

Hidden City

Beijing's Subterranean Housing Market

Sim Chi Yin/VII

This property management company employee lives with his wife and son in this 7-square-meter basement room in west Beijing.

Annette M. Kim

Today an estimated one million people are living in subterranean apartments in Beijing, where affordable housing near employment is scarce for the greater city's 23 million inhabitants (Xing 2011). These units are often windowless subdivisions in basements and air raid shelters, and the median size is 9.75 square meters.

In August 2010, Beijing instituted a three-year plan to evacuate tenants from these underground dwellings. Evictions started taking place in 2011, particularly in the innermost urban districts with expensive land values, but demand remains high. In some areas of the city, particularly in the outer districts, conspicuous signs on the street advertise subterranean rentals, and the Internet lists thousands of units below street level as well.

This article draws on the author's analysis of this phenomenon from 2012 to 2013, when online advertising for subterranean apartments was active and growing. These listings contain enough infor-

mation on individual units—including location, price, size, amenities, and depth below ground—to assess the dynamics of this low-income rental housing submarket.

Shortage of Affordable Rental Housing

Like most Chinese cities, Beijing suffers an acute shortage of affordable rental housing, driven by the massive migration to urban centers (Liu et al. 2013; Xie and Zhou 2012). It also has a vast amount of subterranean space, resulting from a policy dating to 1950 that requires all new buildings to have common basements and air defense shelters. Construction codes specify building guidelines, including the provision of infrastructure such as electricity, water, and sewers. This supply of underground space has grown exponentially amid China's extraordinary building boom in recent decades. Some complexes contain as many as 600 units below street level.

As a means of addressing the housing deficit, official policy for 24 years encouraged the “economic” utilization of this underground space

during peacetime, and residential shelter was one of the sanctioned uses (BMBCAD 1986). But in 2010, Beijing stopped granting new use permits for underground apartments and instituted the aforementioned three-year plan to evacuate residents. Given the number of people involved and the lack of affordable housing alternatives, the process has posed challenges, including landlords who demand compensation for occupancy rights they had purchased when the units were legal.

State-Sponsored Housing

Since China transitioned to a private market from a centrally planned economy, wherein the state provided all housing, the real estate sector has grown explosively. Treated primarily as an investment vehicle, new private units are accessible only to those with enough savings to purchase a house with little financing.

Restrictions on land supply are another obstacle to the private provision of shelter. Because the state, which owns all land, is trying to protect fertile farmland, development is prohibited in rural areas on the urban periphery. Nevertheless, informal settlers have rapidly built out that landscape into housing projects. These “urban villages” provide private residences for 5 to 6 million low-income people who cannot afford to live closer

to the city center, but the government has been trying to remove them by demolition.

The Chinese state provides four types of affordable housing projects, particularly for public employees with lower incomes (see table 1). The earliest types of assistance included the *lian zu fang* program, which provided rental housing to the poorest families, and *jing ji shi yong fang*, which provided subsidized homeownership opportunities.

The government launched a program in 2011 to construct more rental housing (*gong zu fang*) for recent college graduates and skilled workers in key sectors such as the high-tech industry. Given the relative newness of this program, though, the number of affordable rental units is still relatively small. Meanwhile, *xian jia fang* housing projects are targeted for the displaced. Despite the large number of units constructed for low-income residents over the years, demand far outstrips supply and wait lists are long.

The Hukou Barrier

Beijing *hukou*, or household registration permit, is a prerequisite for all four types of affordable housing. A holdover from central planning, *hukou* entitles households to public services in the

Some complexes contain as many as 600 units below street level. Roughly 50 percent of the advertised units are one or two stories underground.



These mall workers are temporarily sharing a tiny, windowless, underground room in Beijing.

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TABLE 1
Comparative Rent Levels of Affordable Housing Programs

Type	Lian Zu Fang	Jing Ji Shi Yong Fang	Gong Zu Fang	Xian Jia Fang
Translation	Low-rent house	Economic affordable house	Public rental housing	Price limit house
Property Right	Public ownership	Private ownership	Public ownership	Private ownership
Start Year of Program	2001	2001	2011	2007
Size in Square Meters	< 50	N/A	< 60	< 90
RMB per Square Meter	40 Source: www.bjjs.gov	2500~5,000 (Rough estimation) Source: http://m.focus.cn/bj/loupan	20~50 Source: www.bjjs.gov	8000~20,000 (Rough estimation) Source: http://m.focus.cn/bj/loupan

Source: HU Hai-feng, HU Ji-ya, 2012.

