural China, respectively.

Per capita living space will be used as the dependent variable in both the rural and urban analyses. To capture its linear effect, per capita living space is transformed into a natural log measure. At the household level, our independent variables include the respondent's age, sex and marital status, per capita income of the household, household size, education, a dummy variable of occupation (professional/technical personnel or not), employment sector (state vs. non-state), *hukou* status, and a political status variable (cadre vs. not cadre). We include two contextual variables, both measured at the provincial level. The first is a "marketization index",⁶ which was created by Chinese economists to gauge the level of market forces and has proved its reliability across studies (Fang et al. 2010). The second is the "average housing price" from the 2006 National Statistical Yearbook. Housing price not only reflects the supply of housing but also the demand for housing stock. It is expected to have a negative effect on per capita housing living space. The variables are described in Table 10.3.

⁶ In studies by Fan Gang et al., the "marketization index" is a 0–10 scale that indicates a province's relative position in the progress towards market economy as compared to other provinces in China. This index is based on 19 indicators of institutional arrangements under five major areas of market-oriented reforms. To find out more about how to calculate this index: <http://cerdi.org/uploads/sfCmsContent/html/192/Fangang.pdf>.

Table 10.3 Descriptive statistics of variables in models

	Urban	N=6013	Rural	N=4138
Variables description	Percent/mean	SD	Percent/mean	SD
Per capita living space	37.02	24.29	54.09	39.31
<i>Household-level variables</i>				
Age	41.83	13.95	43.19	12.63
Male	0.45	0.5	0.48	0.49
Married	0.76	0.43	0.87	0.33
Per capita income (in thousand yuan)	17.32	112.71	5.88	19.9
Household size	2.31	0.93	2.45	1.02
Education	10.3	3.55	6.66	3.65
Professional/technical personnel	0.26	0.44	0.07	0.26
<i>Hukou status (Rural migrants as reference)</i>				
Local urban residents	0.8	0.4	NA	NA
Suburban farmers	0.11	0.31	NA	NA
Urban migrants	0.03	0.17	NA	NA
Cadre	0.06	0.23	0.03	0.17
Employed in the state sector	0.34	0.48	NA	NA
<i>Provincial- level variables</i>				
Marketization index	6.81	1.72	6.93	1.54
Average housing price	3017.86	1648.27	2624.12	883.75
NA not available in the dataset				

Source: Authors' calculations

10.4.2 Model Specifications

We conduct our analysis and model estimation in several steps. First, a null model (Model 1) is estimated. This is a model without any explanatory variables at either household or provincial levels. The models are specified as follows:

$$\text{Level 1 Individual level: } Y_{ij} = \beta_{0j} + r_{ij}$$

$$\text{Level 2 Provincial level: } \beta_{0j} = \gamma_{00} + u_{0j}$$

where Y_{ij} is the per capita housing living space for the respondent household i in j province, β_{0j} is the mean per capita living space for province j , and r_{ij} refers to the residual error term. The variance of r_{ij} is equal to σ^2 , which represents within-province variability in per capita living space. γ_{00} refers to the mean of per capita housing living space. The variance of μ_{0j} is equal to τ_{00} , which represents the between-province variance in per capita living space. The aim of this model is to decompose variance at the household and provincial levels. The intra-class correlation coefficient (ICC) is defined as $\tau_{00}/(\tau_{00} + \sigma^2)$ that gives the proportion of the total variance in the dependent variable that exists among provinces. A low value indicates that there is little variance among provinces.

After this null model, the hypotheses are systematically tested in the following models. In the models based on urban areas, we included all the household-

level variables, except for *hukou* status dummy variables with their fixed regression slopes, in Model 2. This model is designed to test our socioeconomic status hypothesis, political power hypothesis, and work unit inequality hypothesis. Next, we add *hukou* status dummy variables in Model 3, which is designed to test our *hukou* status hypothesis. Finally, two provincial-level variables are included in Model 4, in which we assess provincial effects on our household-level coefficients.

Some urban variables are not available in the rural part of the CGSS survey, so we make some adjustments in the rural models. Rural Model 1 is the same as urban model 1. In rural Model 2, all household-level variables except for the cadre dummy are included. In rural Model 3, the cadre dummy is added. In the final rural model, two provincial level variables are included.

