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China's Homeownership-Oriented Housing Policy: An Examination of Two Programs Using Survey Data from Beijing

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Abstract

The paper uses data from a household survey in Beijing to explore the impact of China's two primary homeownership-oriented housing policies: the Housing Provident Fund (*Zhufang Gongjijin*) compulsory savings scheme and the subsidized construction of 'affordable housing' (*Jingji Shiyong Fang*). With respect to the former it attempts to establish whether owners that are beneficiaries of the program purchase larger homes and enjoy more living space per person than other owners. Descriptive results support these effects but cannot be considered conclusive given the multitude of alternative factors driving housing consumption in Beijing that cannot be controlled for with our dataset. With respect to the *Jingji Shiyong Fang*, the paper uses a simple mortgage simulation to investigate whether households in varying income classes can purchase a unit through the program. Results indicate that although the subsidy is substantial – roughly halving the purchase price per square meter – the typical middle-income and lower-middle income households that are the program's intended beneficiaries would still find these units out of reach.

Keywords: China; homeownership; housing policy

Introduction

China's housing policy, like those of most countries, has welfare and homeownership components. This paper looks at the latter, specifically examining the efficacy of the two principal policies supporting homeownership: the Housing Provident Fund (*Zhufang Gongjijin*) and the production of so-called 'Affordable Housing' (*Jingji Shiyong Fang*).[1] The former is a compulsory housing savings plan with employer matching that is modeled on Singapore's Central Provident Fund. The latter is a subsidized construction scheme with developer profit caps designed to help middle- and lower-middle-income households become homeowners. Although theoretical and practical problems have been identified with each program, their income targeting and general efficacy have not been subjected to systematic empirical investigation.

This paper uses data from a household survey in Beijing in an effort to examine a specific aspect of each program. First, does access to Housing Provident Fund benefits increase the size of the housing units purchased and/or living space per capita among beneficiaries? Unfortunately, due to the nature of housing allocation and privatization processes in China, we found it impossible to provide a definitive answer to this question with the survey data collected. While households with access to *Zhufang Gongjijin* savings did purchase larger units, virtually all of the units purchased by both HPF beneficiaries and non-beneficiaries were privatized public sector housing. Unit size was therefore determined *prior* to the decision to purchase the home: households simply used whatever funds were available to them to purchase the unit they already occupied. Second, are the lower-middle- and middle-income households that are ostensibly the targets of the *Jingji Shiyong Fang* program able to afford homes in these 'affordable housing' projects? Results for this second question indicate significant gaps between the stated goals and targeting of the policy and its actual outcomes and beneficiaries. Few households below the upper middle-income strata can purchase even these subsidized units.

[1] These are in addition to the privatization of formerly state and work unit owned dwellings which boosted ownership rates in urban areas to 77.1 percent as of 2000 (Wang 2003).

Background: China's Homeownership-Oriented Housing Policies[2]

China's housing market and policy context are relatively unique, differing from those of the Europe and the US, including the post-Communist countries (Wang and Murie 1999, Naughton 1994).[3] This section therefore begins with a review of China's homeownership-oriented housing polices. In this section and throughout the paper the discussion focuses on urban housing policy only because of the different rules and institutional arrangement governing housing in rural and urban areas.

Privatization

As economic reforms deepened in the 1990s China's policymakers sought to privatize much of the publicly-owned housing stock that had been previously rented from the state or state-owned enterprises (SOEs). In doing so the government was motivated by a number of factors, foremost of which was the fact that maintenance cost levels ran well above the nominal rents paid by tenants. Zhang (2000) cites figures indicating that as of 1991 rent on government-owned housing averaged 0.13 ¥/m^2 of living space (enterprise-owned housing was even cheaper) while upkeep expenses averaged 2.31 ¥/m^2. Under these conditions housing costs accounted for only 1 percent of the average worker's earnings.

Further motivation for privatization came from the need to disentangled employment and housing provision – the defining characteristic of China's system of housing allocation under socialism and well into the reform period. While tying workers' residence to their employment served government goals when political control was of paramount concern, it became increasingly untenable when priorities shifted to include development of a more market-oriented economic system. In this context, the fact that labor mobility was greatly attenuated by the linkage between employment and housing became a major liability of the system. Li (2001) argues that workplace involvement in housing allocation in this system also

[2] Although the information in this section is drawn from a variety of sources, many of the principal themes are covered in an excellent article on China's housing and housing finance policies by Wang (2001).
[3] For a summary of the commonalities between China's housing markets and those of other post-socialist countries see Doling (2003).

sowed dissatisfaction among workers who saw substantial inequities in the system. This dissatisfaction ultimately translated into limited alignment of employer and employee incentives in the workplace.

Privatization was also motivated by the fact that policymakers were looking for ways to spur development of the country's nascent housing markets by encouraging the transacting of secondhand homes. Creating a large pool of owners was seen as a precondition to initiating the filtering process through which most owner-occupied housing is allocated in countries with well-developed housing markets. After several fits and starts privatization gained momentum in the early to mid-1990s, primarily as a result of units being offered to sitting tenants at prices well below market rates. This incentive was complemented with the threat of gradually rising rents for those that did not take the opportunity to purchase their unit, though ultimately the rent increases announced were only partially implemented. Meanwhile, another avenue through which many households had continued to acquire housing well into the 1990s was closed in 1998 by a central government directive banning in-kind housing provision by all public sector (including SOE) employers, although employment-based housing subsidies were permitted – and indeed persist today.

In 1994 the Housing Reform Steering Group of the State Council unveiled several reforms designed to encourage the development of housing markets, including both of the programs examined in this paper (Wang 2003).[4] Lee (2000: 66) claims that the 1994 housing policies revealed a strategy by the government of "seek[ing] every means to disengage from public housing through the promotion of homeownership." Zhang (2000) categorizes these shifts as amounting to a policy preference favoring owner-occupied tenure over rental. Tomba (2004a) attributes policies supporting purchases of newly built units in the market – which he notes are heavily skewed toward public sector employees – to three government priorities: (1) fueling economic growth by stimulating consumption; (2) helping attract talented individuals to public sector employment; and (3) binding the urban middle class more closely to the political

[4] Beijing had established a Housing Provident Fund in 1992.

status quo. Liu, Park, and Zheng's (2002) analysis of the relationship between housing investment and economic growth found significant positive relationships over both the short and long runs: another important policy motivation for spurring development of housing markets.

