Land wealth generation and distribution in the process of land expropriation and development in Beijing, China

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ABSTRACT

Based on transaction data at the parcel level in Beijing, this paper itemizes the costs incurred in the process of transferring rural land to urban development, quantifies the exact magnitude of land appreciation generated in this process and examines how the land wealth is distributed among involved parties. The main findings include the following: first, the land appreciation and the costs incurred in the process of land expropriation and primary development both differ from case to case; second, conventional comparison of the compensation for expropriated land with land granting price substantially overestimates the magnitude of land appreciation; the average and the median land appreciations account for 44.8% and 44.0% of the mean and median prices of granted serviced land, respectively; last, the compensation paid to affected farmers has improved in absolute terms during our study period from 2003 to 2014; however, because the land granting price has been escalating at a faster pace, the land wealth received by local governments has trended up.

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1. Introduction

Over the past two decades, developing countries have experienced a rapid pace of urbanization, which has demanded massive fiscal capacity to finance large-scale land acquisition and infrastructure extension (Vera & Kim, 2003). China is one of the countries that have faced this challenge with the greatest acuity. In parallel, it has also undergone a two-track process of fiscal recentralization assorted with duty decentralization (Bahl & Wallich, 1992; Jin, Qian, & Weingast, 2005; Liu, Tao, Yuan, & Cao, 2008; Zhang, 2006). Local governments, therefore, have had to tap new financial sources to cope with escalating expenditures. In this context, land-use policy and land financing are employed by local governments as crucial instruments to bankroll urbanization and leverage development (Ong, 2014; Peterson, 2007, 2009; Su, Tao, Xi, & Li, 2012; Wang, 2008).
There is widespread evidence that China’s local governments have turned rural land expropriation and land granting into a lucrative business (Cao, Feng, & Tao, 2008; Du & Peiser, 2014; Du, Thill & Feng, 2014; Liu & Jiang, 2005; Tao, Su, Liu, & Cao, 2010; Zhou, 2007). To maximize land revenue, local governments monopolize land supply for urban non-agricultural development, depress the compensation for the expropriated land and inflate the price of the serviced land. By law, rural land is not allowed to be directly used for urban development; it must first be expropriated, transferred to state ownership and approved for non-agricultural development. Affected farmers are compensated according to administratively stipulated standards, which are commonly believed to be lower than the free market equilibrium price; local governments retain the value appreciation between the serviced land price and the costs of land expropriation and development and enforce land expropriation in a coercive way (Benjamin, 2009; Cao et al., 2008; Ding, 2007; Ho, 2001; Zhang, 2000). Land revenue plays an increasingly important role in the fiscal system of local governments. Land grant revenue has been on the rise; in 2010, it accounted for 68% and 509% of local governments’ budgetary and extra-budgetary income, respectively (Du & Peiser, 2014).

Notwithstanding the financial attractiveness of such a scheme, a series of social and economic problems have emerged. First, it has led to a massive loss of agricultural land coupled with dramatic urban expansion, the outcome of which is often regarded as an inefficient utilization of urban land. During 1999–2008, 21,011 km² of cultivated land was lost in China (Song & Pijanowski, 2014). In the Beijing Metropolitan Region, the area of cultivated land has shrunk more than 50% between 1992 and 2008; a significant portion of this loss stems from urban encroachment (Du, Thill, Peiser, & Feng, 2014). Yet, an investigation uncovered that about 70% of land was left idle in the country’s 6,866 development zones (Cao, 2004). Second, rampant land expropriation has incited severe social unrest in rural areas. It is estimated that about 100 million farmers have been evicted from their land since the beginning of the Opening and Reform policy in 1978 (Walker, 2006; Yan, 2009). Feeling unfairly compensated, affected farmers responded to land expropriation with mass petition (qun zhong shang fang), fierce resistance or even violence. Land expropriation has become the primary cause of unrest and court appeals in the countryside and it is considered to be the greatest threat to China’s “modernization” (Ding, 2007; Erie, 2007; Zhu et al., 2006). Third, the land development business has aroused land speculation and soaring land prices (Du & Peiser, 2014). Since the introduction of the land banking system in 2001 and the enforcement of granting through tender, auction and/or listing for profit-oriented development in 2002, land prices in China have been rising steadily (Du & Peiser, 2014). Worries about land speculation and a real-estate bubble are not uncommon among the public, government officials and academia (Du & Peiser, 2014; Financial Times, 2013; Joseph, 2006; Shao, Qing, & Laurence, 2013).

Criticisms of China’s current land expropriation policy have so far focused on the low compensation standards that are in effect across the country and the approaches to setting these standards. As regards the exact magnitude of the compensations and of the value gap between the compensation and the price of the serviced land, analysis has heavily relied on anecdotal evidence due to severe dearth of quantified data. However, generalizing from reported cases that involved mass conflicts is not a good basis for policy research. Because the total costs of land improvement and real-estate
development and their itemization (for instance, the costs of leveling the ground and supplying utilities, and the allowance fees to farmers affected by expropriation and others) are seldom available, existing studies have resorted to rather simple comparisons between the compensation granted to the affected farmers for expropriated land and the price of the serviced land (Ding, 2007; Du, Thill, & Feng, 2014; Yardley, 2004). However, this approach is believed to overestimate the magnitude of land appreciation because several other types of costs that are incurred during land expropriation, infrastructure improvement and land granting are not taken into account, as will be discussed in detail in Section 5. We argue that detailed analysis of real-estate values at different development stages can more precisely quantify the magnitude of land appreciation and measure how the generated land wealth is distributed among relevant stakeholders.

