

# CHINA'S HOUSING REFORM AND OUTCOMES

*Edited by*  
Joyce Yanyun Man

CHINA'S  
HOUSING  
REFORM  
AND  
OUTCOMES

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**L** LINCOLN INSTITUTE  
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## Foreword

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Many observers and analysts are familiar with the remarkable growth of China's economy, its market-oriented reforms, and the large investments from both domestic and foreign sources that have taken place in the past 30 years. Less known, however, is how these economic changes have profoundly affected China's housing market. For example, China now represents the world's largest construction market in terms of built space, adding over 2 billion square meters of floor area annually—nearly half the global total. About half of China's annual constructed space is residential, which is divided about evenly between urban and rural housing.

This volume provides background and explanations about the causes and consequences of China's boom in residential construction, and it reviews how some well-established and ongoing trends are likely to impact China's housing sector in coming years. The expected demographic shifts and growth in urban populations suggest that the high rate of change in the housing sector will continue.

Since China's population has increased by about a third in the last three decades—from 1.0 billion in 1982 to an estimated 1.33 billion today—some of the growth in housing construction obviously results from this population growth. However, the more significant factor driving residential construction has been the dramatic rise in housing standards in terms of residential space per capita. From 1978 to 2007, residential space per capita quadrupled in urban areas (from 6.7 square meters to 28.3 square meters), and tripled in rural areas (from 9.4 square meters to about 29 square meters). China's per capita floor area now exceeds the averages in Japan and Europe, but this is unlikely to expand much beyond current levels.

Two major housing reforms in the past three decades have transformed China's housing market. The 1988 reforms fostered the privatization of housing, and much of the stock of rental housing was sold to employees of public enterprises at low prices. The 1998 reforms ended enterprise-supplied housing and moved to comprehensive market-based housing provision.

In recent years housing prices have risen much faster than incomes, making housing unaffordable for many. The government has taken steps to moderate housing prices by raising mortgage interest rates, increasing down payment requirements, taxing short-term capital gains from real estate, and constraining household purchases of multiple dwellings. The rapid rise in housing prices indicates that some recent housing demand has been speculative, resulting in urban vacancy rates that may be well above those required for a healthy housing market. However, documenting this is difficult because little data on urban vacancy rates are available.

Looking ahead, at least two major challenges face China's housing market. The first is the continuing high rates of migration from rural to urban areas; it is projected that 15 million migrants annually will move from the countryside to the cities. This flow will maintain demand for urban housing in the next decade or two and will moderate demand for rural housing. The second challenge is the aging of the population; the share of China's population over 65—7.7 percent in 2009—is projected to rise to 11.8 percent in 2020 and 24 percent in 2050. Currently, 70 percent of the elderly live in rural areas, but that share will decline as urbanization increases. The impact of aging on housing markets is complex, leading to both a rise in the demand for specialized housing for the elderly, and a likely decrease in household size as the surviving elderly add to the number of single person households.

These challenges and others are explored in this volume, which contains essays by scholars who specialize in China's housing market. Many of the chapters are empirical, drawing on household surveys and public data related to housing. The volume makes clear that the dynamism of the housing sector in China will continue in coming decades, while posing many policy challenges to public authorities at all levels of government.

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# Urban Expansion, Land Conversion, and Affordable Housing: The Case of Zhengzhou

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Chinese cities are quickly surpassing population and urban land area projections from prior decades. Between 2000 and 2020, for example, China's urban population is expected to grow by 66 percent. And if expansion of the land occupied by cities proceeds at the same rate observed from 1990 to 2000, it could grow by as much as 133 percent between 2000 and 2030, double the rate of urban population growth.<sup>1</sup>

In 2000, the urban population of China was 454 million and comprised 36 percent of the population of the country (United Nations 2007). By 2030, this population is expected to rise to 1 billion, with more than two-thirds of China's population residing in urban areas (Woetzel et al. 2008). According to recent UN estimates, China's urban population is now growing by 15 million people every year, and its urban area is growing by some 43,200 square kilometers each year. Using built-up area density calculations from a sample of nine Chinese cities, we estimated that in 2000 the land area of China's cities was some 48,000 square kilometers and amounted to 3.4 percent of the arable land in the country. Given the observed decline of average urban densities—by an average of 3.6 percent per year in the sample between 1990 and 2000 and at least 1.7 percent per year both in China and in a global sample of cities between 1990 and 2000—the land area of China's cities may now be growing by as much as 5.74 percent per year. At this rate, it can be expected to reach 15,013,000 square kilometers by 2020 (Angel et al. 2005). At that point, it would amount to some 107.7 percent of the arable land in the country.

<sup>1</sup> This exponential growth projection by the authors is based on the 5.7 percent annual growth rate observed between 1990 and 2000 in a sample of nine Chinese cities (Angel et al. 2005).

Yet arable land constitutes less than 15 percent of China's land area (Liy 2006). Since China has one of the lowest ratios of arable land per person in the world,<sup>2</sup> the Chinese government mandated strict quotas on the conversion of arable land to urban land in the name of protecting its food security and independence (Lichtenberg and Ding 2007). The quotas have had a significant impact on the shape and character of urban expansion, resulting in fragmented development on the urban fringe, the destruction of highly affordable housing in urban villages both within cities and on the fringe of cities, and land supply bottlenecks that have led to steep increases in urban land prices in recent years (Bertaud 2007a).<sup>3</sup> Although the central government recognizes that China's cities are its engine of economic success, concern is mounting over the exorbitant urban land prices that threaten to slow economic development. The government has proactively mandated the production of new affordable housing by the private sector.<sup>4</sup> Despite these measures, the National Development and Reform Commission has admitted to failure in curbing home prices.<sup>5</sup>

The Chinese government thus faces a serious predicament: How does it ensure national food security without compromising the prospects of urban-based economic development and without becoming an accomplice to an unmanageable housing crisis? The government cannot solve these challenges at the theoretical level or by appeal to ideology. Any resolution must be grounded in a more detailed analysis of the real-world interactions between urban population growth, the contribution of conversion quotas to future food security, the pattern of urban expansion in the face of these conversion quotas, and the delivery system of affordable housing in Chinese cities. This challenge requires a pragmatic solution that stakeholders can apply throughout China's urban system.