Housing Provident Fund

The Housing Provident Fund (HPF) was designed to help wean employees from workplace housing provision. As such, it was paired with reform of the salary system. Instead of providing housing directly and paying employees a correspondingly lower salary, the program's goal was to enlist public sector employees in the development of the commercial housing market by raising their incomes but siphoning the increase into savings accounts dedicated to housing, while reducing their in-kind housing benefit, thereby encouraging them to find housing in the marketplace (Wang 2001). The reform was part of a more general effort to have individuals and markets replace government and work units as the entities responsible for housing finance (Lee 2000). Because employer participation is not mandatory in the private sector, the primary HPF beneficiaries are government, party, SOE, and other public sector workers, although some private firms and foreign joint ventures also match employee contributions.

Under the savings scheme, an individual's funds are deposited directly by the employer into an account in his or her name administered by China Construction Bank. The fund can be used for a variety of purposes associated with buying, building, or improving homes, including outright purchase, downpayment, and monthly mortgage expenses. Unused HPF funds are inheritable in the event of an account holder's death. Contribution levels were initially set at 5 percent and had risen to 8 percent by 1999 (Wang 2001). Because Beijing has an enormous share of government, party, and public sector workers, access to HPF schemes with employer matching is relatively high there compared with other cities.[5]

[5] According to Wang (2001) there are more than 20,000 government work units (government departments, state-owned enterprises, and other institutions) in Beijing.

In a recent overview of China's housing policy, Sun (2004) criticizes the targeting of the HPF system. He first notes that because HPF is employment-based, it has no effect at all on the many households who are unemployed or marginally employed. This is reinforced by the fact that even most working lower-income households are not in the kind of official, full-time, and typically public sector positions likely to carry an HPF benefit. Further, because employer matching takes the form of a percentage of income, higher-income households receive a larger benefit (Lee 2000). Taken together, the work of Lee (2000) and Sun (2004) suggest that *Zhufang Gongjijin* is a significantly regressive policy in which the lower-end of the income distribution receives no benefit at all, and the magnitude of employer contributions increase with an employee's position and income. As Tomba (2004a: 17-18) notes in his analysis of housing market conditions in Beijing, "the introduction of housing provident funds in the nineties did not enhance egalitarian distribution of housing assets…the funding schemes ended up advantaging employees in the financially and economically most viable enterprises and, within this group, privileged employees with a high level of employment stability and prestige."

Sun (2004) goes on to point out that even the group of theoretical beneficiaries consists only of a subset of the urban population (and an even smaller share of those with unmet housing needs). He estimates the employed population in urban China at 200 million, of which 40 million work in the public sector and 30 million are employed at SOEs, putting the maximum covered population at not much more than 70 million. Yet many of those counted as employed among the SOE population are no longer working, and many nominally functioning SOEs are not capable of paying into the HPF (an expense that further reduces their competitiveness). Further, many lower level employees in the public sector are unable to use their HPF funds, so the actual potential beneficiary pool is a modest subset of the urban population and even of the urban employed population.

Gu and Trefzger (2003) compare *Zhufang Gongjijin* to policy alternatives that have been used to subsidize homeownership in other countries. They recommend replacing it with a suite of policies working through mortgage markets (*e.g.*, government loan guarantees) and the tax

system (*e.g.*, deductibility of mortgage interest) that they argue would more substantially increase ownership among low- and moderate-income families. They also note that the standardization derived from government participation in the mortgage market could potentially advance efforts to develop a secondary mortgage market, adding a needed depth to the Chinese housing finance system.

Affordable Housing

The other principal homeownership-oriented public policy is the development of 'affordable housing' (*Jingji Shiyong Fang* or 'economic and comfortable housing'). The policy is designed for lower-middle- and middle-income urban residents and involves government subsidies and profit caps for developers. The primary subsidy vehicle making the program possible is administrative allocation of state-owned land at no cost.[6] Projects are also often subsidized by the reduction in development costs and fees paid to local government. Developer profits are limited to three percent and units are generally smaller than commercial apartments to maintain affordability. Actual selling prices are supposed to be checked to ensure that they remain below agreed upon thresholds in order to avoid capture of the subsidy by developers. Sun (2004) calls *Jingji Shiyong Fang* the government's primary housing program and argues that government has invested enormously in it through the combined revenue forgone by land donation, reduced taxes and fees, and subsidized construction loans.[7]

In Beijing, where commercial housing is expensive relative to incomes, affordable housing projects have been popular. The primary qualification standards for the program set by government include: local residence registration; first time buyers or households officially defined as facing housing poverty; and income below ¥60,000 annually (Ministry of Construction 2004). The fact that this income threshold is relatively high is discussed later in

[6] Because compensation must be paid to existing land users the 'land cost' of the projects is not zero, however, and can constitute as much as half of total development costs (Wang 2001). See Chan (2003) for a discussion of problems related to China's system of land acquisition.

[7] According to Wang (2001) the development of affordable housing was also tied to efforts to develop domestic consumption in response to the Asian Financial Crisis. As a sector with large spillovers, housing has long been associated with macro-economic stimulus policies (cf. Carliner 1998).

this paper in the section examining the income targeting of *Jingji Shiyong Fang*. It is worth noting, however, that according to the Beijing Municipal Bureau of Statistics the mean annual household income of lower-middle-income households (*i.e.*, the target group for the policy) in Beijing in 2002 was ¥29,966 or slightly less than half of the threshold.

In Beijing, 1998 saw the approval of the first set of *Jingji Shiyong Fang* consisting of 19 projects containing 70,000 units with a total of 5.6 million square meters of floor space. Most were located in suburban areas, at least in part to reduce the cost of compensating existing land users. Prices ranged from 2,000 to 4,000 ¥/m^2. A second wave of projects was approved the following year, at prices agreed upon between developers and government officials ranging from 2,350-4,450 ¥/m^2 (Wang 2001). The amount of 'affordable' housing now reaching the market is substantial. In 2003, these units constituted 23 percent of all new units sold in Beijing (Beijing Real Estate Information On-Line 2004). Feng and Guo (2003) claim that an apparent dip in Beijing house prices in 2002 was due largely to the opening of sales for three large affordable housing communities with a total of more than 2 million m^2 of living space priced between 2,200 and 2,650 ¥/m^2.[8] For *Jingji Shiyong Fang* units sold in the first quarter of 2004, the average price per square meter was ¥3,202.

Wang (2001), Sun (2004), and Zhan (2003) all argue that although they are priced substantially lower than market rates, the housing in *Jingji Shiyong Fang* projects remains out of reach for most households. Sun (2004) claims that despite the policy's intent to reach lower-middle-income first-time buyer households, the annual income threshold of ¥60,000 actually makes most upper-middle-income households eligible. This claim is consistent with figures from the Beijing Municipal Statistics Bureau mentioned earlier, which put mean annual incomes of the upper-middle-income group at ¥43,581. In any case, qualification criteria may not to be strictly monitored as for example, applicants with multiple sources of income find it easy to qualify by presenting pay slips from only one source. Tomba's (2004a, 2004b) interviews with residents of one project in Beijing found that neither income limits nor rules

[8] The three were *Tian Tong Yuan, Hui Long Guan,* and X*i Hong Men Rui Hai Xin Cheng*.

prohibiting existing owners from buying *Jingji Shiyong Fang* housing were enforced.[9] Given that developer incentives favor bending the rules to qualify as many potential customers as possible, effective monitoring would seem to be quite difficult. Sun (2004) argues for scrapping the affordable housing scheme in favor of a downpayment assistance program targeted more directly at lower-income households.