Proximity to jobs and transportation makes the tradeoff of living underground worthwhile for many lower-income residents of Beijing.

place of residence assigned to them by the government, but restricts receipt of services in other locations. People born into *hukou* of large cities are eligible for better educational, health, and infrastructure services. Unless a state-sponsored employer requests a change of *hukou* for a worker,

those without *hukou* in major cities still face a significant barrier to economic opportunity.

Figure 1 shows the current location of public housing programs for people with Beijing *hukou*. As in other places around the world, affordable housing projects are located in more remote parts of the city, as mentioned, where land is less costly but also less desirable. Also typical

of affordable housing projects, subletting is reportedly widespread, with program recipients collecting rents for their publicly provided apartments.

Analyzing the Underground Market

Our study took advantage of the detailed listings for underground rentals available at Ganji.com, which were optimal for analysis because the site was well organized, with the greatest number of ads. Using the search term “地下室,” or “underground unit,” we captured the monthly rent, square meter area, specific location, amenities, and other descriptors of subterranean apartments, such as the depth below ground level. Of the 7,312 ads we collected from October 2012 through September 2013, we culled 3,677 unique listings with complete information. As figure 1 shows, these units

are well distributed throughout the city, reflecting the requirement that all new buildings in Beijing include underground space.

It is important to mention that the ads represent what is likely the higher end of the underground housing market. Landlords who advertise online tend to be better educated, with more resources. The ads themselves usually feature photos, evincing the relatively high quality of the housing. Moreover, the landlords’ willingness to advertise suggests that they felt relatively secure about their tenure.

Table 2 provides descriptive statistics for the 3,677 subterranean housing units studied. The median size is 9.75 square meters, slightly smaller than Beijing’s 10-square-meter minimum and the overall average housing area per capita (28.8 square meters per person). Even so, the apartments are generally larger than the average worker dormitory housing, which is just 6.2 square meters (Xie and Zhou 2012).

The mean monthly rent of 436 RMB (US\$70) confirms that the apartments are at the higher end of migrant housing. A 2012 government study found that about 48 percent of migrants in Beijing pay less than 300 RMB (US\$48) per month, 27 percent pay 301 to 500 RMB (US\$48–80), and 17 percent pay more than 1,000 RMB (US\$160) (Xie and Zhou 2012). In other words, these underground rental units are generally a higher-valued type of shelter for migrants than the more common worker dormitories and urban village housing.

On average, subterranean units are less than 11 kilometers from the city center, with a standard deviation of 6.2 kilometers, placing them well

within the 5th Ring Road. With these locational advantages, the apartments offer potentially lower commuting costs and better economic opportunities. Similarly, the average distance to the nearest subway station is a little over 1 kilometer, which is considered within walking distance.

Roughly 50 percent of the advertised units are one or two stories below street level. The other 50 percent are half underground, like so-called “garden apartments” in the United States, with a small window near the ceiling of the room. Our preliminary analysis found that whether a unit was one or two stories below ground did not make any statistical difference in price after holding for other variables. As for amenities, the ads for about one quarter of the units advertised the presence of heating, more than half mentioned Internet connectivity, about one quarter mentioned the presence of surveillance cameras, and less than one eighth mentioned the employment of security guards.