This chapter focuses on the key issues surrounding this urban growth challenge in one intermediate-size city—Zhengzhou, the capital of Henan Province. A city of 3.22 million people, its growth and expansion in recent years are typical of the rapid urbanization process currently sweeping China. A former capital of China, Zhengzhou is a transportation hub and a cultural center (Zhengzhou Municipality). Located just south of the Yellow River, this fast-growing industrial city sits at the intersection of two major railways, which connect Beijing in the north to Guangzhou in the south, and Xi'an in the west to Shanghai in the east (Zhengzhou

<sup>2</sup> In 2000, there were 739 square meters of arable land and permanent crops per person in China. Among the 48 largest countries that had populations in excess of 20 million and contained 87 percent of the world's population in 2000, China had the fourth-lowest ration of arable land area per person, after Egypt, Japan, and South Korea. The weighted average arable land per capita in those 48 countries was 2,245 square meters, three times that of China (World Bank 2007).

<sup>3</sup> Bertaud (2007a) states further that the enclaves of agricultural land within the urban built-up areas results in less agricultural productivity due to the lack of access to irrigation systems and rejection of lower-paid employment opportunities by rural migrants.

<sup>4</sup> Initiatives include Ministry of Construction regulations stipulating that residential units with an area of 90 square meters or less should occupy 70 percent of the floor area of newly built residential housing (called the 90-70 regulation), mandating that municipalities earmark 10 percent of proceeds from land sales to low-rent housing, and levying taxes on land appreciation of 30-60 percent. Xinhua News Agency 2007. House funding for the low-income tops the agenda, August 31; Hongxiao, Chang. 2007. China's affordable housing push: Easier said than done. *Caijing English Newsletter*, August 20.

<sup>5</sup> Xinhua News Agency 2007. Policies fail to curb soaring home prices, August 30.

Municipality). In 1983, the Zhengzhou Administrative Area was given jurisdiction over six districts and five county-level cities with a total area of 7,446 square kilometers. The administrative area of Zhengzhou City proper is 1,062 square kilometers, of which some 280 square kilometers constitute the built-up area of the city (Zhengzhou Municipality).

A team of 10 graduate students from the Woodrow Wilson School of Public and International Affairs of Princeton University focused on the issues surrounding urban expansion and its impact on affordable housing in China in a policy workshop led by Dr. Shlomo Angel in the fall of 2007. The team visited China in October–November 2007 and conducted interviews in Beijing, as well as extensive fieldwork and interviews in Zhengzhou, focusing on four main topics:

- The physical expansion of the built-up area of Zhengzhou.
- Agriculture and income-generation on the urban fringe in light of restrictions on the conversion of arable land to urban use.
- The low-income housing delivery system.
- The critical role of urban villages in the provision of affordable housing to the lowest-income households.

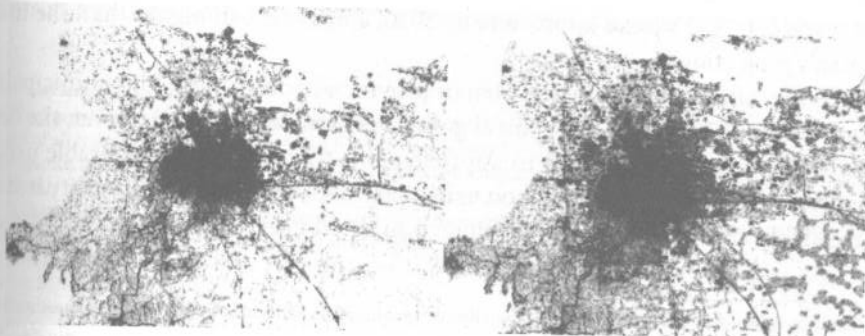
### Urban Expansion in Zhengzhou, 1992–2006

First, satellite imagery for the urbanized area of Zhengzhou in four time periods—1988, 1992, 2001, and 2007—was examined. The spatial data in the images were classified into three land use categories—built-up area, arable land, and other land use—and combined with population data (see figure 9.1). The black indicates built-up areas.

Zhengzhou has changed significantly during the past 15 years. Analysis shows that while the annual rate of population increase was 3.6 percent to 3.22 million people in 2007, the built-up area of Zhengzhou increased at an annual rate of

**FIGURE 9.1**

The Built-Up Area of Zhengzhou, 1992 and 2001



Zhengzhou 1992

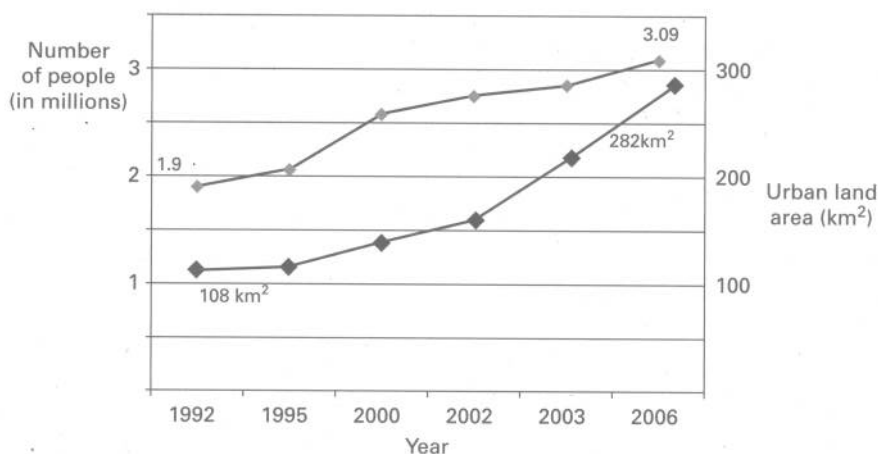
Zhengzhou 2001

SOURCE: Angel, Sheppard, and Civco, 2005.



FIGURE 9.2

## Urban Land and Population Trends in Zhengzhou City



SOURCE: Zhengzhou Municipality, General Information on Zhengzhou, <http://torchrelay.beijing2008.cn/en/journey/zhengzhou/news/n214325673.shtml> (in Chinese).