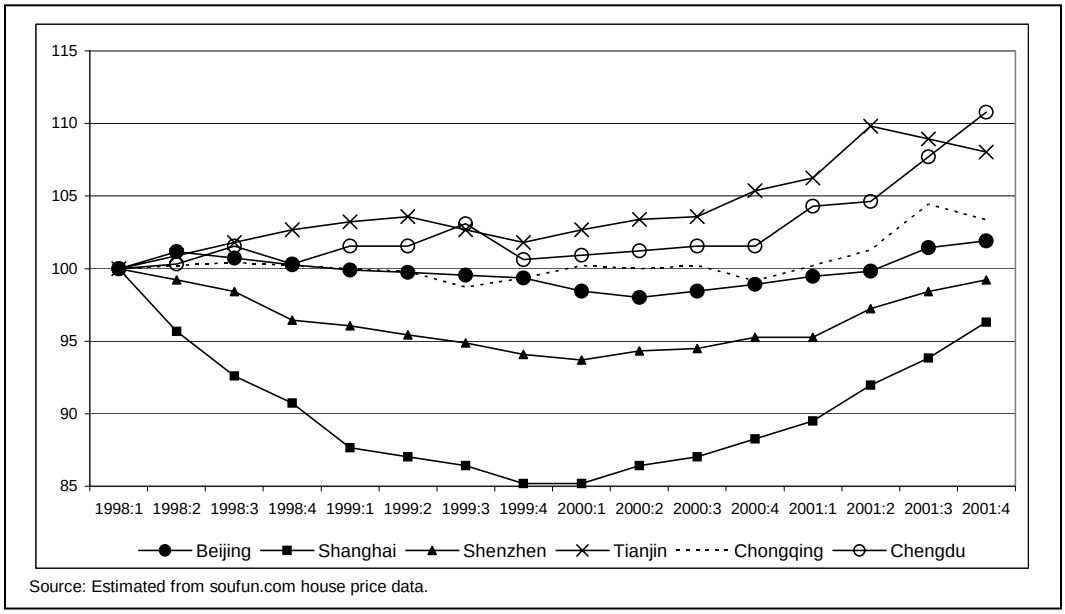
In the past decade and a half the policy shift from public rental to owner-occupation has been pronounced. China now has one of the highest homeownership rates in the world, largely as a result of the privatization of public sector housing. The remaining policies that promote ownership require a significant commitment of government resources, both on-budget and in the form of forgone revenues from land use rights allocation, taxes and fees. Yet, as this section has shown, each program is perceived as flawed by those analysts that have examined them. The next section presents some additional background information on Beijing's housing market before the paper moves to an empirical examination of the validity of these critiques.

Beijing's Housing Market

China's real estate markets are localized at least to the metropolitan area level, as indicated by the differing price trends in six large cities presented in Figure 1. Prices across the six exhibit substantially different trajectories over the recent four year period covered in the Figure. The cities break relatively neatly into three sets of two: Shanghai and Shenzhen experienced substantial declines, Beijing and Chongqing were relatively flat, and Chengdu and Tianjin saw modest house price growth.

[9] In the latter work Tomba (2004b) quotes an employee of the real estate management company as saying that one *jingji shiyong fang* project he visited had only 40 percent owner occupiers with the remaining 60 percent of units used as rental properties.

Figure 1: Price Trends Differ Among Cities



Source: Estimated from soufun.com house price data.

The localization of China's housing markets is not merely the result of the standard elements of differentiation across real estate markets – such as local and regional macroeconomic conditions – but also derives from unique historical and political factors. Huang (2004) argues that because of the coexistence of the housing market and socialist government, and because housing reform has been a decentralized process, today's markets are substantially influenced by characteristics of the residual socialist era housing, degree of marketization in each city, and local government behavior.

Han (2004) shows that these factors notwithstanding, Beijing's housing market is categorized by the familiar presence of important submarkets differentiated by price and historical factors. The latter include: a North-South division based on Chang An Street with the North side generally more desirable and home to higher-status households; a preference for the North of the city based on *fengshui* principals associated with the landscape; and the official designation of a central business district. Because Han (2004) is exploring the spatial structure of the city rather than localized price trends his analysis does not explore the extent to which price trends differ in the different submarkets he identifies.

As home to important organs of the central government (the most powerful public sector work units), Beijing sees as much or more ongoing work unit involvement in housing provision than any other Chinese city. Huang (2004) found that even a substantial share (60 percent) of the allegedly fully marketized 'commodity housing' sector in Beijing were actually homes purchased by work units and sold to their employees at a discount. Additional support for the notion that Beijing's housing market is heavily influenced by extra-market factors is provided by Feng and Guo (2003) who found that two of the key features nudging prices downward in 2002 were the affordable housing projects described above and changes in land use policies.

Figure 2: Beijing Housing Market Characteristics, 2003

Unit Type	Units Sold	Floor Space (mil. Sq. m.)	Value (bil. ¥)	Ave. Price (¥ per sq.m)
Pre-Sold Units				
Affordable Housing	33,797	3.9	11.5	2,918
Commercial Housing	114,003	13.5	86.4	6,396
Pre-Built and Resold Units				
Affordable Housing and Privatized Units	16,826	1.2	3.6	3,057
Commercial Housing	17,061	2.6	8.0	3,080

Source: *Beijing Housing Market Annual Communique 2003* . http://house.sina.com.cn.

Figure 2 presents some descriptive information on the Beijing housing market for 2003. The data are presented by the provider and already aggregated such that only two key cleavages exist: (1) Pre-sold newly constructed units versus the combination of secondhand homes and new homes sold after construction is complete and (2) market-priced commercial housing versus the combination of affordable housing (*Jingji Shiyong Fang*) and privatized government/enterprise housing. Among pre-sold units, commercial housing was dominant, accounting for more than three times as many sales valued at 7.5 times that of other pre-sold units. The higher aggregate value of commercial housing is partially a function of the subsidy, which makes the affordable units less than half as expensive on the basis of cost per square

meter. To an unknown degree it is also undoubtedly due to lesser desirability of the affordable units relative to commercial ones in terms of location, structural features, and other variables that determine house prices. Among pre-built/resold homes the price is more or less the same across the two categories of housing, though commercial units are more than twice as large on average.

