



Research note

Land pricing and its impact on land use efficiency in post-land-reform China: A case study of Beijing



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ABSTRACT

This paper analyzes how the newly introduced land pricing system affects urban land productivity in China, taking post-land-reform Beijing as an example. China has been developing its urban land market by building an effective pricing system. This study indicates that the effects of such pricing system on urban land productivity have evolved with the progress of land reform. It is only since 2004, when land granting by negotiation was at last totally prohibited for profit-oriented developments, that the land pricing system has started to positively and significantly improve urban land productivity; the land pricing system also promotes more productive urban land usage by stimulating more intensive investment and better business management.

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1. Introduction

Improving the efficient use of land is commonly recognized as of paramount importance in balancing the protection of farmland and the accommodation of socio-economic development, especially for a country like China with intense human-land relationship and rapid urbanization (Choy, Lai, and Lok, 2013; Meng et al., 2008). During the planned economy era, land was free of charge for development in China. Land users tended to occupy more land than they actually needed, leading to massive loss of cultivated land in rural areas and inefficient land usage in urban areas. From 1956 to 1978, the area of cultivated land shrank 12.44 million ha nationwide and the annual loss amounted to 5652 km² (Li, 2000). An urban land reform based on the paid-to-use¹ principle was initiated in the late 1980s with the expectation that land pricing would improve the cost of land use.

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¹ "Paid-to-use" means that potential land users have to pay a price to use the land. Current literature usually uses the term "paid-to-use," although some researchers have also used "paid-for land use" or "paid land use" to conceptualize this reform. Certain land uses such as land for education, military, and government are still free, and get land use rights through administrative allocation. At the time the urban land market was established, this price was called a "land conveyance fee" in order to avoid being tagged as a form of capitalism.

More accurate land use cost would compel land users to utilize land more economically, and therefore, help improve urban land use efficiency,² preserve cultivated land, and raise capital for development (Li, 1999; Wang, 2008). From 1978 to 1996 the annual loss of cultivated land was indeed cut in half, although it still amounted to 2628 km² (Yang and Li, 2000). However, according to the national land survey, the annual cultivated land loss jumped to 8263 km² during the period 1996 to 2006. Consequently, it remains unclear whether the market mechanism has helped improve land use efficiency as anticipated.

With the expansion of urban land, land use efficiency can increase or decrease depending upon the relative rates of change between land consumption and socio-economic output. Existing studies have looked critically at the massive magnitude of urban development by analyzing the dynamics of urban expansion and the institutional roots of "losing control" of urban sprawl in China (Zhou, 2006). However, incorporating more land to accommodate a growing population and to support urban economic growth is inherent in the process of urbanization, especially for a country with such magnitude of population and at such a stage of urbanization. Therefore, without examining the socio-economic output or urbanization, we may miss the point that really matters: land use

² In this paper we follow the customary usage of the term 'efficiency' found in most of the literature on land management and policy, where it captures the notion of productivity, as the ratio of outputs to land input. In some other strands of literature, it encompasses a meaning of optimality in input usage.

efficiency is more important than the magnitude of urban expansion and the pace of urbanization.

This paper aims to examine the evolution of land use efficiency in the post-land-reform era and to investigate the effect of China's land pricing system on urban land use efficiency.³ We hypothesize that the higher the land price is, the more imperative it is for land users to use land economically; consequently, the more effective it is in improving land use efficiency, *ceteris paribus*. We test this hypothesis by examining land use and land market data in Beijing.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature; Section 3 presents the institutional reform aimed at improving the land pricing mechanism. Section 4 examines urban expansion and evolution of land use efficiency in post-land-reform Beijing. Section 5 further analyzes empirically how the land pricing system affects land use efficiency in Beijing. Section 6 concludes with the main findings of the paper.

2. Literature review

Extensive research has been devoted to analyzing the reasons that lead to cultivated land loss and inefficient urban land usage in China. Artificial promotion of urbanization has been criticized as an important institutional reason (Lu, 2007; Zhou, 2005, 2006). These studies have warned that the speed of urbanization is not “the faster, the better.” Land left idle or low-density development is employed as primary evidence in support of this strand of research (Deng and Huang, 2004). However, it takes time to establish infrastructure and attract population and employment to newly assembled land, and for newly established enterprises to generate profit; land left idle or in agricultural use can be part of the normal development process, providing future development opportunities at higher densities (Peiser, 2001). Most of these studies, however, fail to present more solid causal evidence to substantiate their claims.