7.1 percent, almost double the rate of its population increase.<sup>6</sup> Figure 9.2 shows the growth of people as well as the urban land area.

Analysis of the figure shows that the gross density of the built-up area of Zhengzhou city declined from 1992 until 2006, from 174 to 110 persons per hectare, at an annual rate of 3.4 percent.

By comparing these numbers to projections of population, density, and built-up area, we estimate that by 2020 Zhengzhou City's population will have increased to 3.5 million (Office of Zhengzhou Water Resources Group).<sup>7</sup> Its density will decline by 1.7–3.0 percent, from 100 to 73–87 persons per hectare, and its built-up area will increase to 400–480 square kilometers.<sup>8</sup>

Our projection and the municipality's projections of the built-up area are not far apart. The municipality's 2020 master plan projects the population to be 5.5 million, the density to remain at 110 persons per hectare, and the built-up area to increase to 500 square kilometers. If, however, the municipality's population projections and our density projections are correct, the built-up area of Zhengzhou City may reach 630–750 square kilometers by 2020, a figure much higher than the master plan's projections.

Recently, after approval by the Henan provincial government, the municipality submitted its 2020 plan to the central government for approval. However, the central government has been slow to approve plans that call for considerable urban expansion. According to Zhengzhou urban planners, a Beijing municipality had its plan quickly approved last year, when it committed itself to practically zero urban

<sup>6</sup> These figures are based on GIS analysis of satellite images for 1988, 1992, and 2001. The 2006 figures are from personal communication with the Zhengzhou Planning Bureau and do not include an arable land estimate.

<sup>7</sup> Compared to the Zhengzhou master plan and UN Population Division estimates, the Office of Water Resources numbers are our central estimate.

<sup>8</sup> 1.7 percent is the average annual density increase in world cities described in Angel et al. (2005). The upper boundary in this scenario is 5 percent, which is Zhengzhou's average annual decrease in density between 1995 and 2006.

expansion in the coming years. These planners felt that the Zhengzhou municipality could not follow in Beijing's footsteps. Its 2010 plan, submitted in 1998, grossly underestimated both population growth and urban expansion: It estimated its 2010 population at 2.3 million and its area at 189 square kilometers. Both were surpassed by 2003.

A significant portion of the growth in the built-up area of Zhengzhou arises from the urbanization of rural villages. From an institutional perspective, land use in China is strictly differentiated into two categories. Municipalities own all *urban* land, and portions of it are leased (through official auctions<sup>9</sup>) to various entities for construction (Peterson 2006). Communes and villages own all *rural* land. Villages may distribute plots for residential use by villagers and other plots for various productive land uses. Rural land is transformed into urban land only when a municipality purchases the land from a rural commune, compensates the farmer, and provides the land with urban infrastructure.<sup>10</sup>

In reality, the boundary between urban and rural land use is fuzzy; cities are surrounded by broad regions of "urban" or "urbanizing" villages, referred to as *desakota* in the geographic literature (Heikkila 2003).<sup>11</sup> These urban villages are characterized by an increase in nonagricultural activities; by the fluidity and mobility of their populations; and by highly mixed land uses, with agriculture, small-scale industry, rental housing, and other uses located side by side (McGee 1991). Many of these villages are already completely encompassed by municipally owned urban land without a change in ownership status from communal ownership to municipal ownership. Figure 9.3 shows a traditional entrance for an urban village in the City of Zhengzhou.

Based on observations in 20 villages outside the city of Zhengzhou and interviews in 16 of them, these villages are now undergoing rapid urbanization, albeit without the ownership of their land being transferred to the municipality.<sup>12</sup> A patchwork of nonagricultural land uses was apparent in these villages: industrial and commercial centers; new roads and bus lines; and local factories and small-scale industry established by outsiders and locals. Also evident were an increase in the importance of rental housing as a significant source of income for villagers and an influx of outsiders, including factory workers, construction workers, and college students.<sup>13</sup>

Through comparisons of satellite imagery and data collected by recording GPS points at locations with increasingly urbanizing characteristics, we estimate that

<sup>9</sup> Previously, land sales had little transparency. The Ministry of Land and Resources found that more than 95 percent of all transfers had been done through private negotiation in the mid-1990s, losing revenue for municipal governments. In 2002, the central government ordered all municipal land transfers to go through public competition. Public bidding and auction transfers rose from 15 percent to 33 percent by 2003.

<sup>10</sup> Whether proper compensation is given is still a controversial issue. In addition, illegal land grabs by municipalities are a highly charged human interest story of the Chinese print media.

<sup>11</sup> The name *desakota*, coined by T. G. McGee, is derived from a combination of the words for "village" and "city" in Bahasa, Indonesia.

<sup>12</sup> A village was considered to be a part of the functional urban area of Zhengzhou if (1) a substantial fraction of villagers had transitioned to nonagricultural commercial and industrial livelihoods; and (2) there was a substantial amount of nontraditional, new housing construction in the village that could be rented to workers and students. In contrast, McGee classified urban areas primarily based on (1) the contribution of nonagricultural activities to the area GDP; and (2) the percentage of the labor force involved in nonagricultural activities.

<sup>13</sup> Field interviews from various urban villages in the Zhengzhou urban fringe, October–November 2007.

FIGURE 9.3

Entrance to Urban Village in Zhengzhou, 2007



SOURCE: Yueyuan Zheng, Princeton University.

up to 15 percent of the built-up area of the 1,100-square-kilometer Zhengzhou City district may be composed of scattered urban villages outside the built-up area of the city proper. A more precise figure requires a more rigorous study than we were able to undertake.

According to published reports, in 1990 the built-up area of the city completely surrounded 39 urban villages. By 2002 the number had grown to 114, and as many as 75 more are now gradually being encircled by the expanding city (Net East News 2007). Due to restrictions on the conversion of cultivated land to urban land, the municipality now plans to obtain most of the land needed for urban expansion by destroying and redeveloping the built-up areas of urban villages. Figure 9.4 shows a familiar site in Zhengzhou, the redevelopment of an urban village.