The presence of hybrid forms of property rights is another key characteristic of China's housing markets. To start with, urban land ownership is still largely controlled by the government. Under this system land is made available for development under long term leases in which 'use rights' only are transferred (Ding 2004). Perhaps more significantly, property rights arrangements surrounding individual privatized units are often not clearly defined. In order to accomplish the goal of reducing or ending the burden of managing public housing and initiating a market in secondhand homes, privatization prices needed to be low enough for sitting tenants to purchase their units. For those without the resources to buy at a price carrying full property rights to the unit, a lower set of prices was established under which 'use rights' (including the ability to inherit them) to the unit were sold but the state or enterprise retained a claim to capital gains on sale of the unit (Wang and Murie 1999). Such a system may have increased the rate at which government and enterprises escaped from under crippling maintenance expenditures, but at the same time worked against the broader goal of jumpstarting housing markets because the microeconomics of housing choice differs for use rights purchasers and standard homeowners.[10] Those who only own use rights are more likely to remain in their privatized unit because their financial incentive to sell is weakened and because the equity they might have tapped to fund a new home purchase is diminished by the amount that must be returned to the government or work unit when the home is sold.

In summary, China's housing markets are a combination of familiar and unique factors. In terms of the former, they are regionalized and characterized by differing levels of affordability, differentiation into submarkets, income sorting, and geographic variation in price

[10] Liu, Zheng and Sun (2004: 2)) note that existing homes sales are far lower than new home sales in Beijing due to the issues related to incomplete property rights. They further note that even in Guangzhou, which has one of the best developed markets for existing homes in China, new homes sales continue to outpace existing home sales by more than 50 percent.

trends. Yet they are also effected by a high degree of public sector involvement in housing provision (which reaches a peak in Beijing) and have non-standard property rights regimes for both housing units and the land beneath them.

Data

Data for the analysis are drawn primarily from a national survey on social protection conducted for China's Ministry of Civil Affairs (MCA). The survey instrument includes a purposed-designed housing component that allows us to examine the research questions outlined at the beginning of the paper. Data collection in Beijing was conducted in April and May of 2004. Sampling proceeded in two stages, community selection and household selection.

Community Selection

Communities were not selected randomly. MCA's goal of understanding characteristics and behavior of 'typical' households dictated a focus neither on very wealthy nor very poor neighborhoods. The communities selected were identified by MCA officials as broadly 'middle income,' although lower-middle-income may be a more accurate description for several of them based on interviewer perceptions and the income data collected and reported later in the paper. All are drawn from the eight-district area referred to as the 'City Proper' and 'Near Suburbs' by the Beijing Municipal Bureau of Statistics.[11] Four of the six communities are located in Beijing's traditional core, all in the Dongcheng District in the Southwestern portion of the City Proper. In practice, the urbanized area of Beijing extends deep into the districts classified as 'Near Suburbs' (*e.g.*, the official Central Business District lies in the 'Near Suburb' of Chaoyang) and the two communities in the Near Suburbs are both in highly-urbanized sections of the Haidian District.

Figure 3 presents summary information on community characteristics. The first two

[11] The City Proper includes: Dongcheng, Xicheng, Chongwen, and Xuanwu. Near suburbs are Chaoyang, Fengtai, Shinjingshan, and Haidian.

communities (Chongnei and Beijige) are *hutong* communities of *pingfang*[12] housing predating the New China era.[13] The other four communities consist primarily of *loufang* or apartment block-style structures built over the past five decades, with the vast majority completed before 1990. In recent years, a few new commodity housing buildings have been constructed in or merged into these three communities. Communities C3-C6 are associated with one or more work units, including nuclear research (C5) and CCTV (C4). Five of the six communities officially house more than 1,500 registered households - the exception is the much smaller C5 – but in practice the number of full time occupants is often lower according to community staff members.

Figure 3: Characteristics of Communities in Sample

Community Name/ Number	Chongnei C1	Beijige C2	Dongwai Dajie C3	Dinghui Dongli C4	Heqingbaosuo C5	Shizipo C6
Type of housing	*pingfang*	*pingfang*	*loufang*	*loufang*	*loufang*	*loufang*
District	Dongcheng	Dongcheng	Dongcheng	Haidian	Haidian	Dongcheng
Location	inside 2nd ring	inside 2nd ring	outside 2nd ring	between 3rd & 4th rings	between 3rd & 4th rings	outside 2nd ring
Sample Size	148	143	96	149	77	92

Source: Interviews with staff in each community.

Household Sampling

Household sampling within each community was intended to be random. The target number of respondents from each community was dictated loosely by community size, with goals of 150 respondents drawn from larger communities 100 respondents from medium-sized ones, and 90 respondents from the smaller C5. Using the door number plate list as a sampling frame, researchers selected every n^{th} record in order to reach the desired sample size for that

[12] Traditional style housing is called *pingfang* or 'flat' housing to differentiate it from *loufang* (apartment style) housing.
[13] Community 4, Dinghui Dongli has 20 units of *ping fang* homes, none of which are included in the sample.

community based on its total number of residents. Proxy cases for selected households known by community staff to be living elsewhere were chosen in the same manner.

Several problems prevented true randomized sampling. First, households absent at the time of the interview were generally substituted for by their nearest neighbor at home at the time of the interview. Although interviews were conducted on weekends to minimize the chance of missing working households, they may have been missed anyway because they might spend this time doing things such as shopping and visiting friends and relatives that they do not have the opportunity to do during the week. This method likely biases the sample away from the working and working age population. (These effects are accounted for by weighting the data as necessary in the analysis.) Second, in communities where it was difficult after several attempts to achieve the desired sample size (C1, C2, C5, and C6), residents who were easy to access were interviewed. Based on interviewer observations, these 'easy access respondents' included disproportionate numbers of unemployed and elderly residents, and acquaintances of community staff members.

Characteristics of Households and Housing Units in the Sample

Figure 4 compares characteristics of houses in the study sample and those in urban Beijing. The comparison is with the annual Beijing Urban Discretionary Income Survey (BUDIS) (Beijing Municipal Bureau of Statistics 2004) which samples 200 households in each of five income classes. Classifying our interviewed households into these five income classes indicates that our sample appears to have a relatively high share of lower-income households. Fully 43 percent of surveyed households are in the lowest income group, and their average income is well below that of the 'low-income' group in the BUDIS study. Unfortunately, it is not possible to know what share of Beijing's households occupy each of the BUDIS sample's income classes since they sampled equal numbers of households from each income group and do not report cutoffs or how their groupings were determined.[14] The skewing of our sample toward

[14] Because the income classes used to classify households in the BUDIS study were not reported, our households are classified using cut points halfway between each of the income category means reported by Beijing Municipal Bureau of Statistics.

lower-income households may also result from the inclusion of large numbers of respondents (more than 40 percent of the sample) from the two *hutong* communities (C1 and C2). Both had mean incomes below the overall average, and C1, at ¥24,262 per year, was the lowest of the six.[15]

Our high-income group is also relatively large, and earns substantially more than the average for high-income households in the BUDIS survey. The average for all five income groups in our dataset is about ¥2,000 lower than the comparison study, but when weighted so that each group counts equally our households actually earn about ¥4,000 more per year. In general the BUDIS sample indicates far less income inequality than our sample. While an interesting issue in its own right, which dataset correctly reflects incomes of the highest and lowest earners in the city is not important for our particular purpose because the targets of the homeownership policies we examine are aimed at lower-middle- and middle-income households. For these groups the two datasets are quite similar in terms of both income and expenditures.