In both urban and rural analyses, the random intercept model is used. The intercept in the model is thus the provincial level mean of per capita living space and is allowed to vary among provinces. In addition, household level coefficients are assumed to be fixed and the random intercept is the only random “group effect”. The complete models with household-level and provincial-level variables can be represented as follows:

Individual level in urban areas:

$$\begin{aligned} \text{Ln}(Y_{ij}) = & \beta_{0j} + \beta_{1j}(X_1) + \beta_{2j}(X_2) + \beta_{3j}(X_3) + \beta_{4j}(X_4) \\ & + \beta_{5j}(X_5) + \beta_{6j}(X_6) + \beta_{7j}(X_7) + \beta_{8j}(X_8) + \beta_{9j}(X_9) \\ & + \beta_{10j}(X_{10}) + \beta_{11j}(X_{11}) + \beta_{12j}(X_{12}) + r_{ij} \end{aligned} \quad (10.1)$$

Individual level in rural areas:

$$\begin{aligned} \text{Ln}(Y_{ij}) = & \beta_{0j} + \beta_{1j}(X_1) + \beta_{2j}(X_2) + \beta_{3j}(X_3) + \beta_{4j}(X_4) + \beta_{5j}(X_5) \\ & + \beta_{6j}(X_6) + \beta_{7j}(X_7) + \beta_{8j}(X_8) + r_{ij} \end{aligned} \quad (10.2)$$

Provincial level in both urban and rural areas:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01}(W_1) + \gamma_{02}(W_2) + \mu_{0j} \\ \beta_{qj} &= \gamma_{q0}, \quad q = 1, 2, \dots, Q \end{aligned}$$

In the model, $\text{Ln}(Y_{ij})$ represents the log transformed per capita living space for the respondent household i in j province. Household-level individual variables consist of X_1 (male=1), X_2 (per capita income), X_3 (age), X_4 (married=1), X_5 (household size), X_6 (education), X_7 (professional/technical=1), X_8 (cadre=1), X_9 (employment in the state sector=1), X_{10} (local urban residents), X_{11} (suburban farmers), X_{12} (urban migrants), and rural migrants as reference group for the last three *hukou* dummy variables. Provincial-level variables include W_1 (“marketization index”) and W_2 (average housing price). These equations emphasize that the slope coefficients are fixed. In the full model, β_{0j} presents the effects of provincial-level

variables on the mean level of per capita living space on the j th province, while the regression coefficients are assumed to have no variation across units. A hierarchical linear model (HLM) is applied here to analyse the data. Full maximum likelihood is used to estimate parameters.

Since there is a large difference in each unit of independent variables, all the independent variables were standardized before running the models. The results for household-level and provincial-level effects on per capita living space are presented in Table 10.4 for urban areas and in Table 10.5 for rural areas.

10.4.3 Urban Model Estimates and Interpretations

Model 1 in Table 10.4 shows a two-level random intercept null model. We examine how much of the total variance can be attributed to the household level and how much to the provincial level. The variance among provinces (0.024) is much smaller than the variance among households within provinces (0.252). This is also reflected in the intra-class coefficient, which is 0.086. It suggests that 8.6% of the total variance is between provinces. The chi-square test of the estimated between-province variance component proved to be highly significant (chi-square=585.58, degree of freedom=27). The significant chi-square tests of the estimated between-province variance component indicates that significant variation between provinces can be explained by household and provincial-level characteristics in urban models.

For Model 2 in Table 10.4, all variables are entered into the model except for *hukou* status variables. As shown, age, per capita income, and marital status have no significant effect on the average per capita living space. Contrary to our expectation, education has no significant effect. As expected, however, households headed by professional/technical job holders tend to have larger homes than those headed by non-professional/technical job holders. Cadres/officials have a significant advantage over non-cadres in terms of living space. State employees do not have such advantages over non-state employees. Compared to other variables, household size has the strongest influence on per capita living space; the negative coefficient indicates that larger families tend to have less per capita living space.

When *hukou* status variables are added in Model 3, the variances for household level and provincial level decrease from 0.024 and 0.209 to 0.023 and 0.0206 respectively, indicating the usefulness of including *hukou* status variables in the model. We find that *hukou* has a positive significant effect on per capita housing living space and it verifies the *hukou* inequality hypothesis. Compared to rural migrants, urban migrants,⁷ suburban farmers, and local urban residents have greater living space. Among these four groups, suburban farmers have the most spacious dwellings. The main possible reason is that suburban peasants are entitled to build their own house under current land policy.