While the municipality is committed to the construction of new affordable housing, it remains largely oblivious to the sad fact that the destruction of urban villages and their redevelopment will seriously exacerbate housing affordability, as these villages provide most of the low-cost housing to low-income groups. Restrictions on the conversion of cultivated land and the patchwork redevelopment of villages are also likely to lead to fragmented urban expansion, increasing the cost of infrastructure provision. Ultimately, noncompact, leapfrogging urban expansion is likely to result in higher transport costs, as well as higher levels of traffic congestion and air pollution.

FIGURE 9.4

Private Redevelopment of an Urban Village in Zhengzhou, 2007



SOURCE: Jona Repshiti, Princeton University.

### Agricultural Productivity on the Urban Fringe of Zhengzhou

A review of China's farmland preservation policies from 1994 to the present underscores the underlying tensions between the growing demand for urban land to make room for the urban-based economic boom and the traditional concern with famines, food shortages, and food security.<sup>14</sup> The Chinese government has given a high priority to agricultural land preservation in its food security policies, among them the Basic Farmland Protection Regulation of 1994, the 1998 Land Management Law, and the New Land Administration Act of 1999 (Lichtenberg and Ding 2007).

Henan Province, in which Zhengzhou is situated, is one of China's principal agricultural regions, providing 24.5 percent of China's total wheat crop and 50 percent of the frozen and processed foods distributed within China (He and Yu'an 2005). Along the meandering edge of Zhengzhou City and in between the built-up areas on its periphery, rural villagers still practice mainly subsistence farming, selling only a small portion of their produce to local markets in the city. The collectives on the outskirts of Zhengzhou City are divided into villages, with approximately 100–200 families belonging to each. Each family is entitled to a 200-square-meter

<sup>14</sup> Lester Brown's 1994 work, *Who Will Feed China?*, largely inspired the Chinese government to adopt a nationwide plan for food self-sufficiency in the same year. Various actors, including the U.S. Embassy in Beijing, have alluded to this as a top concern of other governments. For example, see U.S. Embassy in Beijing, *Can China feed itself in the 21st century? Land use patterns may provide some answers*, June 1996.

residential plot and to half a *mu* (333 m<sup>2</sup>) of farmland per family member. Families usually grow leafy greens and vegetables such as cabbage and tubers on this land and are responsible for farming a portion of a large communal wheat plot, from which they typically reap an annual income of some 700–1,000 yuan (US\$95–135).<sup>15</sup>

Ten farming families on the periphery of Zhengzhou were interviewed about the size of their plots, their yields, and their sources of farm and nonfarm income. Based on our fieldwork, interviews with agricultural economists at Henan Agricultural University, and data on farm crop output per hectare in Henan Province in 2006, we estimate that typical income per *mu* of cultivated land on the periphery of the city may be on the order of 15 percent (for vegetables) and 75 percent (for wheat and corn) of the average income per *mu* of cultivated land in Henan Province as a whole. Figure 9.5 shows an example of farming near an urban village.

The reduced productivity is attributable, at least in part, to the use of plots for subsistence farming of vegetables and the emergence of new income-earning opportunities: the construction of rental housing on villagers' residential plots; the leasing or selling of communal lands directly to commercial developers; and the employment of rural youth in the nearby city. For example, a typical building on a villager's residential plot may have 24 rooms for rent on three floors, yielding a monthly income of 1,200–1,800 yuan (US\$170–250), considerably more than household income from agriculture.<sup>16</sup>

**FIGURE 9.5**

Subsistence Farming in the Built-Up Area of Zhengzhou City, 2007



SOURCE: Aritetsoma Ukuieberuwa, Princeton University.

<sup>15</sup> Field interviews, October–November 2007.

<sup>16</sup> Ibid.



Thus, the protection of communal farmland on the fringe of Zhengzhou City from urban development may be futile.<sup>17</sup> Because of its low productivity, it fails to serve the national interest in food security and only contributes to inefficient development on the periphery of China's cities (Bertaud 2007a).

Chinese cities fragment significantly more rural land on their fringes than cities in the rest of the world. We define the urban footprint of cities as the sum of their built-up area and fringe open space not more than 100 meters away from the built-up area. The urban footprint of nine Chinese cities in 2000 averaged 2.4 of their average built-up area. In 111 cities in the rest of the world in 2000 it averaged only 1.9 of their average built-up area. In other words, Chinese cities fragment open space equivalent to 140 percent of their built-up areas. If we assume that cities in China now occupy some 75,000 square kilometers, they also fragment 106,000 square kilometers of cultivated land, some 8 percent of all cultivated land, and make it less productive.

Assuming that arable land area is currently at its peak and consumption rates remain fairly stable, China's major cities will continue to encroach into surrounding rural and agricultural lands. If land conversion quotas are removed, we project that arable land in China will decline from 1,381,000 square kilometers to 1,279,000 square kilometers, a decline of 7.4 percent, from 2000 to 2020.<sup>18</sup>

Land productivity in China is among the highest in the world. According to the UN Food and Agricultural Organization (FAO), its wheat yield, for example, measured in tons per square kilometers, is now the highest in the world. Its corn yield is the second-highest, after the United States (FAO 2007). China will need to increase its land productivity, through the use of improved agricultural technology, seeds, and fertilizers. It will also need to increase the amount of land in cultivation away from urban areas to replace the projected 7.4 percent loss of arable land.

Although the Chinese government does not currently share this view, it is more sensible to focus on increasing the productivity of the available arable land and on bringing additional land into cultivation than to limit urban expansion in the name of ensuring food security. In the short term, Zhengzhou and other cities facing the same predicament may also benefit from following the pragmatic approach of Shanghai and Tianjin in securing adequate lands for urban expansion. The municipalities of both cities were permitted to purchase and develop arable land in Xinyan Province in northwestern China in exchange for converting arable lands on their periphery to urban use in excess of their land conversion quotas.<sup>19</sup> That initiative cannot remain the exception and must become the foundation of a new agricultural policy.

