
A room of one's own: housing consumption and residential crowding in transitional urban China

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Abstract. The goal of this paper is to evaluate the level and examine the dynamics of housing consumption and residential crowding in urban China almost a decade after the housing reform was launched. I argue that housing consumption and residential crowding are affected not only by demographic and socio-economic factors, as they are in market economies, but also by institutional factors that are unique to China because of the dualism in housing reform. Using a 1996 national survey, I find that the level of housing consumption is still low and residential crowding is common. A room of one's own continues to be a dream for most Chinese. However, Chinese households now have more control over their housing, and their housing behaviors are beginning to share similarities with the West. For example, life cycle, household income, housing tenure, and city size have similar effects on housing consumption and residential crowding as they do in Western housing markets. It is still clear, however, that the socialist institution—the *hukou* system—continues to influence housing consumption, although to a lesser extent than in the prereform period. Households with rural or temporary *hukou* are at a disadvantage in the housing market, in the sense that they occupy less spacious housing and suffer more from residential crowding than do those with urban and permanent *hukou*. Yet, these last are more constrained by institutional variables such as job and work-unit characteristics, which affect housing consumption differently across cities.

Introduction

Housing shortage and crowding in urban China have long been recorded in the popular media. Yet research on residential crowding and housing shortage in China has been quite limited, because of the lack of housing data and the fact that housing was not open for debate in socialist China. As part of the transition toward a market economy, housing reform was launched nationwide in 1988. The aim is to improve housing consumption through privatizing the previously welfare-oriented housing system. Profound changes have since taken place, both in housing provision and in housing consumption. In this paper I will evaluate the levels of housing consumption and residential crowding⁽¹⁾ in urban China, and suggest an explanation of their underlying dynamics.

Housing was considered a welfare benefit in socialist China. Although households enjoyed virtually free housing provided by the government or government agencies (for example, work units), they had no part in deciding how much space they needed. Instead, housing and the amount of space were allocated based on a set of administrative criteria such as job rank (Bian et al, 1997; Zhang, 1998). Thus, the conventional wisdom that households adjust their housing consumption as they progress through the life cycle and experience changes within households (Clark, 1992; Clark et al, 1984) did not apply in socialist urban China. However, the recent reform has granted households a certain degree of freedom of housing choice. In addition to tenure choice (Huang and Clark, 2002; Li, 2000a), households can now adjust their housing consumption by renting or purchasing new housing units from the public or private sectors, as well as

⁽¹⁾ Residential crowding can occur both at household and at neighborhood levels. In this paper, only residential crowding at the household level is considered.

by constructing new housing for self-occupancy. However, the reform in urban China is gradual and evolutionary in comparison with the 'big bang' reform in Eastern Europe (McMillan and Naughton, 1996). To ensure a smooth transition, a dual system with "new policies for the new housing stock, old methods for the old housing stock" (*xin fang xin zhi du, lao fang lao bai fa*) has been promoted (State Council, 1998). Thus, housing consumption in urban China is affected not only by demographic and market-related factors, as in market economies, but also by institutional factors that are unique to the Chinese housing system. In particular, households living in public housing are more constrained in terms of the space they can consume.

With some important exceptions (Huang, 2003; Huang and Clark, 2002; Li, 2000a; 2000b; Logan et al, 1999), most existing research focuses on macro-aspects of the housing system in China, such as housing provision (see, for example, Tolley, 1991; Wu, 1996), housing problems (for example, Logan and Bian, 1993; Zhang, 1998), and housing policies (for example, Chen and Gao, 1993; Wang and Murie, 1999), and there has been much less research conducted at the microlevel. In this paper I provide an interpretation of individual behavior in the housing market and the way housing consumption and residential crowding are mediated both by socioeconomic and by institutional factors. After a brief literature review on housing consumption and residential crowding, I evaluate the impact of Chinese housing reform on housing consumption. I then present an empirical analysis of the level of housing consumption in urban China and evaluate the role of different factors affecting housing consumption and crowding.

Literature review

As important indicators of living standards, housing consumption and residential crowding have long been research foci in the social sciences. Urban sociologists and psychologists study housing consumption as an indicator of socioeconomic achievement, and evaluate urban pathologies associated with residential crowding. They argue that crowded housing conditions can lead to poor mental and physical health, poor social relations in the home, and can have detrimental effects on child care (for example, Baldassare, 1988; Gove and Hughes, 1983; Stokols, 1978). Geographers and economists focus more on the determinants of housing consumption, and the way it changes over time, space, and population. The conventional wisdom is that low-income households, immigrants, and others who live in the inner cities have a low level of housing consumption and are more likely to experience crowding (see, for example, Clark and Drever, 2000; Clark et al, 2000). In general, housing consumption has improved and crowding has been alleviated over time because of shrinking household size, overall expansion in the housing stock, and the 'trading up' process (Sternlieb and Hughes, 1980). Residential crowding is also considered an important trigger for residential mobility, and research suggests that in general households occupy larger housing units after they have moved (for example, Clark et al, 1984; Davies and Pickles, 1985; Rossi, 1955).

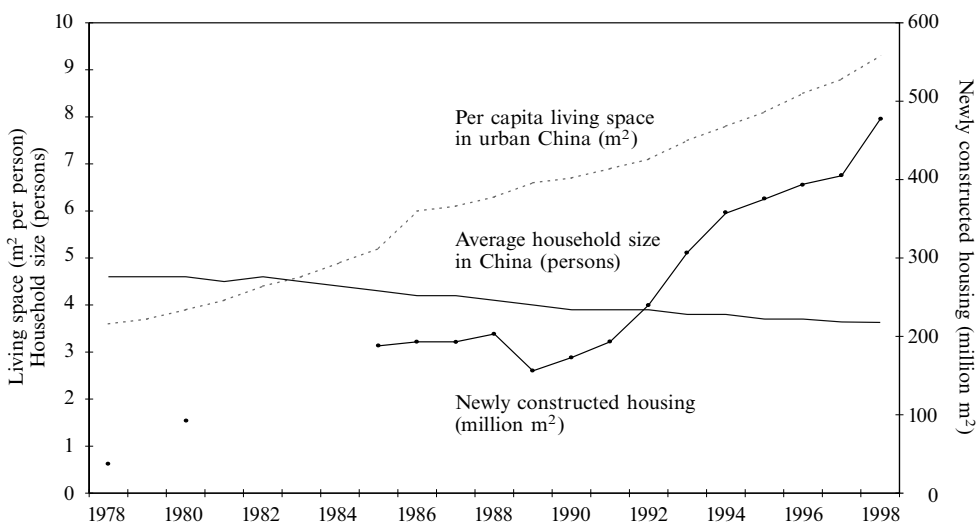
Although racial discrimination is often practiced in housing markets (Galster, 1988; Massey and Denton, 1993), households are assumed to have freedom in housing consumption, and the amount of floor space they consume determined mainly by their needs and available income. In socialist China, housing was allocated and the amount of space a household could have was determined by government policies. Political status and professional qualifications, rather than households' needs and resources, were the main criteria determining the allocation of housing space. According to the Regulation of Housing Allocation in a university in Chongqing, which is based on a similar regulation by the State Council in 1983, the amount of living space a household

Table 1. Space criteria in housing allocation, in a university in Chongqing (source: Office of Housing Allocation of the University).

| Job rank | Unit size (m ²) |
|---|-----------------------------|
| Ordinary staff, lecturers | 42–50 |
| County, department (<i>chu</i>) level cadre, or professionals at this level | 60–70 |
| Bureau (<i>ju</i>), district (<i>di</i>) level cadre or professionals at this level | 80–90 |

can occupy is mainly determined by the job rank of the household head or his spouse (table 1). Bureau (*ju*), district (*di*) level cadres and professionals at the same level are qualified for 80 m²–90 m² units, almost twice as large as that for ordinary staff (42 m²–50 m²). Although the overall level of housing consumption is low in urban China, people with higher job ranks can access more spacious units. The specific criteria may differ across work units, yet the general pattern is the same. Bian et al (1997) found significant housing inequalities between people with different job ranks both in Shanghai and in Tianjin.