The groups are also similar across household size but differ on employed and retired persons per household measures. These differences may be explained by definitional issues between the two datasets dealing with differences in usage and respondent interpretations of the terms ‘employed’, ‘unemployed,’ and ‘retired’ between the two surveys that we were unable to fully disentangle.

[15] This may be an artifact of the policy environment. Both C1 and C2 are slated for resettlement which, according to community staff members, has prompted many households to split and register as multiple households in order to maximize the compensation they receive as part of the resettlement process.

Figure 4: Comparison of Characteristics of Study Sample and Beijing Residents

Household Income Class	Average Household Income	Expenses	Household Size	Employees Per Household	Retired Persons per Household	Sample Size (households)
	Beijing Urban Household Annual Survey of Discretionary Income					
Low	21,827	21,880	3.2	1.7	0.49	200
Lower-Middle	29,966	25,515	3.1	1.7	0.61	200
Middle	37,292	30,310	3.1	1.7	0.74	200
Upper-Middle	43,581	34,861	2.9	1.7	0.71	200
Upper	65,597	41,457	2.7	1.6	0.71	200
Total	39,759	30,857	3.0	1.7	0.65	1,000
	Households in Study Sample					
Low	15,651	16,245	2.9	1.3	0.72	295
Lower-Middle	29,981	26,493	3.0	1.5	0.90	93
Middle	37,226	31,114	3.2	1.3	0.93	86
Upper-Middle	47,620	44,453	3.2	1.8	0.91	80
Upper	89,233	72,127	3.3	1.9	0.91	129
Total	37,961	34,435	3.1	1.6	0.83	683
Weighted Total	*43,942*	*38,087*	*3.1*	*1.6*	*0.88*	*683*

Note: Research sample households are sorted into income classes using cutpoints midway between the category means of the Beijing Discretionary Income Survey. Expenses for Discretionary Income Survey households include total living expenditures. Expenses for research survey households are only total of three largest expenses in previous year. Weights are based on equal size (136.6 households) income classes.

Source: Beijing Municipal Bureau of Statistics, *Beijing Statistical Yearbook 2003*.

As a final note on Figure 4, from a home purchasing perspective the implied ability of lower-middle- and middle-income households to save for the downpayment necessary to purchase a home with mortgage loan is minimal because expenses are high. As discussed below, a typical affordable unit with subsidized construction costs and developer profit caps costs about ¥225,000 (without furnishings or fixtures). Assuming an eighty percent LTV mortgage suggests it will take over a decade for those in the lower-middle-income group to save for a home, and more than seven years for middle-income households to do so. While these numbers are very rough and ignore many other costs associated with purchasing a home, and neither survey collected information on household wealth from which potential downpayment sizes might be inferred, they suggest that affordability is a potential problem even for residents with access to mortgage finance to support home purchases.

As a final step before moving on to the analysis, Figure 5 presents tenure and housing quality information for the sample, again comparing it with BUDIS households. Sample

households are separated into *hutong* (C1 and C2) communities and others to reflect the many fundamental differences between *pingfang* and *loufang* housing. A brief list of these differences includes age of the unit, allocation mechanism, rules governing privatization, and most structural characteristics.

Figure 5: Tenure and Structural Characteristics of Sample Households and Units

Unit/Household Characteristics	Hutong Communities C1-C2	Other Communities C3-C6	Beijing Urban Discretionary Income Survey Households
Owners (%)	15.6	80.0	65.1
Sample Size	147	400	1,000
Share of Owners in Privatized Unit	*35.2*	*88.9*	*92.6*
Share of Owners in Other Unit	*64.8*	*11.1*	*7.4*
Sample Size	*17*	*305*	*651*
Renter (%)	84.4	20.0	34.9
Sample Size	147	400	1,000
Share of Renter in Public Unit	*67.6*	*34.7*	*94.3*
Share of Renters in Other Unit	*32.4*	*65.3*	*5.7*
Sample Size	*115*	*49*	*349*
Housing Quality/Crowding Indicators			
Living Space per person (sq. m.)	8.3	16.7	17.9
Private Water Tap (%)	99.2	100.0	84.8
Private Lavatory (%)	10.2	98.8	52.8
Central Heating (%)	13.8	99.5	75.0

Note: 'Private' can be shared among families in a single *pingfang* yard in C1 and C2.

Relative to the 65.1 percent rate among BUDIS respondents, *hutong* community households have dramatically lower (15.6 percent) ownership rates, while the other communities have substantially higher (80.0 percent) rates. The share of owners that purchased a privatized unit – at 35.2 percent – is also much lower in the *hutong* communities than in either of the other groups, where it is roughly 90 percent. This difference almost certainly derives from unique factors pertaining to *pingfang* homes, such as many shared entrances and other facilities than make it difficult to subdivide the larger 'yards' (s*iheyuan*) of which each household's unit is a part, as well as from privatization policy differences. Among renters, much

larger shares rent from sources other than government or work units in C1 and C2 than C3-6, although the BUDIS data indicate that, citywide, most rentals are in the public sector.

In terms of housing quality, C3-C6 residents appear to be living relatively comfortably, with virtually all residents of these communities having private water and plumbing facilities and central heating. (Differences with the all-Beijing totals represented in the BUDIS data are likely a result of our sample consisting exclusively of households relatively close to the city center.) The much lower prevalence of these amenities in C1 and C2 is again a function of the age and history of these units. *Hutong* households also have far less living space than others. At 8.3 square meters per person, this *average* is just above the 'housing poverty' guideline of 7.5 square meters per person. Even the 'private' water taps reported by most respondents are often shared within the *pingfang* yards (BBLRH 2001).[16] Because *pingfang* housing differs so substantially from *loufang*, we omit C1 and C2 owners from the analysis in the next section where we compare purchases of *Zhufang Gongjijin* beneficiaries and non-beneficiaries.