Agricultural economists at Henan Agricultural University estimate that the development of one mu of land into arable land in Xinyan Province costs 12,000 yuan, or US\$2.40 per square meter. In comparison, in 2007 one mu of urban land with infrastructure in Zhengzhou (and several other cities) was auctioned for 4.5

<sup>17</sup> Several studies show also that China's total grain production has been declining since 1997 (Lichtenberg and Ding 2007; Rural Development Institute 1999).

<sup>18</sup> This figure was calculated by applying the rate of arable land consumption since 1980 from the World Development Indicators of the World Bank. April 2008. <http://data.worldbank.org/indicator>.

<sup>19</sup> Interview with agricultural economists at Henan Agricultural University, November 2007.

million yuan, or for 6,400 yuan (US\$890) per square meter,<sup>20</sup> 375 times the cost of adding one mu to the total stock of arable land in the country.

Therefore, a strong case can be made for massive urban-to-rural transfers aimed at increasing the amount and productivity of agricultural land in the country, with the principal goal of ensuring China's food security, and the secondary goal of freeing urban areas from the current distortions of the urban development process. These land conversion distortions are more apparent when we focus on the effects of land conversion quotas on the housing market in Zhengzhou.

## The Housing Delivery System in Zhengzhou

As noted earlier, the Chinese government is concerned that rapid increases in housing demand, coupled with increased construction costs and land prices, have created a housing affordability crisis in the country.<sup>21</sup> The central government recognizes the challenge despite the recent global economic downturn. As recently as January 2008, the housing and finance ministries, as well as the central bank and the National Development and Reform Commission stated that prices are still "not affordable for ordinary people" (Poon and Shaw 2009; Xinzhen 2009).

To understand the nature of residential affordability, our fieldwork in Zhengzhou addressed two fundamental questions about the city's housing delivery system: (1) Under what conditions are residents housed, and who are the suppliers of housing, assuming that all households are housed in one way or another? (2) To what extent are the available housing options affordable to households in *all* income groups? Observations show that *basic* housing conditions in Zhengzhou at the present time are surprisingly adequate and acceptable, as follows:

- All households in Zhengzhou are properly housed; there is no evidence of homelessness.
- There are no shantytowns, and all housing is constructed with permanent building materials and supplied with indoor water and sanitation as well as electricity.<sup>22</sup>
- There does not seem to be significant overcrowding, and the amount of floor area per person appears to be on the increase (Bertaud 2007b).

In other words, there is no housing "deficit," and there are no slums in Zhengzhou. This finding, in and of itself, is very significant. We must infer from our field observations that the contention of the UN Human Settlements Programme that 38 percent of the urban population in China lives in slums is wrong, even if we accept its definition of a slum dwelling as a dwelling with at least one of four shelter deprivations: unimproved water, unimproved sanitation, impermanent structures,

<sup>20</sup> According to developers and planners interviewed in Zhengzhou, November 2007.

<sup>21</sup> Since 2003, the central government has been focused on pursuing "macrocontrol" policies, appropriately called "cooling initiatives" (Xinzhen 2007).

<sup>22</sup> The housing conditions of migrant workers whose temporary housing is part of the wage package are the major exception.

and overcrowding (UN Habitat 2003).<sup>23</sup> None of these deprivations were found in Zhengzhou in observable quantities.

At the very least, the housing delivery system in Zhengzhou has been able to supply adequate, or minimal, shelter for all. This does not imply, of course, that the available housing meets people's expectations, that there are no households forced to share units or bathrooms, that there is adequate floor space to ensure minimal privacy, that there are no shortages of residential infrastructure, that buildings are solid enough and have proper fire escapes, or that neighborhoods are safe and have adequate amenities.<sup>24</sup> In the long term, the impact of recent job losses for migrants within urban China remains unclear (BBC News Asia 2008).

Since everyone is housed, the housing delivery system in Zhengzhou apparently produces dwellings that are affordable to *all* income groups. How can this be so? Table 9.1 calculates the monthly housing budget for a variety of household income levels to begin the affordability analysis.

The housing delivery system in Zhengzhou produces both dwellings for owner occupation and dwellings for rental occupation. Our fieldwork noted six types of dwellings for owner occupation.<sup>25</sup> These are typically bought with cash, but mortgage financing is available on good terms. Figure 9.6 shows the general housing typology for Zhengzhou.

Currently, no median-income household could afford any of the units presently offered on the market. For example, if a median-income household could afford to pay 30 percent of its income (308 yuan per month) on housing and it had savings amounting to a third of the value of a unit for a down payment, it could obtain a 30-year mortgage at an annual fixed-interest rate of 6.15 percent. With this loan it could only afford to buy a unit with a value of 73,000 yuan (US\$10,100). Most dwelling units for sale in Zhengzhou are bought by pulling together cash from savings, but the amount of savings available to households in different income groups is hard to

TABLE 9.1

Calculating the Housing Budget for a Variety of Zhengzhou Households

	Annual Income	Monthly Income	Housing Budget (30% of annual income)
Median household income	12,330 yuan 1,712 USD	1,030 yuan 143 USD	308 yuan or 43 USD
Lowest income decile household	5,201 yuan 722 USD	435 yuan 60 USD	130 yuan or 18 USD
Highest income decile household	23,800 yuan 3,304 USD	1,980 yuan 275 USD	595 yuan or 83 USD

SOURCE: *Zhengzhou Statistical Yearbook*, 2006.

NOTES: US\$1 = RMB 7.2027; this was calculated using currency rates from November, 2006.

<sup>23</sup> This was also confirmed during our fieldwork in Zhengzhou, where we observed almost zero homelessness.

<sup>24</sup> In fact, the Zhengzhou Planning Bureau cited concerns over the safety of urban village housing, and in our fieldwork interviews with self-financed property developers in these villages, owners used neighbors' building standards as their own.

<sup>25</sup> Field interviews and observations, October–November 2007.

**FIGURE 9.6**

## Housing Typology for Owner Occupation in Zhengzhou

### Luxury Housing



**Price:** Up to 4.5 million yuan (US\$320,000)  
**Floor area:** Range with maximum at 300 m<sup>2</sup>  
**Affordability:** 185 times median annual household income  
**Description:** New single-family dwellings built by private developers, produced and quickly sold in limited numbers. Recently, they have become less available as new directives from the central government focus on affordable housing.