With the socialist ideology of ‘production first, consumption second’ (*xian shengchan, hou xiaofei*), housing construction and provision were maintained at a minimum level before 1978, when the economic reform was launched. Housing investment accounted for only 0.78% of gross national product (GNP) on average every year between 1949 and 1978 (SSB, 1990). After the initiation of housing reform, there was a boom in housing construction in the late 1980s and 1990s, indicated by increasing amounts of new housing being constructed (figure 1). The total housing stock living space was 210 million m² in 1999, more than 3.6 times that in 1985 (SSB, 2000). Yet, in the 1980s housing investment was still only about 3% of GNP on average. At the same time, the urban population has more than doubled since 1978—reaching 389 million in 1999 (SSB, 2000). As a result, housing consumption per capita is still low and residential crowding is the norm rather than exceptional. The per capita living space

**Figure 1.** Housing construction, housing consumption, and household size (source: Research Institute of All China Women’s Federation et al, 1998, page 148; SSB, various years).

was only 3.9 m² in 1978. Although it has increased significantly over time, it is still less than 10 m² in 1998 (figure 1)—much smaller than that in most developed countries.⁽²⁾

There are two dimensions to the crowded housing conditions in China. First, a large proportion of urban households in China still do not have their own housing: couples and families have to live with their extended families, share housing with colleagues, or live in dormitories and offices. It is impossible to know how many households do not have their own housing units. The State Statistical Bureau in China publishes the number of households who did not have housing but have 'solved housing problem' (*jia jue que fang hu*). Every year there are hundreds of thousands of such households—there were 900 086 in 1999. Second, even among households who do have their own apartments, the amount of space they have is in general much smaller than they need. Although family size is declining because of the strict family-planning program (figure 1),⁽³⁾ it is still normal for unrelated adults to share a room, for married couples to live with their parents, and for young children to share a room with their parents or grandparents. Although both parents and adult children, in particular married children, prefer independent living, the level of coresidence remains high and stable in urban China (Logan et al, 1998). It might be true that Chinese, like Hispanics, have a greater tolerance for overcrowding than do Anglo-Americans (Gove and Hughes, 1983), and Chinese do have some unique methods to cope with crowding (Anderson, 1972). But conflicts between generations and between families because of space sharing and crowding are common, and are well reflected in the popular media. Having a room of one's own, with privacy, is a luxury for most Chinese.

Housing reform and housing consumption

Housing reform, launched nationwide in 1988 after pilot experiments, aims to improve housing consumption through privatization of the housing system and the creation of a housing market. Although housing consumption in urban China continues to be low compared with that in developed countries, it has improved significantly since 1988. The per capita living space was 9.3 m² in 1998—1.5 times that in 1988. Although housing reform has also introduced or exacerbated problems such as housing inequality and residential separation, clearly it has improved housing consumption and, to some extent, alleviated the crowding problem.

Privatization is the most important aspect of the housing reform; this has several components. First, the construction of private housing built by developers—called 'commodity housing' (*shang ping fang*)—has been encouraged (State Council, 1994). Although the government can exercise its intervention through land allocation and loan access, commodity housing is provided and consumed mainly according to market mechanisms. Because the housing shortage was severe and residential crowding was common before housing reform, there are genuine demands for housing. Thus, there has been a boom of private housing construction. In 1993 investment in commodity housing was more than 50% of the total housing investment nationwide (CREHRA, 1994), and it was more than 153.9 billion yuan (US\$18.6 billion) in 1997 (Yearbook of China Real Estate Market, 1999, page 21). The availability of commodity housing has greatly improved housing consumption, especially for high-income households. The richest strata of population in urban China, such as those who live in the

⁽²⁾ According to the US Census Bureau, the space per person in the USA was 714 ft² (66.3 m²) in 1999—more than six times that in urban China.

⁽³⁾ Household size shown in figure 1 is the average size for all households, including rural and urban households. In general, urban households are slightly smaller than rural households.

gated communities in suburban Beijing, enjoy housing that is not much different from that in suburban North American cities. However, commodity housing is beyond most households' means, especially in big cities where private housing is extremely expensive. For example, the average purchase price for commodity housing in Beijing was 4815 yuan m^{-2} (582\$ m^{-2}) in 1998. Thus, a two-worker household has to pay about twenty years of their wage income (12 285 yuan a year) for a 100 m^2 apartment. In this sense the contribution of commodity housing to improvement in housing consumption is relatively small and the benefit is limited to a small group of the population—especially in big cities where crowding is the most likely.

However, 'affordable housing' (*jingji shiyong fang*)—a special type of commodity housing—targets medium-income and low-income households, who are the majority in urban China. Although affordable housing is provided by private developers the prices are controlled by the state, with the principle of profit being less than 3%, in other words, just to cover its costs and make minimum profits (*bao ben wei li*) (State Council, 1998). The average price for affordable housing was only 1093 yuan m^{-2} in 1999, which is much more affordable than the high-end commodity housing (4503 yuan m^{-2}) (SSB, 2000). In addition, each developer is required to construct a minimum of 20% of its housing development as 'affordable housing' (State Council, 1994). In 1997 more than 12% of housing investment was for affordable housing (Yearbook of China Real Estate Market, 1999). With its relatively cheap prices and guaranteed provision, affordable housing has become the main means whereby households improve their housing condition. More than 27 million m^2 affordable housing was sold in 1999, accounting for about 21% of all housing sold (SSB, 2000).

The second aspect of privatization is the sale of existing public housing, and the development of secondary housing markets. Sitting tenants of public housing are encouraged to purchase their flats at subsidized prices (State Council, 1994). Although this sell-off process cannot directly improve the space that households occupy, it provides an opportunity for households to own a flat, from which they can then trade up to larger units.⁽⁴⁾ The recent development of the secondary housing market, facilitated by the availability of online housing-information databases and classified advertisements, has encouraged the processes of 'trickle down' and 'trade up', which improve housing consumption in general. Housing transactions between individual households have increased so much in recent years that housing exchanges have been created (for example, the Jiangyin Housing Exchange in Jiangyin City, Jiangsu Province), and various legislations have been developed (for example, The Temporary Regulations on the Management and Sale of Purchased Public Housing and Affordable Housing, Ministry of Construction, 1999a). In addition, households are encouraged to invest in self-built housing (*zi jian fang*) mainly for self-occupancy (Zhang, 1998). More than 192 million m^2 of self-built housing was completed in 1999 (SSB, 2000), twice that in 1988 when housing reform was launched. With the availability of private housing, the development of secondary housing markets, and the possibility of building housing for self-occupancy, urban households in China now have more control over how much space they can have. Thus housing consumption has been improved significantly. In addition to the increase in per capita living space (figure 1), more than 700 000 households with inadequate housing have been able to 'solve their housing problem' (*jiaque quefang hu*) every year since 1997 (SSB, 2000). While housing privatization is being implemented, public housing is still an option for households—but to a smaller extent than in the past. Sitting tenants of public

⁽⁴⁾ Because some public housing is sold at subsidized prices, households may have only partial property rights. But they can gain full property rights by paying off the amount of the subsidy.

housing can continue to rent, but pay rising rents, and households with incomes lower than the minimum, and housing consumption smaller than the minimum,⁽⁵⁾ qualify for ‘cheap rental housing’ (*lian zu fang*), where rent is heavily subsidized and set by the local government (Ministry of Construction, 1999b). The dwelling units in public housing may be small in size and are unlikely to meet households’ needs; yet, public rental housing at least allows qualified households to have a flat of their own.