This study provides a comprehensive estimate of land appreciation in the process of land expropriation and land granting by accounting for various charges incurred during the transition from rural to urban use. Moreover, it quantitatively imputes land wealth among relevant parties that are involved in the urbanization process. The empirical analysis is based on land expropriation, primary development and land granting data at the parcel level in Beijing, China. This city is selected as the study area because its fast population growth supports a very active real-estate market. Also, Beijing has made some progress in reforming its land expropriation policy and disaggregated data are not available in other cities. Specifically, we assembled a unique parcel-level data set in two suburban districts of Beijing, which is formed of the records of the price of serviced land, on the one hand, and of restricted-access data on the compensation for expropriated rural land and on the costs of land development, on the other hand. Because the land values are transaction prices at different stages of development, these data enable us to gauge the magnitude of land appreciation with a solid information base. The compensation for expropriated rural land is the latent rural land value and can be taken as the land wealth realized by affected farmers. The value difference between the serviced land price and the sum of compensation and costs incurred during land expropriation and development is the land appreciation that is received by local governments. In the transaction, developers receive a profit whose rate is stipulated by administrative norms. Therefore, such unique data enable us to accurately characterize the wealth distribution among involved parties, including farmers, land developers and local governments.

The results indicate that the compensation paid to affected farmers has improved in recent years; however, the land granting price has been escalating at a faster pace; therefore, the proportion of land wealth received by affected farmers tends to decrease while that received by local governments tends to increase. The average and the median land appreciation are 2,816 and 1,464 yuan per square meter, respectively; their proportions to the mean and median price of granted serviced land are 44.8% and 44.0%, respectively.

The remainder of this paper is organized as follows. Section 2 reviews relevant literature on land-value stages, land wealth distribution and related policies and practices in China. Section 3 discusses Beijing’s land expropriation and development process and identifies all the costs incurred during this process. Section 4 estimates the magnitude of land appreciation in the process of converting rural land to urban
development based on detailed transaction records. Section 5 examines, in greater detail, three typical cases of land expropriation and the ensuing granting of the land and reveals the land wealth distribution among parties involved in this process, namely the affected farmers, developers, intermediaries and local governments. Based on detailed cost accounting, the analysis also enables us to compare the new land appreciation estimations with the more conventional land-value gap estimations. Conclusions and discussions are presented in Section 6.

2. Literature review

2.1. Studies on the components of land value

Urban land price has four additive components: the value of unimproved land (agricultural land rent), the cost of conversion, the value of accessibility and the value of future rent increases resulting from growth; in rapidly growing cities, the growth premium may account for a substantial portion of the average land price (Capozza & Helsley, 1989). The longitudinal comparison of property values of a piece of land at different stages of development is a well-established and effective means to monitor real-estate markets and analyze price dynamics. One strand of studies has been devoted to estimate the value of development rights of rural land, that is the premium of converting rural land to urban use, to formulate policy instruments to preserve rural land (Blewett & Lane, 1988; Guiling, Brorsen, & Damona, 2009; Isgin & Forster, 2006; Shi, Phipps, & Dale, 1997).

Another strand of research has employed land-value stage analysis to examine land speculation and land wealth redistribution. Under different land administration regimes, land value could be partitioned into different stages. Whitten (1936) analyzed land speculation in American suburbs by examining land values across three development phases. In the first phase, land is still undeveloped and its value is the farm value of the raw, unimproved land. This “farm value” is set by agricultural income and independently of possible future urban uses. In the second stage, the market anticipates the imminent development of the real property, which is factored in the land value (the so-called subdivision value). In the last stage, the land is fully improved and the “value of the lot” is the difference between the normal cost of the built structures and the combined cost or value of the house and lot (Whitten, 1936).

Another study phased lot prices into the price of raw land, the cost of development and the built lot price, and demonstrated that between 1950 and 1962, 50% of the appreciation in lot prices could be attributed to the rise of raw land value in California (Maisel, 1963). In the transition from rural to urban uses, Schmid (1968) differentiated five land-value stages, namely, active farm value, speculative price to farmer, raw land price paid by subdivider, cost of improvement for urban development and price of improved land. Using this framework, he found that the average land appreciation (lot prices less improvement costs) was 892–1975% above the farm value in the United States in 1964. These two studies were both based on aggregate data. A more recent study by Du, Thill, and Feng (2014) measured the value gap between the compensation paid to farmers in rural land expropriation and the prices of serviced land at the parcel level between 2009 and 2012 in Beijing, China. These authors found the value gap to be
positively correlated with the price of the serviced land, which suggests that there is a lack of regulating mechanism to restrain speculation and avoid profit seeking behavior.