Some researchers criticize local governments' reliance on land finance and specifically the land granting system as the fundamental institutional factor promoting China's land development fever. The most powerful evidence they present is the high proportion of land-related revenue as a percentage of local governments' total revenue (Guo, 2001; Lin and Ho, 2005; Long, Li, Liu, Woods, and Zou, 2012). However, studies of land use dynamics have provided a *de facto* economic and/or demographic rationale for land development and urban expansion in various regions (Cheng and Masser, 2003; Ho and Lin, 2004; Seto and Kaufmann, 2003; Xie, Mei, Tian, and Xing, 2005). Therefore, local governments' high land-related revenue may simply be seen as a normal consequence of demand-driven land development. A more direct examination and robust causal relationship is needed to test the impact of the newly established land pricing system on urban land use efficiency.

With respect to the study of land use efficiency, although a large body of literature has been devoted to measurement, little attention has been paid to exploring its factors. In North America, especially, an extensive literature exists that measures land use efficiency in terms of development density, population density and/or employment density (Deng and Huang, 2004; Glaeser and Kahn, 2003; Peiser, 1989). In the Chinese literature, a few studies have developed indicators to measure or monitor land use efficiency. Key indices include investment intensity and economic output per unit of land (Choy et al., 2013).

Although they may differ from those of urban land productivity, the factors that influence agricultural land productivity can shed light on the issue. Property rights, policy, market mechanism and other institutional factors have been reported to affect economic performance and agricultural productivity (See Benin, Ahmed, Pender, and Ehui, 2005; Coase, 1960; Holden, Deininger, and Ghebru, 2009; Jeon and Kim, 2000; Lin, 1992). Other commonly identified factors include

management and technology, (human) capital investment, location and land quality, and farmers' endowments and abilities (Craig, Pardey, and Roseboom, 1997; Shaban, 1987; Thünen, 1826[1966]; Wiredu, Mensah-Bonsu, Andah, and Fosu, 2010). Planning and design approaches also affect land use efficiency (Alberta., 2008; Bertaud, Bertaud, and Wright, 1988; Springfield., 2009). Furthermore, it is reported that land use efficiency varies by industrial sector, depending on whether developed parcels were located within development zones and how they obtained land use development rights (Meng et al., 2008).

3. Development of the land pricing system and its effect on urban land use

According to the urban land rent theory, land used for urban development competes with agricultural use; land rent for urban activities decreases with the distance from the urban center, while land rent for agricultural use is less spatially sensitive; the urban boundary is determined at the intersection point where land rent for urban use equals that for rural use (Alonso, 1964; Brueckner, 1987, 2011; Glaeser and Kahn, 2003; Wheaton, 1974). Compared to China's previous land system in which land was allocated for free, the newly established land pricing system, therefore, is expected to help contain urban expansion and improve land use efficiency according to the highest-and-best-use principle.

China's reform is a gradual and trial-and-error process (Lin, 2008). For the land market to work, constant attention is needed to address loopholes and distortions of the pricing system. When the urban land market was initially introduced, there was no reference to determine land price. The authorities developed an urban land benchmark price system by evaluating and developing a rank of urban land and by setting benchmark prices accordingly. To prevent speculation and land hoarding, local governments can withdraw the land use rights without compensation if land is left idle for two years.

However, there are still some critical distortions and obstacles to developing a well-functioning land market. First, there is no market-determined pricing system for rural land. Rural land used for urban development must first be expropriated. The compensation standards for expropriated land are administratively stipulated, and usually set at very low levels (Benjamin, 2009; Du, Thill, and Feng, 2013; Joseph, 2006; Zhu et al., 2006). The price of rural land decided by the compensation standard for expropriation is lower than the value in a free market; therefore, it fails to constitute an effective balancing factor in determining the urban boundary (Bertaud, 2012). Second, China's urban land supply is monopolized by local governments and land is not supplied solely through the market mechanism. Administrative allocation (*hua bo*) still accounts for a significant proportion of total land supply; the granting modes (*chu rang*) include one-to-one negotiation between local governments and land users, and more competitive and transparent channels of tender, auction, and/or listing (TAL). Land prices granted through negotiation are usually lower than those through TAL (Du and Peiser, 2014; Du, Thill, Peiser, and Feng, 2014). To build a more competitive land market, the authorities required that profit-oriented development (including commodity housing, commercial, tourism, and entertainment) must be granted through TAL after July 1st 2002 and should not be granted through negotiation after August 31st 2004 with no exception (Du and Peiser, 2014); after January 1st 2007, land used for industrial development must also be granted through TAL and the price must be higher than a minimum land granting price standard (Du and Peiser, 2014; State Council, 2006).

Third, as the existing literature has established, under the taxation system, local governments price land discriminatorily for different land use types in order to maximize their total income. After the 1994 tax sharing reform, business tax, income tax from local enterprises, and land-related taxes and fees were ascribed to local governments; value-added tax was shared with the central government while local governments can claim a 25% share (State Council, 1993). Therefore,

³ This paper does not attempt to develop a criterion or norm above which land use could be deemed as efficient.

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