In summary, by permitting penetration of the housing market by private capital, housing reform has expanded housing options and has provided various paths by which households can improve their housing (table 2). Instead of waiting for allocation, households now have more control over how much space they can have through accessing different types of housing and through residential mobility.⁽⁶⁾ However, as

Table 2. Options for households to improve their housing consumption (source: compiled from various government policy documents).

| Before housing reform | Since housing reform | |
|--|---|--|
| | options | qualifications |
| Wait till they were qualified for allocation of a flat | Purchase ‘commodity housing’ | Households with high income and urban and permanent hukou, with a few exceptions (for example blue hukou) |
| Being promoted to higher rank positions | Purchase ‘affordable housing’ | Employees of government agencies and state enterprises who have medium–low income, urban and permanent hukou |
| | Purchase occupied public housing, then ‘trade-up’ in the secondary housing market | Sitting tenants of public housing who are usually employees of government agencies and state enterprises, and have urban and permanent hukou |
| | Purchase or rent flats that work units purchased from developers | Employees of government agencies and state enterprises, with urban and permanent hukou |
| | Rent ‘cheap rental housing’ | Households with lower than minimum income and housing consumption according to criteria set up by the local government; and who have urban and permanent hukou |
| | Invest in ‘self-built housing’ | Permanent hukou |
| | Purchase or rent of private housing by individuals | Everyone |
| | Move from inner city to suburbia, from old to new housing units | Households with permanent and urban hukou who are affected by urban renewal projects; or better off households who ‘trade up’ |

⁽⁵⁾ Criteria for minimum income and minimum housing consumption are set by local governments.

⁽⁶⁾ Residential mobility in urban China is still relatively low. According to Wu (1990), the great majority of households surveyed in the cities of Nanjin, Wuxi, Tianjin, and Beijing had lived in the same residences for more than ten years. Although recently residential mobility has been on the rise (Zhou and Meng, 2000), Chinese are still far less mobile than North Americans.

indicated in table 2, not everyone can enjoy these options. In addition to the constraints of affordability, the socialist institutions such as the Household Registration (*hukou*) System and work units may limit the options between which households can choose to improve their housing consumption. The *hukou* system, developed in the 1950s, has been an important tool for government control (Chen and Seldon, 1994), and could be considered to be an internal passport system as it defines an individual's socio-economic status and opportunities (Chan, 1994). Every Chinese is born with either an urban or a rural *hukou*, based mainly on birthplace, and either a permanent or temporary *hukou* based on the place of registration. In general, only people with urban *and* permanent *hukou* are qualified for state welfare benefits such as subsidized housing, free medical care, and pension. As most welfare benefits are distributed through state-owned work units, a person's work-unit affiliation becomes vital in accessing benefits. For example, although the prices for affordable housing are cheap, only low-income and medium-income households with urban and permanent *hukou and* who are working in government agencies, education institutions, and state-owned enterprises are qualified for affordable housing (Beijing Municipal Government, 1998). In addition, affordable housing is, in principle, for sale and not for rent (State Council, 1998). Thus people working in the private sector, migrants with rural or temporary *hukou*, and renters in general do not qualify for affordable housing, even though it has improved housing consumption for many qualified households. Even unsubsidized commodity housing, already difficult to access because of its high prices, is available only to those with urban and permanent *hukou* (Beijing Municipal Government, 1992). This *hukou* requirement excludes people with rural or temporary *hukou*, such as migrants, from improving their housing consumption through purchasing commodity housing—even if they can afford it. Recently there have been a few exceptions in some cities. In order to attract investment or to boost the housing market, cities such as Beijing and Guangzhou issue a certain number of special household registrations—blue *hukou* (*lanyin hukou*)—to people who do not have urban and permanent *hukou* in the city, but who can either invest a large sum of capital and/or purchase a unit of commodity housing conforming with certain criteria (such as size) (Bureau of Public Security in Guangzhou, 1998). Yet, even this exception was cancelled in cities that feared an influx of migrants.

Much as the options to improve housing consumption through private housing are not open to everyone, the options through public housing are even more restricted, being available only to certain qualified households. For example, 'cheap rental housing' is available only to households with permanent and urban *hukou and* a minimum income, to solve severe housing problems (Ministry of Construction, 1999b). Migrants with rural or temporary *hukou*, regardless of their income level, and urban residents with higher than the minimum income do not qualify for cheap rental housing, no matter how crowded their existing housing is. In addition, the option of purchasing public housing and then trading up in the secondary housing market is only available to households who already have access to public housing—usually households with permanent and urban *hukou and* who work in government agencies and state-owned enterprises.

In addition to the fact that options for housing improvement are not open to everyone, housing subsidies created during the privatization process are also determined by institutional factors such as job rank and job seniority. For example, households can enjoy job-seniority discounts (*gongling zhekou*) when they purchase public housing (State Council, 1994). In Beijing the discount ranges from 0.6% to 0.9% for every year of service (Beijing Housing Reform Office, 1996). Obviously, urban residents with high job seniority can afford larger housing units. Furthermore, the maximum

amount of space a household can purchase at the subsidized prices is determined by job rank. Cadres of bureau (*ju*) and district (*di*) levels are qualified to purchase 100 m²–120 m² at most, county (*chu*) level cadres qualify for 80 m²–100 m², department (*ke*) level cadres qualify for 60 m²–90 m², and those at lower levels qualify for only 55 m²–80 m² (Jiangyin Municipal Government, 1997).⁽⁷⁾ In other words, people with higher job ranks are more likely to access larger housing units in the socialist housing system. In addition, they are also more likely to own more spacious units because they enjoy subsidized prices for more space.

In summary, housing reform has provided various options for households to improve their housing consumption by encouraging the entry of private capital into housing construction, controlling housing prices, and developing secondary housing markets. However, because of the persistence of socialist institutions—the hukou system and work units—not every household can enjoy the opportunities to improve their housing consumption brought about by the reform. Only households with urban and permanent hukou and who work in public sectors are likely to improve their housing consumption and alleviate crowding through various paths. I hypothesize that, although housing consumption in urban China is beginning to be mediated by household needs and affordability, as is the case in market economies, the socialist housing access and allocation systems continue to affect housing consumption, even though they are no longer as important as in the socialist era. The following empirical analyses test this hypothesis.

Empirical analysis

Data and variables

The study utilizes a national survey: *Life Histories and Social Change in Contemporary China* (Treiman, 1998).⁽⁸⁾ The survey was conducted in 1996, using multistage probability sampling stratified by education level to ensure the representativeness of different strata of the population (Treiman, 1998). The county-level units—county-level cities, counties, and urban districts in prefecture-level and provincial-level cities—serve as the primary sampling units (PSUs). These PSUs are stratified into twenty-five equal population strata, according to the county-level proportion of the population aged 20–69 years with at least middle-school education, which were obtained from the 1:100 subset of the 1990 Census. Two county-level units are selected from each stratum with probability proportional to population size; and then one township-level unit is selected from each selected county-level unit, and two village-level units are selected from each selected township-level unit with the same probability-sampling technique. Within each village-level unit, a list of adults aged 20–69 years is created from the household registration (hukou) list and the list of temporary (migrant) residents. Thirty adults, and thus thirty households, are randomly selected from the two lists, in proportion to the contribution to the total population. More than 3000 households were surveyed in cities. This data set includes not only information on a household's housing status and housing condition, such as size, facilities, and year built, but also a wide range of demographic, socioeconomic, and institutional information at the individual, household, and work-unit level, which allows sophisticated analyses of housing consumption.

⁽⁷⁾ People can purchase more space than they are qualified for, but they have to pay unsubsidized prices for additional space.

⁽⁸⁾ As housing has not been a major research focus within China until very recently, housing data in China are limited and scattered. Housing information was not included in the national census until the latest census in 2000, which is not yet available to the public.