⁷ Rural migrants are migrants with a rural *hukou* who have migrated to a city or a town. Urban migrants have a *hukou* in their home city or town, and have migrated to another city or town.

Table 10.4 Multi-level analysis of per capita living space in urban China

Model	Model 1	Model 2	Model 3	Model 4
Fixed effects	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)
Intercept	3.49*** (0.03)	3.49*** (0.03)	3.49*** (0.03)	3.49*** (0.024)
<i>Household-level variable</i>				
Age		0.01 (0.012)	0.001 (0.012)	0.001 (0.012)
Male		-0.004 (0.004)	-0.005 (0.004)	-0.001 (0.004)
Married		-0.004 (0.009)	-0.005 (0.008)	-0.005 (0.008)
Per capita income		0.003 (0.004)	0.004 (0.003)	0.004 (0.003)
Household size		-0.206*** (0.014)	-0.212*** (0.013)	-0.212*** (0.013)
Education		0.008 (0.009)	0.006 (0.009)	0.006 (0.009)
Professional/technical personnel		0.012* (0.006)	0.012* (0.006)	0.012* (0.006)
Cadre		0.024*** (0.005)	0.024*** (0.005)	0.024*** (0.005)
Employed in the state sector		-0.012 (0.008)	-0.012 (0.008)	-0.012 (0.008)
Local urban residents			0.075*** (0.010)	0.075*** (0.018)
Suburban farmers			0.082*** (0.016)	0.082*** (0.016)
Urban migrants			0.018*** (0.007)	0.018*** (0.007)
<i>Provincial-level variables</i>				
Marketization index				0.101 (0.033)
Average housing price				-0.129 (0.031)
Random effects	Variance component (χ^2)	Variance component (χ^2)	Variance component (χ^2)	Variance component (χ^2)
Average per capita living space (provincial level)	0.024*** (585.58)	0.024*** (753.08)	0.023*** (722.99)	0.017*** (480.73)
Level 1 effect	0.252	0.209	0.206	0.206

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Source: Authors' calculations

Provincial-level variables are added in Model 4. When all household-level variables are controlled, the marketization index is positively correlated with living space. It suggests that urban residents living in provinces with a higher degree of

Table 10.5 Multi-level analysis of per capita living space in rural China

Model	Model 1	Model 2	Model 3	Model 4
Fixed effects	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)
Intercept	3.71*** (0.049)	3.71*** (0.051)	3.71*** (0.052)	3.63*** (0.066)
<i>Household-level variables</i>				
Age		0.038** (0.015)	0.038** (0.015)	0.037** (0.015)
Male		-0.031*** (0.008)	-0.032*** (0.008)	-0.032*** (0.008)
Married		0.000 (0.010)	-0.0007 (0.011)	-0.0007 (0.011)
Per capita income		0.031** (0.014)	0.031** (0.014)	0.031** (0.014)
Household size		-0.304*** (0.013)	-0.304*** (0.013)	-0.304*** (0.013)
Education		0.048*** (0.010)	0.047*** (0.011)	0.047*** (0.011)
Professional/technical personnel		0.005 (0.013)	0.005 (0.013)	0.005 (0.013)
Cadre			0.013** (0.005)	0.013** (0.005)
<i>Provincial level variables</i>				
Marketization index				0.228* (0.117)
Average housing price				-0.399** (0.189)
Random effects	Variance component	Variance component	Variance component	Variance component
	(χ^2)	(χ^2)	(χ^2)	(χ^2)
Average per capita living space (provincial level)	0.059*** (567.63)	0.065*** (754.82)	0.065*** (760.61)	0.053*** (653.25)
Level 1 effect	0.35	0.26	0.26	0.26

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' calculations

marketization tend to have larger dwellings than their counterparts residing in less marketized provinces. Average housing price at provincial level also has large and significant effects on housing inequality in terms of living space; the negative coefficient indicates higher average housing price constrains the housing demand of low-income individuals or households. From the perspective of proportion reduction in variance, when these two provincial-level variables are added, we find that variance at provincial level decreased from 0.023 to 0.017, equal to a proportion of explained variances of 26% at the provincial level.