### Market-Rate Housing

**Price:** 120,000–600,000 yuan (US\$17,000–43,000)  
**Floor area:** 30–120 m<sup>2</sup>  
**Affordability:** 10–25 times median annual household income  
**Description:** New housing built by private developers. Smaller units are a newer phenomenon and are sold furnished.

### Secondhand Housing

**Price:** 180,000–1,210,000 yuan (US\$25,000–85,000)  
**Floor area:** 60–120 m<sup>2</sup>  
**Affordability:** 16–50 times the annual median household income  
**Description:** Older apartments, with smaller, less expensive units. Secondhand residences comprise the most housing sold by real estate agents.

### Economic and Suitable Housing



**Price:** 105,000–290,000 yuan (US\$15,000–40,000)  
**Floor area:** 60–120 m<sup>2</sup>  
**Affordability:** 9–23 times the annual median household income  
**Description:** New “affordable” apartments built by private developers with municipal subsidies or on municipal land.

### Developer-Built Housing on Village Land



**Price:** 100,000–170,000 yuan (US\$14,000–24,000)  
**Floor area:** 60–100 m<sup>2</sup>  
**Affordability:** 8–14 times the annual median household income  
**Description:** New apartments built by developers on land obtained from villagers in semiofficially sanctioned arrangements.

### Secondhand Enterprise (*Danwei*) Housing



**Price:** 100,000–300,000 yuan (US\$14,000–42,000)  
**Floor area:** 50–100 m<sup>2</sup>  
**Affordability:** 8–24 times the annual median household income  
**Description:** Built from the 1950s to 1980s by public enterprises and work units, *danwei* housing has recently been privatized and sold to inhabitants at discounted prices.

SOURCE: All information was collected from field interviews in Zhengzhou, October–November 2007.

determine. Another example: If a median-income household had saved 30 percent of its income at 6 percent per annum for the past 15 years, it would have accumulated some 90,000 yuan (US\$12,500), and, coupled with a mortgage loan of 50,000 yuan, that would allow them entry into the bottom end of the housing market.

Clearly, a significant portion of the dwelling units for sale as of late 2007—including the “economic and suitable” housing produced with municipal assistance—are not affordable for the majority of Zhengzhou residents.<sup>26</sup> In addition, households without an urban *hukou*<sup>27</sup> are not eligible for the “economic and suitable” housing even though unofficial estimates put these migrants at 22.6 percent of China’s total urban population (*The Economist* 2007). There is, indeed, a housing affordability crisis that affects the emerging urban middle class. Although the growing number of urban middle-class households are starting to see higher incomes, which translate to high expectations, most cannot afford to buy the housing now offered by the market. Given the data, it seems that only households in the highest decile of the income distribution can acquire units in the housing market.

In addition to owner-occupied dwellings, the housing delivery system in Zhengzhou produces four types of rental units. As a whole, these housing types are considerably more affordable than units for sale. Figure 9.7 shows a basic typology of rental housing units found in Zhengzhou.

Our analysis shows that urban villages within and outside the built-up area of the city provide the majority of the low-income housing stock in Zhengzhou. The most prevalent type of lodging for rent is a room with a shared bathroom on the same floor. Though such conditions meets residents’ basic housing needs at an affordable cost, renters in urban villages often lack urban residence permits (*hukou*) and are thus deprived of hospital, school, and other essential social services. Proponents of urban village destruction and redevelopment frequently cite fire safety and public health concerns within these villages (Wu 2004).<sup>28</sup>

The municipal government has drafted an ambitious plan that aims to tear down all urban villages within the third ring road by 2020, and it is now proceeding at an aggressive pace to implement this plan.<sup>29</sup> Yet our fieldwork identified several urban villages in good condition that are en route to destruction. The municipality calculates that the destruction and redevelopment of urban villages will provide sufficient land for the city’s development needs for the next 10 years, thus presenting a viable alternative to the conversion of cultivated land (Fulong et al. 2007). However, there has been no attempt to calculate the amount of affordable housing that will be permanently eliminated by this plan, nor have there been any attempts to explore alternative affordable housing production options.

<sup>26</sup> While it is envisioned that by 2010, “economic and suitable” housing will constitute 12.5 percent of new residential construction, the supply of that housing stock is not nearly enough today. In 2006, only .06 percent of total residential investment was spent on it (Zhengzhou Real Estate Statistics 2005).

<sup>27</sup> For general information about the *hukou*, see Chan and Zhang (1999). The *hukou* system and rural-urban migration in China: Process and changes. *The China Quarterly*. 160:818–855

<sup>28</sup> Interviews with the Zhengzhou Planning Bureau, October–November 2007.

<sup>29</sup> This plan is not dissimilar to efforts in other Chinese municipalities. For more information about how these redevelopment schemes tie in to urban land development in China, see Wu, Xu, and Yeh (2007).



FIGURE 9.7

## Housing Typology for Rental Occupation

**Private Apartment Rentals**

**Price:** Rent for 500–1,000 yuan (US\$70–139) per month

**Floor area:** 10–12 m<sup>2</sup> for rooms; 40–80 m<sup>2</sup> for units

**Affordability:** These units are not affordable for below-median-income households

**Description:** Individual rooms in private apartments.

**Rooms or Units in *Danwei* Housing**

**Price:** Rent for 100–800 yuan (US\$14–110) per month

**Floor area:** 10–100 m<sup>2</sup>

**Affordability:** Affordable for households at all income levels

**Description:** Rooms and apartments rented by owners of dwellings in *danwei* housing.

**Rooms or Units in Urban Villages**

**Price:** Rent for 50–400 yuan (US\$7–55) per month

**Floor area:** 10–40 m<sup>2</sup>

**Affordability:** Affordable for households at all income levels

**Description:** Walk-up blocks of apartments, up to 7 stories, with rooms and small apartments.

**Temporary Rentals**

**Price:** Included in wages

**Description:** This includes construction worker housing where rent and government-provided units are included in wages. It is not uncommon for developers to provide basic housing for workers during the months-long construction phase.