Housing consumption and residential crowding are measured by the amount of living space a household currently occupies (m^2), the number of rooms it has, and the amount of space per person and number of rooms per person, which are commonly used in housing studies. In addition, crowding is often measured by the mismatch between a household's housing needs and the space they actually have—a measure called 'room stress' (Clark, 1992; Clark and Drever, 2000; Davies and Pickles, 1985). This is calculated by subtracting 1 from the ratio between actual rooms and required rooms (actual rooms/required rooms–1). The 'required rooms' variable indicates the minimum number of rooms a family should have in order to avoid residential stress. Although in the Chinese context the required rooms may be somewhat different, I use a similar definition to those used by American scholars, assuming Chinese would enjoy American housing standards if they were able to do so. The required rooms variable is calculated based on household composition, age, sex, and marital status of the household members.⁽⁹⁾ Thus it is a more sophisticated measure of crowding than the traditional 'rooms per person' variable. A negative room-stress value indicates that households do not have adequate living space—a situation of underconsumption; a positive room-stress value indicates that households have more space than they need—overconsumption. The terms crowding, inadequate housing, underconsumption, and room stress are used synonymously in this paper.

Descriptive analysis

Although housing consumption in urban China has improved significantly in the last two decades, the level is still low. The median housing consumption is 48 m^2 (517 ft^2) per household, 15 m^2 (161 ft^2) per person, and 0.75 rooms per person.⁽¹⁰⁾ About 75% of households live in units with less than one room per person. The median room stress is -0.25 , indicating that, on average, urban households in China have inadequate living space and suffer residential stress. Whereas less than half of the total households have enough (25.0%) or more (21.8%) rooms than they need, more than half of the total households (53.2%) do not have enough rooms (figure 2). In numerical terms,

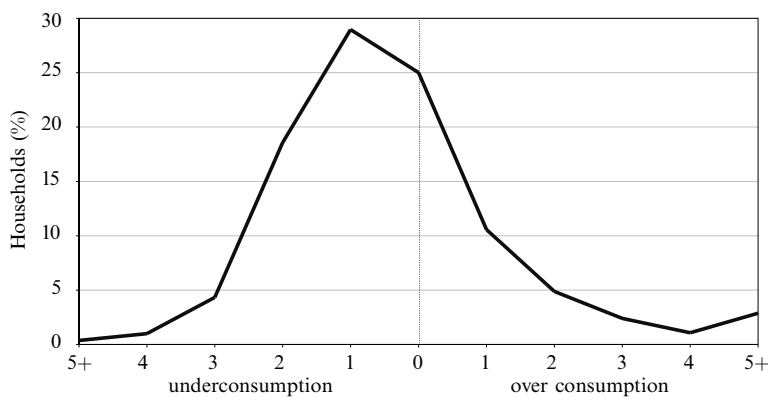


Figure 2. Distribution of overconsumption and underconsumption (actual–required rooms), 1996.

⁽⁹⁾ According to the definition by Panel Studies of Income Dynamics (PSID), the number of required rooms is calculated in the following fashion. Two rooms are needed for the household head, with or without a wife. Then one room is added for each additional married couple, or single person aged 18 or above; one room is added for every two boys under 18; one room for every two girls under 18. If there is an odd number of children then the numbers are rounded up. If there is an odd number of girls and an odd number of boys, those under 10 years of age are paired regardless of sex (Clark, 1992).

⁽¹⁰⁾ According to the 2000 census in the USA, the median amount of space there is 1730 ft^2 per household, and 714 ft^2 per person.

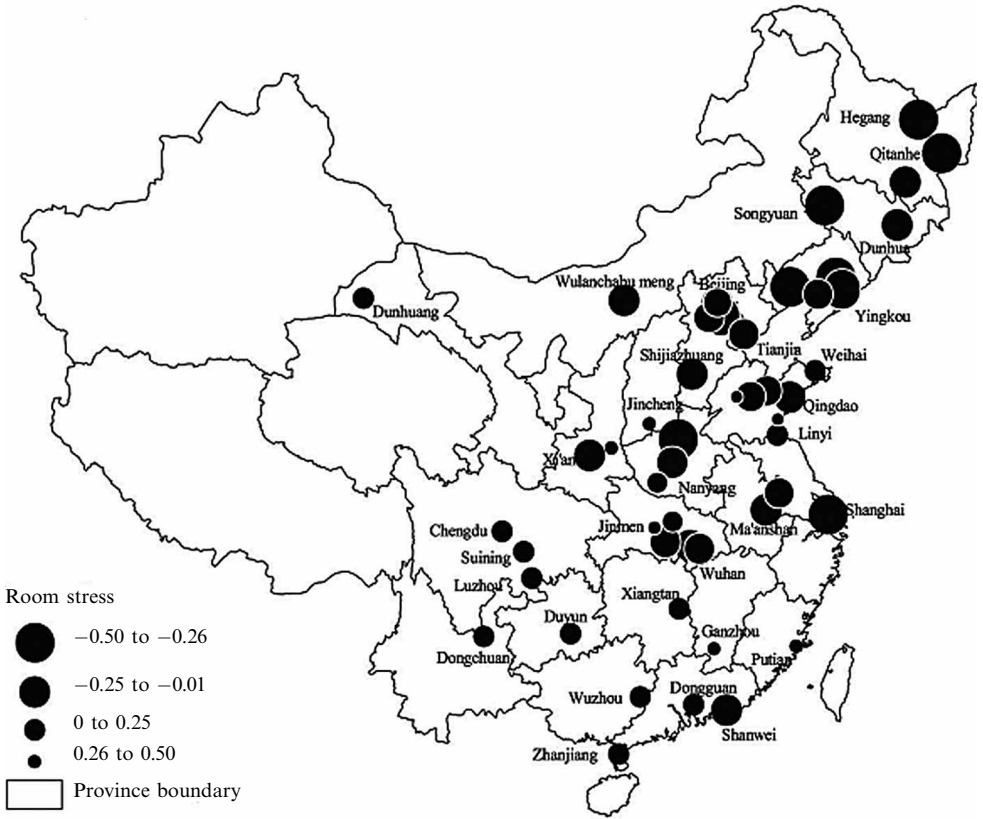


Figure 3. Room stress in surveyed cities, 1996.

households with underconsumption are more than twice as numerous as those with overconsumption. Crowding is still a serious problem in urban China.

Room stress also varies geographically, by city (figure 3). The average room stress at the city level ranges from -0.48 in Benxi (Liaoning province) to 0.42 in Weinan (Shaanxi province). Slightly more cities suffer from underconsumption and crowding. There are twenty-nine cities with average negative room stress, but twenty-one cities with positive room stress. It is evident that cities with overconsumption tend to be located mainly in central or western China, whereas eastern and northeastern cities in general have inadequate housing. The only exceptions are some of the cities in the coastal provinces such as Shandong, Guangdong, and Fujian—the most developed and open regions in China—where positive room stress (overconsumption) is common. Furthermore, big cities like Beijing, Shanghai, Wuhan, and Xi'an in general have negative room stress and thus inadequate housing, whereas small and medium-sized cities are more likely to have positive room stress.