10.4.4 Rural Model Estimates and Interpretations

For rural areas, Model 1 presented in Table 10.5 indicates that the point estimate for the log-transformed per capita living space is about 3.7 square meters. It is higher than the point estimate for urban areas, which is consistent with the result obtained with the census data (Table 10.1). The value of intra-class coefficients in rural areas is 0.14, which means that about 14% of the total variance is between provinces. A chi-square test of the estimated between-province variance component is found to be highly significant (Chi-square=567.63, degree of freedom=23) and suggests that the significant variations between provinces can be explained by individual-level and provincial-level characteristics in rural models.

Model 2 (Table 10.5) examines whether household-level variables have effects on living space. Unlike urban models, age, education, and income have positive effects on living space in rural areas, supporting our socioeconomic status hypothesis. Female respondents have more living space than male respondents.

Since there is no *hukou* restriction in rural areas, *hukou* status variables are not considered here. However, to test the political power hypothesis, the cadre variable, which reflects political power, is added to Model 3 in Table 10.5. The result clearly indicates that rural cadres, like urban cadres, have advantages in housing consumption in terms of living space, which supports the political status hypothesis.

When provincial level variables are included in Model 4 (Table 10.5), regional variance decreases from 0.065 to 0.053, while individual level variance remains almost the same. This suggests that adding these two variables can explain 18% of total variance at the provincial level. Marketization index and average housing price variables show significant effects on living space. Rural households residing in provinces with higher degrees of marketization have more living space than those in less marketized provinces. The average housing price variable still plays a negative role on housing consumption in rural areas. The significance of both provincial-level variables shows the importance of macro-level housing market factors on rural housing consumption.

Discussion and Conclusion

The introduction of market institutions has not only significantly changed the nature of the housing system but also greatly improved housing consumption for almost all social groups. While the 2010 aggregate census data allows for an assessment of overall housing conditions and inequality, the 2006 CGSS provides an opportunity to examine underlying mechanisms of inequality between households in terms of living space.

The analysis of the 2010 aggregate census data has demonstrated that rural-urban housing inequalities exist, as urban households have advantages over rural households for living in commodity housing units with better amenities. Rural

households tend to build their own houses, which are on average larger than urban housing units. At the aggregate level, households headed by people with higher education tend to have more living space, higher rates of purchased commodity homes, higher private home ownership, and to pay higher rents than households with a low-educated head. Moreover, households headed by non-manual occupational classes (cadres and officials, professionals, and clerks and related workers) tend to have more living space, higher rates of private home ownership, and, when they live in rental apartments, tend to pay higher rents than manual working classes.

These variations in measures of housing standards at the aggregate level are not always confirmed by the household-level multivariate analysis based on the 2006 CGSS, in which per capita living space is the single measure of housing inequality. Confined to this measure, education shows a significant effect on rural housing but not on urban housing. Professional and technical job holders tend to have more living space than non-professional and non-technical job holders. The combination of these two findings lends partial support to the socioeconomic status hypothesis. In the analysis of urban areas, *hukou* status variables show consistent effects on living space, which support the *hukou* status hypothesis, but state employees do not have a clear advantage over non-state employees in terms of living space, which rejects our work unit hypothesis. Finally, in both rural and urban analyses, cadres tend to have significantly more living space than non-cadres. This last finding supports the political power hypothesis.

These findings imply that China's housing market is a mixed system: while market mechanisms are not fully in charge, some non-market mechanisms are on the decline while other non-market mechanisms persist. More specifically, by market mechanism we mean that housing production and consumption function through prices determined by the forces of supply and demand. There are three main non-market mechanisms still working in the Chinese housing market. The first is the administrative mechanism: persons in higher political positions are still allocated larger and better-equipped homes. The second is the mechanism of the work unit which, even in the post-reform era, can either build subsidized housing for its employees, or sell them work-unit housing units at a discounted price. The third is the *hukou* mechanism, as those who have local *hukou* status are allowed to purchase homes in the housing market.

By introducing the marketization index and average housing price variables in the multi-level model, the results indicate that individuals in urban areas and in rural areas with a high level of marketization have more living space, which suggests that market mechanisms have been a driving force for housing inequality. In addition, average housing prices at provincial level also negatively influence individuals' living space. Given the high housing prices in the metropolitan areas such as Beijing and Shanghai, it is not difficult to understand that higher housing prices constrain individual demand for a larger home.

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