The Impact of *Zhufang Gongjijin*

All else equal, participation in a compulsory housing savings scheme with employer matching should either raise the likelihood that a household purchases a home, increase the size and quality of the home that they purchase, or both. In theory we could test the unit size and living space per capita hypotheses with our household data. Unfortunately, in reality a rigorous test of this issue with full statistical controls is precluded because virtually all owners in the sample purchased privatized public or enterprise housing. As a result, for most owners unit size is determined prior to both tenure choice and unit selection. Further, causation between use of HPF funds and unit size is particularly difficult to establish when most owners occupy privatized public housing because both derive from the relative power of the work unit and the employee's position within it. In the absence of data with which to model the determinants of unit size and space per capita, this section instead presents a handful of descriptive results

[16] The differences between housing, tenure, and occupant characteristics in the *hutong* communities and others are discussed in more detail in a brief research note (Dong and Duda 2004).

relating to the use of the Housing Provident Fund but stops short of making definitive conclusions about its impact.

In our data, 'beneficiary' status with respect to *Zhufang Gongjijin* is determined based on responses to a series of questions asking owners about the funding sources, including HPF, they used in purchasing their unit. The analysis is restricted to C3-C6 because both ownership and living space are determined by two factors not particularly relevant to the HPF policy in C1 and C2. First, these *hutong* communities are already built out and fully occupied under their current *pingfang* structure type, and have been for decades, offering owners no opportunity to choose or alter the size of their housing unit. Second, separate rules have governed privatization and tenure opportunities in these unique homes in the historic heart of Beijing.

Figure 6: Comparing Housing Provident Fund Users with Other Owners

Unit/Household Characteristics	Beneficiaries	Non-Beneficiaries	All Owners
Housing Quality			
Median Age of Structure (years)	11	17	15
Median Actual Living Space (sq. m)	57	49	50
Median Actual Living Space/Person (sq. m)	20	16	16
Cost			
Median Purchase Price (¥)	50,000	30,000	32,000
Median Purchase Price/Square Meter (¥)	1,041	618	714
Type of Unit Purchased			
Privatized Unit (%)	92.6	88.4	88.9
Median Purchase Price/Square Meter of Privatized Units (¥)	1,042	600	711
Work Unit Type			
Public (Government/Party, SOE, Other Public Sector) (%)	90.5	89.0	89.4
Sample Size	253	55	323

Note: Includes only Communities 3,4,5, and 6. Beneficiaries are those who reported using *Zhufang Gongjijing* funds to purchase their unit. Sample size is the maximum possible, individual cell counts are typically lower. Households are considered 'public' if any family member is employed in the public sector.

Figure 6 presents housing quality and cost results for owners that used HPF funds and those that did not, and shows substantial differences between the two groups. On the housing quality variables beneficiaries appear to fare much better than others. On average they live in buildings that are 6 years newer. They also occupy units that are 16 percent larger overall and

enjoy 25 percent more living space per resident. HPF users also bought more expensive units. The median cost of their homes was two-thirds higher than the price of those purchased by non-beneficiaries (¥50,000 versus ¥30,000). On a cost per square meter basis, the homes bought by HPF users were 68 percent more expensive.

While it is tempting to conclude based on these cost and quality differentials that HPF has helped households purchase larger, more expensive, and presumably more comfortable units, without knowing the absolute amount of the employee and employer contributions received by each household it is not possible to infer this. That is, the right question to ask is whether or not, all else equal, one additional yuan of HPF funds translates into increased likelihood of ownership or increased unit size or space per capita for owners. However, the employee's contribution, the amount of the employer match, and the likelihood of occupying a larger unit in a newer building prior to privatization are unknown here and were all mostly determined by the household's work unit type and the individual employee's level within it.[17] Since roughly 90 percent of both beneficiaries and non-beneficiaries bought privatized units, the same factors 'causing' observed housing quality (operationalized as unit age and living space) in our sample also 'caused' both HFP use and amount of funds available.

In addition, these same factors to some extent 'caused' the total price of the units because larger units cost more (*i.e.*, holding price per square meter constant, a large unit will carry a higher price). Interestingly, on a per square meter basis, beneficiaries paid 68 percent more for housing. Of course, there is no evidence that this higher price paid by beneficiaries and the lower price paid by non-beneficiaries are equally reflective of actual market values. In fact, without knowing more about the market value (*i.e.*, secondhand price) of the units that each group purchased, it is impossible to know if beneficiaries got a better or worse 'deal' on their purchase of privatized housing units despite paying more per square meter. The answer to this question in turn depends on the existence of a reasonably robust market for secondhand

[17] Lee (2000) presents data from 1998 showing that space per person varies by work unit type as follows: Military (8.27); Central government (7.45); SOEs (6.45); local government (6.22); and local enterprises (6.06). Li (2002) shows that in 1998 cadres had 30 percent more living space per capita than workers and Party members had 20 percent more living space per capita than non-Party members (cited in Tomba 2004a).

homes that would efficiently price locational and structural amenities. As discussed earlier in the paper, the extent to which such a market currently exists in much of Beijing is an open question.

While the results discussed in this section are suggestive of some potentially interesting relationships between the policy variable and tenure/quality outcomes, it is too soon to draw any firm conclusions from these simple descriptive comparisons. Ideally the direction of influence problem between the potential dependent variables of tenure type and unit size caused by the preponderance of privatized units could be dealt with by excluding privatized units. Our sample included only a handful of commercial or secondhand privatized units, however. At this point in the development of its housing market, Beijing is a less than ideal place to test hypotheses about the impact of *Zhufang Gongjijin*. Additional insight on the role of HPF funds will have to await further research conducted in other parts of urban China or conducted among a large sample of new housing purchasers.

Is 'Affordable Housing' Affordable to Target Groups?

Affordability is often mentioned as a lynchpin issue in discussions of the development of China's housing market. Rosen and Ross's (2000) assessment several years ago identified it as the biggest hurdle to increasing homeownership and improving housing quality among urban workers. A more recent piece by Wang (2003) lists the mismatch between incomes and prices as one of seven 'major outstanding problems' of China's urban housing system. Huang (2004) and Wang (2001) each point out that Beijing residents' housing affordability problems are particularly acute, despite relatively high salaries, due to even higher house prices. Zhang (2000) relates affordability problems to ongoing work unit involvement in housing markets, arguing that work unit purchases of commercial housing have distorted prices by basing them on their ability to pay more than individuals.