Not surprisingly, housing consumption and residential crowding vary by life cycle and housing tenure. Older generations tend to enjoy more space, indicated by higher amounts of space per person and more rooms per person (table 3). The age of 50 seems to be a tipping point in the sense that generations younger than 50 have less than one room per person and suffer from residential crowding (negative room stress), whereas those above 50 have more than one room per person and enjoy more space than is needed (positive room stress). The evidence also shows that smaller households enjoy more spacious housing. The amount of space per person and rooms per person enjoyed by one-person households (32.98 m^2 , 2.28 rooms), for example, are more

Table 3. Housing consumption and crowding by life cycle and housing tenure.

| | Rooms per person | Space per person (m ²) | Room stress |
|--|---------------------|---------------------------------------|----------------|
| <i>Age of head of households (years)</i> | | | |
| 20–29 | 0.84 | 15.46 | –0.19 |
| 30–39 | 0.82 | 15.53 | –0.16 |
| 40–49 | 0.87 | 17.20 | –0.10 |
| 50–59 | 1.12 | 21.56 | 0.12 |
| 60–69 | 1.27 | 25.70 | 0.20 |
| <i>Household size</i> | | | |
| 1 person | 2.28 | 32.98 | 0.15 |
| 2 persons | 1.35 | 25.49 | 0.30 |
| 3 persons | 0.85 | 16.31 | –0.15 |
| ≥ 4 persons | 0.78 | 15.86 | –0.13 |
| <i>Housing tenure</i> | | | |
| Own | 1.09 | 23.35 | 0.11 |
| Rent from work units | 0.85 | 14.02 | –0.18 |
| Rent from housing bureaus | 0.81 | 13.54 | –0.23 |
| Rent from private parties | 0.61 | 10.69 | –0.44 |
| Other | 0.98 | 18.47 | 0.18 |

than twice those of three-person households (16.31 m², and 0.85 rooms). One-person and two-person households do not experience room stress, whereas larger households do (0.15, 0.30 versus –0.15, –0.13). In addition, owners tend to have more living space (23.35 m² and 1.09 rooms) and experience less crowding (0.11) than do renters of any kind. Among renters, however, those who rent from private parties have less space and experience a greater degree of underconsumption (–0.44) than do renters living in public housing provided by work units (–0.18). In summary, only owners, small households, and those who are over 50 years old have achieved the goal of one room for every family member (rooms per person ≥ 1) and no longer suffer from residential crowding (room stress ≥ 0).

Household income is an important factor in determining housing consumption in most housing markets, and higher income generally reduces housing shortage (Clark et al, 2000). Yet in urban China, there is not a positive relationship between household income and housing consumption (figure 4, see over). The majority of households have less than one room per person, and experience inadequate housing indicated by negative room stress.⁽¹¹⁾ The lack of significance of household income is a result of the four-decade long welfare-oriented housing system, and the persistence of socialist institutions in the housing system even though a housing market is emerging.

For example, as mentioned earlier, hukou status affect households' access to different types of housing and the options they can use to improve their housing consumption and, hence, the amount of space people can enjoy (table 4, see over). It is clear that households with permanent and urban hukou enjoy the largest amount of space (19.13 m² per person and 0.97 rooms per person) and experience the least residential crowding (–0.03), whereas migrants with temporary and rural hukou have the smallest amount of space (11.29 m² per person and 0.75 rooms per person)

⁽¹¹⁾ The lowest income group (1st income decile) has slightly more than one room per person, but experiences underconsumption of housing (negative room stress). The 10th income decile enjoys more rooms than needed but has less than one room per person. The different patterns of rooms per person and room stress may be a result of different household composition between these two groups.

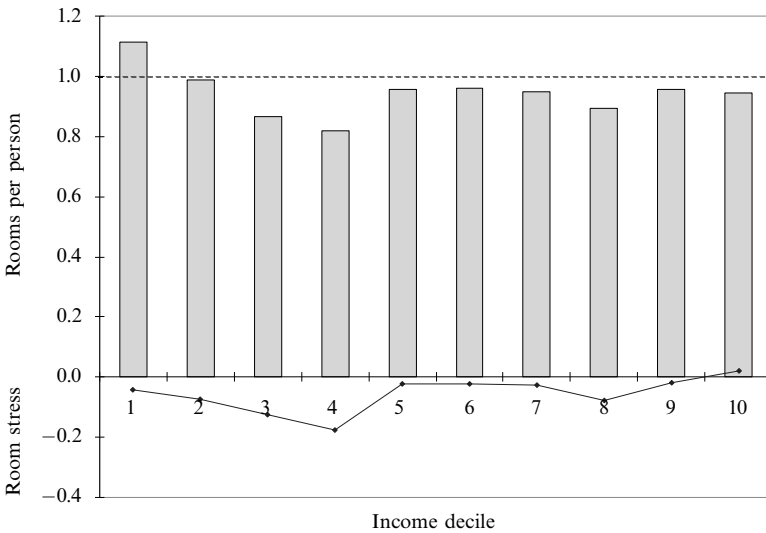


Figure 4. Rooms per person and room stress by income decile.

Table 4. The number of rooms and amount of living space per person, and room stress, with frequency shown in parentheses, by hukou.

| Locale | Permanent hukou | | | Temporary hukou | | |
|--------|------------------|------------------------------------|-----------------|------------------|------------------------------------|----------------|
| | rooms per person | space per person (m ²) | room stress | rooms per person | space per person (m ²) | room stress |
| Urban | 0.97 (2560) | 19.13 (2559) | -0.03 (2560) | 0.89 (60) | 16.22 (65) | -0.17 (60) |
| Rural | 0.94 (160) | 18.35 (164) | -0.04 (160) | 0.75 (214) | 11.29 (273) | -0.30 (214) |

and suffer the largest degree of under consumption (-0.30). Housing consumption for those with permanent rural hukou and urban temporary hukou lies between these extremes. In addition, housing consumption is also affected by a person's job rank and the nature of his or her work unit (table 5). In general, people with higher job ranks enjoy more living space per person and suffer less residential crowding. For example, people who are department (*chu*) or higher level cadres have 20.69 m^2 per person, 1.09 rooms per person, and enjoy more rooms than needed (room stress = 0.10), whereas ordinary workers have only 16.11 m^2 per person, 0.86 rooms per person, and suffer underconsumption of housing (-0.14). Furthermore, people working in public sectors, such as state or collective enterprises and government agencies, have higher amounts of space (18.53 m^2 per person and 16.78 m^2 per person, respectively) than those in private enterprises (10.61 m^2 person) and joint ventures (12.83 m^2 per person). Public sector employees also suffer less residential crowding (-0.11 , and 0.00 versus -0.27 and -0.14). Yet, surprisingly, working in high-ranking work units does not contribute to better housing consumption or alleviate crowding. In general, high-rank work units have more resources to provide larger housing to their employees. However, high-rank work units often have more employees and are located in big cities where housing is relatively expensive, which may lead to smaller living spaces. The recent reform in state-owned enterprises, mostly high-rank work units, may also have a detrimental effect on their employees' housing consumption.

Table 5. Housing consumption and crowding by job and work-unit characteristics.

| | Rooms per person | Space per person (m ²) | Room stress |
|--|---------------------|---------------------------------------|----------------|
| <i>Job rank</i> | | | |
| Others | 1.03 | 20.30 | 0.00 |
| Ordinary worker or staff | 0.86 | 16.11 | -0.14 |
| Team leader, village or township cadre | 1.01 | 19.50 | 0.05 |
| Division (<i>ke</i>) level cadre | 0.97 | 18.97 | -0.01 |
| Department (<i>chu</i>) level cadre and above | 1.09 | 20.69 | 0.10 |
| <i>Work-unit type</i> | | | |
| Other | 1.04 | 21.06 | 0.02 |
| Private enterprise | 0.82 | 10.61 | -0.27 |
| Foreign enterprise, joint venture | 0.86 | 12.83 | -0.14 |
| Collective, cooperative, Township–Village Enterprise | 0.99 | 18.53 | 0.00 |
| State enterprise, government agency | 0.88 | 16.78 | -0.11 |
| <i>Work-unit rank</i> | | | |
| Other | 1.04 | 20.31 | 0.01 |
| Village | 0.96 | 19.46 | -0.03 |
| Township or division | 0.91 | 17.05 | -0.09 |
| County or department | 0.79 | 14.51 | -0.19 |
| Prefecture, bureau, or higher | 0.85 | 15.28 | -0.13 |

The models

According to the aforementioned descriptive analyses, housing consumption and residential crowding in urban China are affected not only by life cycle, housing tenure, and household income, but also by institutional factors that are unique to China. Three sets of multivariate regressions were used to test the relative roles of different factors in housing consumption and crowding. The dependant variables for the models on housing consumption are the number of rooms and the amount of living space (m²), and for the model on crowding the dependent variable is room stress. Because of the requirement of urban and permanent hukou in accessing subsidized housing, households with urban and permanent hukou and those without (including households with rural and permanent hukou, rural and temporary hukou, and urban and temporary hukou) exercise their housing decisions in two somewhat separate segments of the housing system. Thus, these models were run separately for households with urban and permanent hukou and those without.