TABLE 2
Descriptive Statistics for Sample Underground Apartments

Variable	Mean	Standard Deviation
Monthly Rent (RMB)	436.019	186.963
Size (sqm)	9.752	2.908
Distance to Tiananmen (km)	10.781	6.213
Distance to Nearest Subway Station (km)	1.078	1.285
Number of Subway Lines Within 800-Meter Radius	0.660	0.689
No Window	0.525	0.499
Heating	0.240	0.427
Gas	0.024	0.153
Air Conditioning	0.030	0.170
Internet	0.553	0.497
Security Guard	0.138	0.345
Surveillance Camera	0.261	0.439
Low Season	0.605	0.489

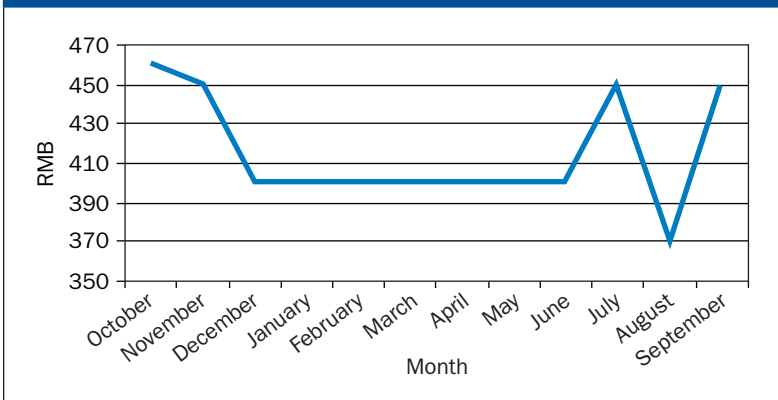
Source: Author's calculations. Number of observations = 3,677.

FIGURE 1
Distribution of Beijing's Affordable Housing Projects and Underground Housing



Source: Author's calculations.

FIGURE 2
Median Monthly Rent for Beijing Underground Housing Units, October 2012–September 2013



Source: Author's calculations.

Analyzing Market Dynamics

Our study examined whether demand in this unusual subterranean housing submarket is similar to the conventional market above ground. In particular, the disadvantage of living below street level may be large, and this type of housing is generally so small that other standard variables in hedonic price models may be more pronounced or differ in some other way.

Our statistical analysis involved a step-wise progression of fitting test variables to a base model

that includes the variables well established in the literature to be significant. It performed predictably with all the variables significant and in the expected direction. For example, rent increases around 3.3 percent for each square-meter increase in unit size, and 3.6 percent for every one-kilometer decrease in distance to the city center. Transportation access is also significant.

Proximity to a subway station raises rent by 1.8 percent per kilometer; for each subway line station within an 800-meter radius of the unit, the rent increases by 2.8 percent.

Given that our hedonic price model performed like other models with the same major significant variables and in the same direction, the underground housing phenomenon is clearly a market. Its emergence suggests that there is strong demand for rental housing—especially among lower-income households—that neither the formal market nor public housing programs are satisfying. This is obvious, given that *hukou* policies do not allow

migrants to apply for public housing programs and that even lower-income Beijingers with *hukou* have been known to live underground.

Our analysis suggests that the highest priority for the lower-income, often migrant population in Beijing is proximity to jobs and transportation. The central location of these units makes the trade-off of living underground worthwhile. Moreover, the comparison with public housing rents in table 1 indicates that while costs per square meter might be higher, the total rent for underground units is much lower (Hu and Hu 2012). The underground market is thus meeting the demand of people with incomes below the levels targeted by affordable housing programs.

Conclusions

Subterranean living is a sizable phenomenon in Beijing. Thousands of advertisements for underground apartments exist on the Internet, and that number was still growing in 2013 despite evictions. But the size of this submarket does not mean it should be incorporated into public policy.

There have been extraordinary accounts of people living on roofs and in sewer wells, trying to find a way to live in central Beijing. Reliance on underground housing is often just another desperate measure that the urban poor resort to in order to live and work in urban areas where they lack *hukou* and therefore cannot access services.

How much can a society minimize living space to make urban locations affordable? This question will become even more pressing as densities in Asian megacities exceed levels of acceptable human decency, forcing policymakers and designers to think more creatively about urban reforms. While underground units are in fact more spacious than dormitories for workers or students, China's extraordinary economic development has raised its citizens' aspirations and expectations for better housing conditions.

Given the fact that most of the renters are single or couples without children, and tenure is temporary, lasting no more than several years, housing policy should consider the need for lifecycle housing for people just starting out in this expensive city, or for those requiring temporary stays for health care, education, and other needs. ■

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Friends from their hometown in Hebei Province, this business journalist and online editor are saving money by sharing a basement apartment with a small window in west Beijing.