SOURCE: Field interviews in urban villages, October–November 2007.

Land conversion quotas play a significant role in the destruction of the most affordable housing—rental housing in urban villages—given the central government pressure to preserve land quotas. Moreover, the municipality does not perceive rental housing in urban villages as worth preserving, preferring to tear it down in the name of building “affordable” housing that fails to serve the majority of Zhengzhou residents. Buildings in these villages are typically clustered close together along narrow roads, with floor-area ratios as high as 7.0, three to four times as high as typical ratios in commercial housing projects.<sup>30</sup> Since commercial developers build at considerably lower floor-to-area ratios, as many as six or seven affordable rental units are potentially destroyed for one so-called affordable unit.<sup>31</sup>

<sup>30</sup> Field observation and interviews, October–November 2007.

<sup>31</sup> Observations and site visits to new development sites in Zhengzhou confirm this claim. Bertaud (2007b) highlights the phenomenon of low floor to area ratios in Chinese cities.

Dwelling tenants and owners feel the short-term consequences of urban village destruction. However, the real effect of land conversion quotas on housing affordability in Zhengzhou (as well as other Chinese cities) has yet to be felt. As government planners insist that enough land exists for urban expansion, land conversion constraints create serious land supply bottlenecks. These bottlenecks have resulted in land hoarding in expectation of further land shortages. According to municipal planners, in 2005, for example, the amount of land purchased but not developed amounted to 53.8 percent of all land purchased that year. Conversion quotas have also resulted in steep increases in urban land prices. As noted earlier, land in Zhengzhou City and other Chinese cities was auctioned at 6,400 yuan (US\$890) per square meter in 2007.<sup>32</sup> There is no question that these quotas have now created a land market in which housing is unaffordable for anyone, except those at the peak of the urban income distribution, for years to come. What does this imply for the future of affordable housing? Although China's GDP growth has calmed, the country's urbanization trends do not waver. As incomes continue to rise, a strong housing market demand will dominate the landscape for years to come (Zhiming and Xu 2009).

The cost of land plays a crucial role in the ultimate price tag of these dwellings. Since urban units are sold on expensive land (i.e., land acquisition costs are high), affordability is a lofty goal even at the onset of the development process. Presently, median-income households cannot afford any housing built on market-priced land.

- At current land prices, if land accounted for 30 percent of the selling price of apartments and if developers built units in high-rise apartments with a floor-area ratio of 2.0, a 90-square-meter apartment would cost 960,000 yuan (US\$133,000), or 77 annual median household incomes.
- At current land prices, if land accounted for 30 percent of the selling price of apartments and if developers built units in high-rise apartments with a floor-area ratio of 3.0, a 70-square-meter apartment would cost 500,000 yuan (US\$69,000), or 40 annual median household incomes.
- At current land prices, if land accounted for 50 percent of the selling price of apartments, and if developers built units in high-rise apartments with a floor-area ratio of 3.0, a 50-square-meter apartment would still cost as much as 350,000 yuan (US\$49,000), or 29 annual median household incomes.

In other words, the majority of urban households cannot afford housing built on land bought at the current market prices. Several explanations exist as to why urban land prices have increased sharply, but this chapter's limited scope prevents lengthy discussion of the matter. Simply put, compensations paid to farmers for the transfer of their lands to the municipality may be high, municipal infrastructure standards are high, and the time it takes to effect a land transfer and prepare land for urbanization is long.<sup>33</sup>

<sup>32</sup> Field interviews with Zhengzhou Planning Bureau, October–November 2007.

<sup>33</sup> Field interviews in Zhengzhou, October–November 2007.

More important, demand for land far exceeds supply; supply is limited due to conversion quotas, and supply elasticity is low, which means rapid increases in demand cannot be quickly accommodated. This suggests that even if land conversion quotas were relaxed and municipalities could acquire more land for urban expansion, land prices are not likely to come down for a long time. In the short term, releasing more land into the urban market is likely to result in more hoarding in expectation of future shortages than in real land price reductions.

## Toward a Shift in National Land Policy

Given this rather alarming scenario, the inevitable two-part recommendation from our analysis is a radical one:

1. Land conversion quotas should be eliminated, and there should be no restriction on the conversion of cultivated land to urban land.
2. The institutional distinction between urban and rural land should be eliminated, and villagers should be able to sell land directly to developers.

### Eliminating Land Conversion Quotas

Emphasis on national food security should focus on increasing both the productivity and the amount of arable land. The removal of land conversion quotas will not damage China's future food security. Cultivated lands in and around cities are not productive and are well below the average productivity of land in properly cultivated agricultural areas. The productivity of agricultural land can be improved by a new emphasis on rural development: on improving the lot of farmers through better water management, flood protection, modern machinery, better seeds, better cultivation methods, agricultural waste recycling, and the judicious use of pesticides and insecticides.

In addition, the innovative initiative of rural land development projects in Xinyan, for example, can bring pastureland into intensive cultivation, with the aim of maintaining a fixed amount of cultivated land in the country as a whole over the years. These rural initiatives, which should be actively supported by cities, will do much more for national food security and for addressing the present inequities between rural and urban areas than distorting the process of urban expansion by the imposition of land conversion quotas.

Conversion quotas are quantitative targets, and, as such, they do not and cannot protect the sensitive lands in the vicinity of cities: wetlands, sensitive natural habitats, and other areas that should remain undeveloped. Pragmatic environmental protection of the periphery of cities will require the active protection of specific, well-defined swaths of open space through the creation of a system of parks and nature conservancies that are in the public domain and on which no urban development is allowed.

Pushing aside the ineffectiveness of the land conversion policy, the quotas, as noted, have a serious unintended consequence: the destruction of the most affordable housing in Zhengzhou and other Chinese cities. Furthermore, the limited land market managed by the municipality is too small and too rigid to supply all the land needed for the rapid urban expansion expected in the future. China's urban-

based economic growth hinges on providing adequate land for housing, as well as for industrial and commercial enterprises both big and small. While removing the conversion quotas will no doubt help reduce the upward pressure on land prices, municipal “urban” land supply is inelastic; once land prices reach a peak, they are not likely to come down anytime soon.