There are two sets of independent variables (table 6, see over). The first set comprises demographic and socioeconomic variables, which are widely used in analyses of housing consumption. This set includes age, age², household size, number of children (< 18 years old), marital status, household income, housing tenure, and city size. It is expected that age will have a positive but curvilinear effect on housing consumption. In other words, older people generally consume more space than the younger generation; yet the elderly tend to consume less space after their children leave home. Married people, larger households, households with more children and higher incomes, owners, and those living in smaller cities are expected to consume more space. It is also expected that larger households, households with more children and low income, renters, and those in large cities are more likely to have inadequate housing and to suffer residential stress.

The second set of independent variables are institutional in nature, and this set is unique to China. These variables include job seniority (years of service in the work unit), job rank, work-unit rank, work-unit type, and number of cadres in the household.

Table 6. Definitions and descriptive statistics of variables.

| Independent variables | Mean | Standard deviation | Percentage |
|---|--------|--------------------|------------|
| <i>Demographic, socioeconomic variables</i> | | | |
| Age | 41.98 | 13.47 | |
| Age ² | | | |
| Household size | 3.42 | 1.31 | |
| Number of children (aged <18) | 0.77 | 0.74 | |
| Ever married (reference 'other') | | | 89.76 |
| Household income | 14 551 | 46 700 | |
| Housing tenure | | | |
| other (reference) | | | 3.50 |
| own | | | 46.61 |
| rent from work units | | | 37.19 |
| rent from housing bureaus | | | 6.58 |
| rent from private parties | | | 6.12 |
| City size | | | |
| small city < 500 000 (reference) | | | 59.38 |
| large city ≥ 500 000 | | | 40.62 |
| <i>Institutional variables</i> | | | |
| Hukou status 1 | | | |
| temporary hukou | | | 11.55 |
| permanent hukou (reference) | | | 88.45 |
| Hukou status 2 | | | |
| rural hukou | | | 14.76 |
| urban hukou (reference) | | | 85.24 |
| Job seniority (years of service) | 9.35 | 9.11 | |
| Job rank | | | |
| other (reference) | | | 40.46 |
| ordinary worker, low-level cadre | | | 50.89 |
| division (<i>ke</i>) level cadre and above | | | 8.65 |
| Work-unit rank | | | |
| other (reference) | | | 44.64 |
| village, township | | | 35.47 |
| county, prefecture, province and above | | | 19.89 |
| Work-unit type | | | |
| other (reference) | | | 37.19 |
| private enterprise, collective, Township–Village Enterprise | | | 11.66 |
| state enterprise, government agency | | | 50.34 |
| Number of cadres in the household | 0.21 | 0.47 | |

For a married couple, both the husband and the wife may have access to housing from their work units, so it is normal to access housing from the work unit of the partner who is qualified for larger housing. Thus, the variable 'job rank' is a result of comparing the husband's and the wife's job rank and taking the higher rank of the two, assuming that higher job rank leads to a larger housing unit. The 'work-unit rank' and 'work-unit type' variables are constructed in a similar fashion. Because the spouse job seniority data are not available, the variable 'job seniority' indicates the respondent's status. Of course, if the respondent is not married, all variables indicate his or her status. Because of the small numbers of observations, some categories for these institutional variables are combined so that they have fewer categories in the models than in descriptive analysis. In addition, it is not uncommon in China for people to live in housing provided by their parents or relatives. Thus, the number of cadres in the

family is included to test the role of political power of family members in housing consumption. It is expected that people with high seniority and high job rank, working in high-ranking work units and public sectors, as well as households with more cadres, will have more living space overall, and will be less likely to suffer from residential crowding.

In addition, as urban economic structure and the progress of housing reform are different across cities, the interactions between city size and the aforementioned institutional variables are also included to test whether these factors have different effects across cities.

The results are listed in table 7 (see over) for people with urban and permanent hukou, and in table 8 (see over) for those without. The models all have reasonable fit with R^2 ranging from 0.188 to 0.537, and they support the hypothesis that sociodemographic variables and institutional variables unique to China both influence housing consumption and residential crowding. It is clear that estimates for people with urban and permanent hukou are different from those with rural or temporary hukou: institutional variables play more important roles in housing consumption for people with urban and permanent hukou as indicated in models 1–3 and models 4–6. This is to be expected, because only people with urban and permanent hukou can access subsidized housing, the allocation of which is mediated by institutional factors, whereas people with rural or temporary hukou are more likely to access private housing, consumption of which is affected more by the housing market. In addition, the constants in models 1–3 are larger than those in models 4–6, indicating that people with urban and permanent hukou in general consume more housing and are less likely to suffer from crowding than those with rural or temporary hukou. In other words, with everything else controlled, people with rural or temporary hukou are disadvantaged in housing consumption.

Although housing decisions are obviously different for people with different hukou status, it appears that the dynamics of housing consumption in urban China is beginning to be affected by market forces—regardless of hukou status. For example, age, household size, household income, and homeownership all have positive effects on the number of rooms and the amount of living space households have. In other words, older people, larger and better-off households, and owners are more likely to consume larger housing. In addition, households in large cities with populations of more than 500 000 tend to have less space and fewer rooms—which is as expected. On the other hand, older people and households with higher income are less likely to suffer residential stress, indicated by their positive coefficients in model 3 and model 6, whereas larger households, renters, and those living in big cities are more likely to experience underconsumption and thus residential stress, as indicated by their negative coefficients.

However, housing consumption in urban China also shows some important differences from that in market economies. For example, both age and age² have positive effects on the number of rooms, the amount of living space, and room stress, although these are not significant in some models. This indicates that the elderly in urban China do not reduce their housing consumption, as would be the case in most market economies. Low residential mobility and the generally low level of housing consumption may contribute to this difference. In addition, households with more children have fewer rooms and less living space (−0.120 and −3.434, respectively, for people with urban and permanent hukou; −0.110 and −7.612 for people with rural or temporary hukou). Although households can adjust their housing through methods such as the purchase of private housing, this is limited by the high cost. Most urban households still live in public housing or public housing which has been sold to sitting tenants, whose unit size

Table 7. Estimates of housing consumption and crowding for people with urban *and* permanent hukou.