To examine the validity of these claims we simulated mortgage costs associated with a typical subsidized unit in a *Jingji Shiyong Fang* project. Results are run for several empirically

likely combinations of loan terms and property characteristics. Figure 7 presents the cost results for these simulated loans. All values in the table are based on the purchase of a 70 square meter home (in the middle of the required 60 to 80 m^2 range for affordable housing projects). Owners are assumed to purchase the units with a twenty or thirty year mortgage at either the special affordable housing interest rate of 4.05 percent (available only to qualifying employees at some work units) or the market rate of 5.04 percent, and to make a 20 percent downpayment.[18] Prices for affordable and market rate housing are those prevailing during the first quarter of 2004.[19] Over that period, affordable units cost roughly half as much per square meter (¥3,202) as market rate housing (¥6,206), indicating the substantial impact on carrying costs made by the subsidy and profit caps in *Jingji Shiyong Fang*.[20]

The goal of Figure 7 is to generate annual payment totals to compare with the income and expenses of lower-middle- and middle-income households that are the intended beneficiaries of *Jingji Shiyong Fang* program. By way of evaluating the potential impact of the policy, it is interesting to compare the loan packages representing the fully subsidized and unsubsidized loan combinations in the figure. Ignoring structural quality and locational differences, a 70 m^2 apartment bought with a thirty-year lower-interest rate loan at the affordable price per square meter costs ¥12,321 less per year (¥10,335 versus ¥22,656) than the same unit purchased with a thirty-year loan at the market interest rate and market price.[21] Said another way, the market package costs 119.2 percent more than the fully subsidized package, and 95.2 percent more for those that do not benefit from the reduced interest rate. These differentials leave no doubt that beneficiaries of the *Jingji Shiyong Fang* program are receiving a very significant subsidy in both percentage and absolute terms.

Figure 7 also makes hints that many lower-middle- and middle-income households will face significant problems purchasing an affordable home. Data from Figure 4 indicated that for

[18] Mortgage interest rates are set nationally and apply to all loans longer than five years. The interest rates on loans of five years or less are 4.77% and 3.60% for market and affordable housing rate loans, respectively.
[19] Taken from the quarterly homes sales report generated by e-fdc.com and published on sina.com.
[20] This is an uncontrolled comparison based on all units sold. As such it does not control for construction quality, location, or other factors that undoubtedly account for some of the pricing between affordable and market rate units.
[21] This is 41 percent of the *annual income* of lower middle-income and 33 percent of middle-income households in both our study and the BUDIS survey.

our survey respondents in these two income classes, the difference between their reported annual income and the total of their *three largest expenses only* in the previous year is ¥3,448 and ¥6,112, respectively, substantially less than the ¥10,335 annual cost of purchasing the affordable unit at the 4.05 percent rate over thirty years. That is, for the most part these households are unable to afford the least cost option available to them. Obviously, none of the other options presented in the table (shorter term loan and/or more expensive unit) are affordable to these households either. For instance, shortening the term of the loan by ten years raises annual payment by ¥2,761, while failing to secure the lower loan rate boosts annual costs ¥1,269.

Figure 7: Monthly and Annual Mortgage Payments on a Typical Unit, 2004:1

Price per square meter	Total Price (¥)	Amount Borrowed (¥)	Monthly Payment (¥)	Annual Payment (¥)	Monthly Payment (¥)	Annual Payment (¥)
Affordable Int. Rate: 4.05%			**30 Year Loan**		**20 Year Loan**	
Affordable Unit: ¥3,202	224,140	179,312	861	10,335	1,091	13,096
¥4,500	315,000	252,000	1,210	14,524	1,534	18,405
¥5,500	385,000	308,000	1,479	17,752	1,875	22,494
Commercial Unit: ¥6,253	437,710	350,168	1,682	20,182	2,131	25,574
Market Int. Rate: 5.04%						
Affordable Unit: ¥3,202	224,140	179,312	967	11,604	1,187	14,248
¥4,500	315,000	252,000	1,359	16,308	1,474	17,688
¥5,500	385,000	308,000	1,661	19,932	1,802	21,624
Commercial Unit: ¥6,253	437,710	350,168	1,888	22,656	2,049	24,588

Note: Based on 70 square meter unit and 20 percent downpayment. Affordable and Commercial Housing average prices are for 2004:1, from http://bj.house.sina.com.cn/circles/index.shtml.
Source: Calculations using mortgage calculator from http://www.mortgage-calc.com/mortgage/simple.php.

While Figure 7 paints a relatively pessimistic picture, things are actually somewhat worse for lower-middle- and middle-income households because the costs of purchasing and maintaining a home do not end with the monthly mortgage payment. Figure 8 factors in just some of the additional expenses and shows the annual impact of a home purchase on the household balance sheet of typical lower-middle- and middle-income households. It's worth noting that even this broader cost definition understates the affordability challenge facing would-be owners using 80 percent LTV loans. This is because selling prices in China do not

include the cost of fixtures such as faucets, sinks, toilets, and lighting; or molding, paint and other components of interior décor. These costs can easily add 10 to 20 percent to the selling price but are not included in Figure 8, which focuses on recurring expenditures. While this omission serves to understate the affordability problem faced by households – at least in the year of purchase – we do not include it because it helps justify our choice of an 80 percent LTV mortgage even though some households may have substantial personal savings, because these must be devoted to making the unit habitable once it is 'completed.'

The top and bottom panel of Figure 8 are identical except for the mortgage carrying cost, which differs depending on whether the representative household is assumed to have accesses mortgage financing at the lower rate. The values in Column two are taken from the 30-year panels of Figure 7. The third column of the table sums up additional housing-related expenditures for owners, while the fourth adds in total non-housing expenses. Data for both housing and non-housing expenses for each income class are taken from BUDIS, which gathers comprehensive data on such costs. Column five totals the housing and non-housing expenses for owners.

In column six average annual expenses *without* home purchase costs are subtracted from average income for each group. The column shows a modest end-of-year surplus for households in the three middle income groups, and a large surplus for the average high-income household. Low-income households are the only ones to show a deficit, although this deficit, at ¥10,675 for the average household, is substantial. In the final column of the table, mortgage and other housing expenses are added to the annual costs and the results subtracted from income for each group. Results indicate that the average household in every income group with the exception of the highest income households would face an annual household budget deficit by purchasing an 'affordable' unit. That the extent of this deficit is substantial for both the typical lower-middle- and middle-income households is of most interest since these households are targets of the *Jingji Shiyong Fang* program.