### Eliminating the Distinction Between Municipal and Village Land

In contrast, opening up the rural land market for urban development will create an alternative market that is not bound by the peak prices of the existing municipal land market. In this market, land prices are likely to remain much lower and housing much more affordable.

Opening up the land market on the urban fringe will result in more compact urban development, reduced open-space fragmentation, and a smaller urban footprint. Built-up area densities, while declining, will still be high enough to sustain transit-friendly urban development. Even if densities decline to 75 persons per hectare by 2020, as we project, they will still be considerably higher than the 50 persons per hectare required to sustain regular and frequent bus transport.

This initiative will require extending urban land use planning beyond the limited land under the jurisdiction of the municipality. In particular, it will require the early planning of the primary infrastructure grid in all outward directions where urbanization is taking place.<sup>34</sup> Urban land use planning must not be limited to areas where the municipality would prefer development to take place, but allowed in all areas where urbanization—evident in the gradual formation of urban villages—is already taking place.

It is important to emphasize that allowing direct land transactions between villagers and developers will also require a radical reform of the municipal finance system. A considerable portion of municipal budgets now depends on an irregular stream of profits and losses from the land conversion process, transactions that are far from transparent. The municipalities use land lease profits as off-budget revenue, revenue that is unreported to the central government.<sup>35</sup> According to some estimates, land sales and leases have accounted for up to 60 percent of the annual revenue of some Chinese cities (Farrell, Devan, and Woetzel 2008). Municipal budgets will need to be reformed with the introduction of appropriate new taxes on land development—such as property taxes, sales taxes, value-added taxes, or capital gains taxes—in lieu of profits from the appropriation of lands from village communes, their subdivision and servicing, and their auctioning to private developers (Peterson 2006; Su and Zhao 2006).

Villages and developers on the periphery of Zhengzhou now already participate in informal transactions, and these activities are likely to gather momentum in the future in light of the exorbitant prices of lands auctioned by the municipality. Pragmatic

<sup>34</sup> This is the grid of arterial roads that will carry future public transportation.

<sup>35</sup> The following reports give a comprehensive overview: Peterson, George E. 2006. Land leasing and land sale as an infrastructure financing option. Policy Research Working Paper No. 4043. Washington, DC: World Bank, November. Su, Ming, and Quanhou Zhao. 2006. The fiscal framework and urban infrastructure in China. Policy Research Working Paper No. 4051. Washington, DC: World Bank, November.

county, municipal, and provincial governments have not been particularly diligent in preventing land transactions on the urban periphery. We witnessed several instances in which developers bought or leased land from village communes, and, as noted earlier, the municipal planners estimated that developers building on village lands now provide up to 20 percent of new residential floor space. On a visit to a building site of a developer currently constructing four seven-story apartment buildings on the urban fringe, we observed 80-square-meter units selling for 136,000 yuan (US\$19,000) or 1,700 yuan (US\$235) per square meter. Although we have not been able to ascertain how much this developer paid villagers for the land, if land cost amounted to 15 percent of the sale price of units (we believe it to be less than that), and the floor-area ratio was 3.0, then the cost of land to the developer would have been on the order of 765 yuan (US\$106) per square meter, one-eighth the cost of land auctioned by the municipality.<sup>36</sup>

Minimally serviced rural land on the fringe of Zhengzhou City constitutes a different land market, and the prices there are not dependent on prices of auctioned municipal land with a high level of infrastructure. It is likely, therefore, that opening up this land market for unrestricted urban development will not result in quick land price inflation. In contrast, simply abandoning the land conversion quotas while maintaining the monopoly of municipalities on urban land will not result in the desired reduction in land prices, a reduction that is absolutely necessary to ensure the steady flow of affordable housing in the years to come.

Admittedly, these conclusions call for a radical change in China's basic policy framework, a change that—much as it is desirable and necessary—is not likely to take place in the near future. In the short term we envision a continuing housing affordability crisis that cannot be ameliorated by marginal changes in policy such as requiring developers to construct smaller units, reducing building and infrastructure standards, increasing permissible floor-area ratios, providing direct demand-side subsidies to deserving households from central government budgets, or providing supply-side subsidies to developers in the form of free or below-market municipal lands. In fact, the burdens of a national housing policy implemented with local funds linked to the fundamental tensions between land leases, municipal revenue, and “economic and suitable” housing policies may only exacerbate the affordable housing crisis in Zhengzhou. None of these policies—important as they are in a housing market that is free of the distortions plaguing urban land markets in Chinese cities—will work to make housing affordable to the large majority of the urban population, both present and future, neither to the middle class nor to poor unregistered migrants.

Urban villages in and around Chinese cities provide the pragmatic solution to affordable housing for poor and very poor families, potentially freeing governments at all levels from the responsibility to subsidize housing and freeing the private sector to construct housing that is entirely oriented to satisfy the needs of the rich and prosperous few while ignoring the needs of the masses. Municipal plans and initiatives bent on the destruction of these villages and their replacement by officially

<sup>36</sup> Fieldwork, October–November 2007.



affordable housing that, in reality, is affordable only to a thin sliver of better-off households, are unconscionable. Steps must be taken immediately to stop this indiscriminate destruction. Instead, China should refocus attention on the important role of urban villages in the provision of housing to the lowest-income urban households. If government intervention in these villages is to take place at all, it should focus on infrastructure improvements; fire safety; and the provision of basic amenities like health care, social services, parks, and playgrounds.

Chinese cities have managed to provide adequate shelter for all in recent years within a pragmatic, albeit unplanned, housing delivery system, thus largely avoiding some of the housing ills besetting the cities of other developing countries. As China continues to make massive strides to urbanize its society and economy, it can do so by opening its peripheral land markets to urban development and by allowing its urban villagers to flourish and survive, while ensuring its food security through effective increases in the productivity of its arable lands. With minor adjustments to its current pragmatic approach to affordable housing, China can continue to urbanize while at the same time continuing to deliver adequate shelter for all in the years to come.

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