| | Model 1 rooms | Model 2 space (m ²) | Model 3 room stress |
|--|------------------|------------------------------------|------------------------|
| <i>Socioeconomic variables</i> | | | |
| Age | 0.013*** | 0.198** | 0.008*** |
| Age ² | 0.003 | 0.084 | 0.003*** |
| Household size | 0.366*** | 8.796*** | -0.110*** |
| Number of children (aged < 18) | -0.120* | -3.434** | -0.014 |
| Marital status (ever married) | -0.196 | -0.577 | -0.035 |
| Household income ^a | 0.019*** | 0.573*** | 0.004** |
| Housing tenure (reference 'other') | | | |
| own | 0.377** | 14.652*** | 0.055 |
| rent from work units | -0.464** | -12.121*** | -0.199*** |
| rent from housing bureaus | -0.761*** | -19.985*** | -0.305*** |
| rent from private parties | -1.141*** | -20.398*** | -0.433*** |
| City size (reference < 500 000) | -0.520*** | -13.995*** | -0.186*** |
| <i>Institutional variables</i> | | | |
| Job seniority | -0.005 | -0.065 | -0.002* |
| Job rank (reference 'other') | | | |
| low-level cadre/worker | 1.188*** | 26.202*** | 0.345** |
| division (<i>ke</i>) level cadre and above | 1.113*** | 24.120*** | 0.315** |
| Work-unit rank (reference 'other') | | | |
| village, township | -0.523*** | -8.808** | -0.186*** |
| county, prefecture and above | -0.587*** | -10.042** | -0.202*** |
| Work-unit type (reference 'other') | | | |
| private, collective | -0.523* | -20.385*** | -0.136 |
| state, government | -0.791** | -24.333*** | -0.207* |
| Number of cadres | 0.347*** | 8.610*** | 0.105*** |
| <i>Interactions</i> | | | |
| City size × job seniority | | | |
| City size × job rank | | | |
| large city × lower level cadre/worker | | | |
| large city × division level cadre and above | | | |
| City size × work-unit rank | | | |
| large city × village, township | | | |
| large city × county, prefecture and above | | | |
| City size × work-unit type | | | |
| large city × private, collective | | | |
| large city × state, government | | | |
| City size × cadres | | | |
| Constant | 1.694*** | 29.540*** | 0.135 |
| Number of observations | 2 561 | 2 561 | 2 560 |
| R ² | 0.201 | 0.261 | 0.185 |

*** significant at 0.001 level; ** significant at 0.05 level; * significant at 0.1 level.

is not determined by household needs, but rather by a set of administrative criteria (Bian et al, 1997). In addition, the presence of more children also means that the household might be less able to afford a larger unit.

Second, almost a decade after housing reform was launched, institutional variables still affect housing consumption and crowding, in particular for people with urban and permanent hukou (models 1, 2, 3, 1I, 2I, and 3I). Political power continues to be important, as number of cadres has positive effects on housing consumption (0.370, 11.939, and 0.106

Table 7 (continued).

| Model 1I rooms | Model 2I space (m ²) | Model 3I room stress |
|-------------------|-------------------------------------|-------------------------|
| 0.013*** | 0.194** | 0.008*** |
| 0.003 | 0.086 | 0.003*** |
| 0.371*** | 8.918*** | -0.108*** |
| -0.125* | -3.732** | -0.016 |
| -0.210 | -0.691 | -0.035 |
| 0.019*** | 0.544*** | 0.004* |
| 0.387** | 14.841*** | 0.059 |
| -0.448** | -11.463*** | -0.190*** |
| -0.738*** | -19.234*** | -0.295*** |
| -1.136*** | -20.426*** | -0.429*** |
| -0.702*** | -21.902*** | -0.262*** |
| -0.006 | -0.068 | -0.002 |
| 1.795*** | 36.957*** | 0.468*** |
| 1.655*** | 33.183*** | 0.426*** |
| -0.638*** | -7.898 | -0.221*** |
| -0.625** | -9.760 | -0.212** |
| -1.165*** | -35.063*** | -0.285** |
| -1.379*** | -41.453*** | -0.343*** |
| 0.370*** | 11.939*** | 0.106*** |
| 0.002 | 0.003 | -0.001 |
| -2.530*** | -44.893** | -0.523** |
| -2.409*** | -40.768** | -0.514* |
| 0.348 | -2.319 | 0.099 |
| 0.179 | -3.525 | 0.033 |
| 2.526*** | 54.930*** | 0.576** |
| 2.446*** | 61.142*** | 0.562** |
| -0.034 | -6.780 | 0.011 |
| 1.752*** | 32.193*** | 0.149 |
| 2.561 | 2.561 | 2.560 |
| 0.205 | 0.267 | 0.188 |

^a Income is measured in units of 10 000 yuan.

in models 1I, 2I, and 3I, respectively). This indicates that households with more cadres are likely to consume more rooms and space, and they tend to have more rooms than they need. Although the interactions between city size and institutional variable improve the models only slightly, their significance shows that institutional variables play somewhat different roles in large and small cities (models 1I, 2I, and 3I). In small cities with less than 500 000 population, both low-level cadre/worker and division or higher level cadre have more rooms (1.795, and 1.655, respectively) and more space (36.957 m², 33.183 m²), and are

Table 8. Estimates of housing consumption and crowding for people with rural *or* temporary hukou.

| | Model 4 rooms | Model 5 space (m ²) | Model 6 room stress |
|--|------------------|------------------------------------|------------------------|
| <i>Socioeconomic variables</i> | | | |
| Age | 0.012 | 0.231 | 0.006** |
| Age ² | 0.027*** | 0.130 | 0.002 |
| Household size | 0.380*** | 9.926*** | -0.078*** |
| Number of children (aged < 18) | -0.110 | -7.612*** | -0.012 |
| Marital status (ever married) | -0.027 | -2.666 | -0.021 |
| Household income ^a | 0.126** | 1.567 | 0.010 |
| Housing tenure (reference 'other') | | | |
| own | 0.698 | 18.671 | 0.072 |
| rent from work units | -2.133** | -19.552 | -0.265 |
| rent from housing bureaus | 0.307 | 8.029 | -0.131 |
| rent from private parties | -0.480 | -14.793 | -0.398* |
| City size (reference < 500 000) | -0.185 | -10.195*** | -0.135** |
| <i>Institutional variables</i> | | | |
| Job seniority | 0.008 | 0.038 | -0.001 |
| Job rank (reference 'other') | | | |
| low-level cadre/worker | 0.026 | 0.041 | -0.220 |
| division (<i>ke</i>) level cadre and above | 0.224 | 38.870** | 0.125 |
| Work-unit rank (reference 'other') | | | |
| village, township | 0.765 | 0.608 | 0.297** |
| county, prefecture and above | 0.246 | -11.341 | 0.108 |
| Work-unit type (reference 'other') | | | |
| private, collective | -0.800*** | -9.953* | -0.062 |
| state, government | -0.414 | 0.296 | -0.120 |
| Number of cadres | 0.471 | 0.410 | 0.135 |
| <i>Interactions</i> | | | |
| City size × job seniority | | | |
| City size × job rank | | | |
| large city × lower level cadre/worker | | | |
| large city × division level cadre and above | | | |
| City size × work-unit rank | | | |
| large city × village, township | | | |
| large city × county, prefecture and above | | | |
| City size × work-unit type | | | |
| large city × private, collective | | | |
| large city × state, government | | | |
| City size × cadres | | | |
| Constant | -0.047 | 15.682 | 0.030 |
| Number of observations | 520 | 520 | 434 |
| R ² | 0.528 | 0.403 | 0.238 |

*** significant at 0.001 level; ** significant at 0.05 level; * significant at 0.1 level.

less likely to suffer from crowding (0.468, 0.426) than people who identify their job rank as 'other'. Surprisingly, work-unit rank and work-unit type have significant but negative effects on housing consumption and crowding. People working in low-rank and in high-rank work units, both in private and in public work units, have fewer rooms and less space, and are more likely to suffer residential stress than those in the 'other' category. Yet in large cities, the signs for these effects are changed because of interaction terms. For example, for work-unit type, after combining main effects and interactions, the signs for both

Table 8 (continued).