Figure 8: Affordability of *Zhufang Gongjijing* Housing by Income Class

Price (¥/square meter)	Annual Household Income	Annual Mortgage Payment (¥)	Annual Housing Expenses (¥)	Annual Non-Housing Expenses (¥)	Total Annual Expenses for Owners (¥)	Net Income w/No Housing Purchase (¥)	Net Income w/Housing Purchase (¥)
Affordable Int. Rate: 4.05%							
Low	15,651	10,335	3,677	26,326	40,337	-10,675	-24,686
Lower-Middle	29,981	10,335	3,834	28,049	42,217	1,932	-12,237
Middle	37,226	10,335	3,912	33,345	47,592	3,880	-10,367
Upper-Middle	47,620	10,335	3,922	39,515	53,772	8,105	-6,152
Upper	89,233	10,335	4,063	47,650	62,049	41,582	27,184
Market Int. Rate: 5.04%							
Low	15,651	11,604	3,677	26,326	41,606	-10,675	-25,955
Lower-Middle	29,981	11,604	3,834	28,049	43,486	1,932	-13,506
Middle	37,226	11,604	3,912	33,345	48,862	3,880	-11,636
Upper-Middle	47,620	11,604	3,922	39,515	55,041	8,105	-7,421
Upper	89,233	11,604	4,063	47,650	63,318	41,582	25,915

Note: Based on 70 square meter unit, 30 year loan, and 20 percent downpayment. Affordable Housing average prices are for 2004:1, from http://bj.house.sina.com.cn/circles/index.shtml.Anual housing costs include utilities, management fees, and insurance.
Annual housing (utilities and insurance) and non-housing expenses from BUDIS.
Source: Calculations using mortgage calculator from http://www.mortgage-calc.com/mortgage/simple.php.

Overall, the analysis in this section suggests that lower-middle- and middle-income households face a very difficult time purchasing an affordable home under standard mortgage assumptions. As such, they support Sun's (2004) claim that *Jingji Shiyong Fang* housing is not an effective vehicle for encouraging purchases of new units by lower-middle-income households. While some of these might manage home purchases if they somehow have large cash reserves or access to funds through friends and relatives, on an ongoing basis 'affordable housing' is not affordable to its intended beneficiaries and therefore unlikely to address their unmet housing needs or to substantially advance the development of Beijing's incomplete housing market.[22]

Conclusion

This paper has examined the effectiveness of two of China's homeownership-oriented housing policies: *Zhufang Gongjijin* and *Jingji Shiyong Fang*. The former, a compulsory housing savings scheme, was shown to be associated with higher levels of housing consumption,

[22] Even many households technically able to afford a home may still choose to remain renters due to the general economic uncertainty surrounding the transitional economy, which motivates many to hold substantial cash reserves in preparation for unexpected expenses and price changes, and because the rents on many public sector units are so low that many households will simply tolerate what may be inferior housing for the combined advantages of extremely low cost and ability to avoid the risk inherent in purchasing a large, illiquid asset in an uncertain economic climate.

although it was not possible to conclusively attribute this result to the program itself. Rather, the observed correlation seems just as likely to be driven by household employment characteristics – specifically, working in the public sector, potentially in a managerial role.

Regarding *Jingji Shiyong Fang*, which Sun (2004) claims is China's premier housing program, our results are consistent with the argument by several authors that affordable housing projects are not, in fact, affordable to lower-middle-class households that form the policy's target population. Further, our analysis indicates that middle-income households will also face substantial difficulties in purchasing a home in an affordable housing project in Beijing. Sun (2004) argues for scrapping the current scheme in favor of a down payment assistance program targeted more directly at lower-income households. Our survey collected no information on household wealth holdings so we are unable to comment on the extent to which current renters who are prospective owners are wealth-constrained as well as income-constrained. Our results do indicate, however, that lower-middle-income households at the outset of the downpayment savings process will take well over a decade to amass twenty percent of the purchase price of today's typical affordable unit. While down payment assistance schemes advocated by Sun (2004) might be necessary, the level of income constraint we identify suggests they will not be sufficient to engender homeownership in the lower half of the income distribution.

Significantly, the fact that (aside from the below market rate privatization policy of the past) homeownership is prohibitively expensive for much of the bottom two-thirds of the income distribution in Beijing seems likely to retard the development of the city's housing market: the other policy motivation for the development of affordable housing. *Jingji Shiyong Fang* projects narrow, but by no means eliminate, the gap between prices on commercially provided new housing and the housing that households in the lower half of the income distribution can actually afford. Until this gap is bridged, the market will be unable to function normally as an effective allocator of housing because the trade-up and filtering processes cannot operate across all price sectors in the market. Essentially, demand will remain bottled up among middle- and lower-middle-income households who would like to improve their housing

conditions, but are stuck with their privatized unit or a rental situation.

These questions are of substantial social policy interest beyond the housing sector because homeownership has been identified as one of the key transmitters of intergenerational inequality (cf. Oliver and Shapiro 1997). By subsidizing home purchases for relatively well off households, while having little impact on the ownership attainment of lower-middle- and middle-income households, *Jingji Shiyong Fang* may be setting the stage for a system in which those unable to become owners and their children face a number of disadvantages that affect their life outcomes. Zhang (2000: 201) has made a similar claim with respect to the outcome of the privatization of public and enterprise housing, which "legitimates and consolidates rather than eliminates the distributional inequalities of the existing housing system… [t]hose who were privileged under the old housing system are still privileged after privatization."

While it is not obvious how to remedy this situation, two things seem clear. First, the *Jingji Shiyong Fang* program should be rethought. Wang (2001) points out that in 1998 the State Council's original goal for the program was to make newly constructed housing affordable to between *seventy and eighty percent* of the urban population (the upper-income group would go without subsidy and the lower-income group would receive rental subsidies). While this goal has obviously been missed, even if the intention of the program were only to achieve what appears to have been the policy's actual outcome: enabling homeownership among the upper-middle class – it could probably have been achieved without the depth of subsidy and resource expenditure characterizing the current program. Meanwhile, efforts should be made to develop policies effectively targeted to the next two segments of the income distribution. Second, sufficient budgetary resources will not be available during the transition period to make trade-up or first-time homeownership affordable to all households currently unable to afford commercial units but that aspire to something beyond their current housing situation of privatized homeownership or public/enterprise sector rental.

Given these constraints, policymakers must continue to look outside the budget, as they did when making land allocation at concessionary rates the principal subsidy for *Jingji Shiyong*

Fang. In this context, policy makers should think carefully about ways in which to enlist the housing finance community as partners in the process of marshaling resources, effort, and technical expertise to the cause of upgrading housing conditions among those without sufficient income to afford today's 'affordable housing.' Because housing finance in China is very much in the developmental stage, policymakers have an opportunity devise regulations that effectively target resources to lower-middle- and middle-income households, thus helping bridge the current gap in the structure of the housing market, an outcome that is good for industry while also serving the goals of policymakers and individual households. Doing so relies on not over-regulating or inappropriately burdening mortgage and construction lenders, or those involved in eventual secondary mortgage markets and securitization of mortgage assets.

Finally, it is important to reiterate that Beijing's housing market is somewhat unique, even in China. Our results may therefore be less applicable to other markets. Shanghai, for example, is considered to have a fairly well-developed secondhand housing market. Examining the role of homeownership oriented housing policies and the development of housing markets among these two cities and others are obvious areas for future research.

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