| Model 4I rooms | Model 5I space (m ²) | Model 6I room stress |
|-------------------|-------------------------------------|-------------------------|
| 0.013 | 0.236 | 0.006** |
| 0.026*** | 0.129 | 0.002 |
| 0.395*** | 10.291*** | -0.074*** |
| -0.108 | -8.015*** | -0.016 |
| -0.033 | -2.241 | -0.020 |
| 0.129** | 1.557 | 0.010 |
| 0.702 | 17.529 | 0.077 |
| -2.067*** | -20.419 | -0.250 |
| 0.346 | 9.229 | -0.099 |
| -0.470 | -14.895 | -0.381* |
| -0.485* | -10.500 | -0.119 |
| 0.004 | 0.042 | -0.001 |
| 0.087 | 3.946 | -0.197 |
| 0.400 | 77.106*** | 0.433 |
| 1.039* | -4.543 | 0.300* |
| 0.029 | -15.928 | 0.012 |
| -1.080*** | -10.254* | -0.075 |
| -0.741 | -0.108 | -0.115 |
| 0.639 | -1.741 | 0.152 |
| 0.017 | -0.013 | -0.001 |
| -0.939 | -13.272 | -0.050 |
| -2.064 | -105.858*** | -0.836 |
| -0.980 | 10.949 | -0.074 |
| 0.862 | 29.357 | 0.371 |
| 1.691** | 9.100 | 0.114 |
| 1.855 | 1.722 | -0.003 |
| -0.472 | 10.322 | -0.030 |
| -0.028 | 14.945 | -0.007 |
| 520 | 520 | 434 |
| 0.537 | 0.416 | 0.249 |

^a Income is measured in units of 10 000 yuan.

private/collective and state/government work units are positive, indicating that people working in these work units have better housing conditions than those in the 'other' categories. Although these results indicate different effects of institutional variables across cities, the actual effects are not clear-cut. Several factors may contribute to this. First, a large proportion of observations is in the category of 'other' for job rank (40.46%), work-unit rank (44.64%), and work-unit type (37.19%). Although it is not clear what 'other' means, the descriptive analysis in table 5 shows that these households seem to consume the

most spacious housing. The unwillingness or inability to identify their job and work unit among the provided options may indicate their uniqueness such that different categories in these institutional variables (for example, low and high job rank, private and public work units) have similar effects as 'others'. Second, only 1.78% of respondents in the sample are cadres at department, bureau, prefecture, or higher levels, and 3.4% of work units are at prefecture, province, and central levels. These high ranks of cadre status and work units are likely to result in different housing consumption, but the sample size for each category is so small that they have had to be combined, which may eliminate any potential differences in housing consumption between different job ranks and different work units. Third, as different cities are conducting the reform differently, the national data may give a mixed picture. More detailed data and case studies are needed for a better understanding of these factors in a specific context.

For people with rural or temporary hukou, the effects of institutional variables are less prominent (models 4, 5, and 6). Yet there are suggestions that division-level or higher-level cadre (38.87 in model 5), and people working in village-level or township-level work units (0.297 in model 6) are more likely to have larger housing, whereas those working in private/collective work units are likely to consume fewer rooms and smaller space (-0.800 , and -9.953 in models 4 and 5, respectively).

In summary, it is clear that the housing consumption decision is different for people with urban and permanent hukou from that of those with rural or temporary hukou. Although socioeconomic factors such as life cycle, household income, and housing tenure have similar effects on both, institutional factors such as job rank, work-unit characteristics, and number of cadres in the household affect mainly those with urban and permanent hukou. This is to be expected, as only these people are qualified for the subsidized housing which is allocated according to various institutional factors. In addition, these institutional factors have different effects in large and small cities.

Conclusion and discussion

Providing adequate housing to the largest population in the world has always been a challenge for the Chinese government. In particular, with the socialist ideology that focused more on production than on consumption, housing shortages and residential crowding were acute. Housing reform, launched nationwide in 1988, was intended to improve housing consumption through privatizing the welfare-oriented housing system and developing a housing market. Profound changes have taken place both in housing provision and in housing consumption since the reforms were implemented. With the availability of private housing and the development of housing markets, housing consumption has been improved significantly over the last decade. Yet housing consumption is still low compared with most developed countries. Using the 1996 national survey, I find that having a room of one's own is still a dream for most urban Chinese. The majority of urban households in China still have inadequate housing, and residential crowding continues to be a widespread problem.

In this paper I have shown that housing consumption and residential crowding in urban China are affected not only by socioeconomic factors, as in market economies, but also by institutional factors that are the remnants of the socialist housing system. On the one hand, housing consumption in urban China is beginning to be shaped by market forces. Housing reform has created various options for households to improve their housing consumption, such as purchasing private housing, purchasing public housing, and 'trading up' or 'trickling down'. Compared with the previous allocation system, individual households now have a more active role in deciding how much space they need and how much they can afford. Under these circumstances, life cycle,

household income, and housing tenure become important factors determining the amount of space households have and the crowding conditions they experience. My analyses suggest that older people, larger and better off households, and owners have larger housing units and are less likely to suffer from residential crowding. In addition, households living in large cities with populations of more than 500 000 have smaller housing units and are more likely to experience inadequate housing than are those in smaller cities. These results echo findings in most Western housing markets (for example, Clark et al, 1996), indicating that housing reform in urban China is being fairly successful in introducing market mechanisms into the housing system.

On the other hand, because of the dualism in housing reform, housing consumption continues to be determined by institutional factors inherited from socialist China, such as hukou status, work-unit characteristics, and political status. Although reforms are underway, the housing system continues to favor households with urban and permanent hukou, by excluding households with rural or temporary hukou from accessing various types of housing and blocking their paths to improvements in housing consumption. Thus, their housing consumption decision is somewhat different. Whereas households with urban and permanent hukou in general consume more spacious housing than do those with rural or temporary hukou (mostly migrants), the former are subjected to the constraints of other institutional variables such as job rank and work-unit characteristics. Although work units are backing out of the business of housing provision, they continue to play important roles in housing consumption. Yet their roles are different in cities with different population sizes. Furthermore, political status continues to be a determinant of the level of housing consumption. Households with more cadres have significantly larger housing units, and they have more space than they 'need'.

Compared with the previous allocation system, in which institutional factors and government policies determined all aspects of housing consumption, households now have more control over their housing and the dynamics of housing consumption are much more complex. Even though demographic and socioeconomic factors now play roles in housing consumption, the role of institutional factors is still apparent. In fact, the importance of both types of factors is illustrative of the transitional state of the housing system in urban China. As housing reform deepens, the importance of institutional factors in housing consumption may reduce. Since 1998, when the central government announced the end of the provision of subsidized housing by work units (State Council, 1998), commodity housing and affordable housing have become the main housing sources. Although these housing types target mainly households with urban and permanent hukou, migrants who have rural or temporary hukou have recently been allowed to purchase private housing in some cities, especially small and medium-sized cities, and to change their hukou status, although most migrants cannot afford to do so. These recent changes may further reduce the role of institutional factors in housing consumption.

As the overall level of housing consumption in urban China has been improved, housing inequality is on the rise. The housing reform is currently focused more on privatization of the housing system, and less on equity issues in the housing market. People with rural or temporary hukou and those working in private sectors, who were at a disadvantage in the socialist housing system, continue to be discriminated against in the emerging housing market. They are not allowed to access various housing options brought about by the reform. With the rapid development of private economies and the increasing mobility in Chinese cities, housing discrimination based on hukou status and work-unit affiliation will result in severe housing problems for these sectors of the society. Furthermore, housing reform tends to reward people who have already

benefited from the previous welfare-oriented housing system more than those who have not. For example, the sitting tenants of public housing can purchase their flats at subsidized prices, whereas those who have not already had access to public housing have to purchase private housing at much higher prices. Thus, as the housing system is moving toward a market-oriented system, not every household in urban China can enjoy the new housing opportunities brought about by the reform, and not every household can enjoy the same degree of help from the government during the transition. Although some recent changes in the housing system and the hukou system, as well as reforms in state-owned enterprises, may reduce the advantages associated with urban and permanent hukou and public sector employment, more reforms are needed to improve housing consumption for all strata of the population and to provide a more equitable housing system in urban China.

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