2.2. Studies on land wealth distribution

One critical but long debated issue closely related to land-value staging is the distribution of land appreciation among involved parties. One influential perspective was popularized by Henry George, who believed that the rise of land value comes from public investment and overall socioeconomic development. Therefore, land appreciation is an “unearned increment” for landowners and should be taxed (George, 1879/1935). Opponents have argued from the perspective that people are entitled to own and benefit from their property and advocated that rural land appreciation first and foremost derives from previous landowners transferring their development rights. Therefore, landowners should be entitled to gain from the land appreciation (Maisel, 1963; Zhou, 2004). In reality, land appreciation is usually shared by the land owners and the state; the actual distribution may depend on tradition, ideology and social thought, political power of different groups, policy and institution, socioeconomic development and other factors. Therefore, many countries have experienced recurring adjustments to the regulations, taxing all or a part of the land appreciation, such as the enforcement and abolishment of the Town and Country Planning Act of 1947 in the United Kingdom and the Housing Act of 1965 in the United States (Home, 2007; Schmid, 1968).

Several obstacles have been found to hamper the quantification of land appreciation and examination of land wealth distribution. First, the accurate assessment of land values at different stages of development is challenging. The farm land value is inevitably influenced by possible future urban development, even when the land is far away from the existing built-up area; therefore, it is difficult to attribute the transaction value as “ripe for development subdivision value” or as “raw farm value” (Maisel, 1963; Schmid, 1968; Whitten, 1936). Second, relevant studies have been commonly constrained by data availability. Even in the United States, researchers have found that “the development costs are marked by their scarcity” (Schmid, 1968) and the “land costs are much less readily available” (Glaeser, Gyourko, & Albert, 2008). Therefore, existing studies either compute the “development cost” and “land cost” as a residual value or assume them as a fixed proportion of the house price (Glaeser, Gyourko, & Saiz., 2008; Maisel, 1963; Schmid, 1968).

2.3. Studies on land revenue and land wealth distribution in China

In China, farmers affected by a rural-to-urban land transfer are compensated according to administratively stipulated standards, which are notoriously low. Whether the expropriated land is “ripe for development” or not, the compensation for expropriated land is based on the annual agricultural output. Recent adjustments stipulate that additional considerations be factored in the calculation of the compensation, including the land-use type and quality of the land, farmers’ input, crop prices, grades of the agricultural land, local economy, living conditions of the residents and the affected farmers’ need for social security. The revised compensation standards blur the distinction between the farm value and the “ripe” land value for development. Because it is incumbent upon
local governments to set up and implement these standards and because their prime concern is maximizing land revenue for financial gain, the actual compensation level has remained rather low. Moreover, in order to expropriate rural land at low cost, local governments tend to acquire the land earlier than actually needed and hoard the land for appreciation before supplying it on the market (Du & Peiser, 2014). This constitutes the institutional root of rampant rural land expropriation, substantial land wealth redistribution from farmers to local governments and consequently massive rural protest.

Extensive literature, therefore, has been devoted to study the magnitude of land revenue received by local governments and to explore the theoretical justifications of land wealth distribution in the process of transferring the use potential of land. Among the earliest studies that discerned the importance of land appreciation, Zhou (1994) summarized the patterns and causes of land appreciation, which mainly include investment-led appreciation, land-demand-led appreciation and land-use-change-led appreciation. These reasons are widely employed today as justification in the debate on the distribution of land appreciation among farmers and local governments. The owner investment-led land appreciation, which is commonly known as artificial appreciation (ren gong zeng zhi), is the only justification and source of appreciation that private owners may claim, while other types of land appreciation (such as public investment and other private investment surrounding the plot, land-use planning and regulation, increase of real-estate demand) are classified as natural appreciation (zi ran zeng zhi), which should be captured by the public sector. With regards to the allocation of natural appreciation, it is actually owned by local governments, although some studies have claimed that it should be solely owned by farmers (Cai, 2004). Considering the difficulty of decomposing these different sources of appreciation to devise an allocation between beneficiaries and to reconcile conflicts of interest, some scholars have proposed that the public (local governments) and private owners (farmers) should share the land appreciation according to some fixed apportionment (Zhou, 2006).

With respect to the empirical studies on land appreciation and its distribution among relevant stakeholders, most analyses have employed aggregate data at the city level (Ma & Qu, 2006; Shen & Zhu, 2004; Zhu & Cao, 2012), sub-city level (Chen, Tan, & Zhang, 2009) or even provincial level (Lin, Zhu, Zhu, & Zhou, 2013), with the exception of a survey conducted on 145 development projects in 3 cities more than 10 years ago (Wang, He, & Cao, 2006). The crucial land values at different stages of development are commonly flawed by ungrounded data. For the estimation of the prices of rural land or compensation for expropriated rural land, existing studies have either capitalized agricultural income (Zhu & Cao, 2012) or applied an arbitrarily determined multiplier (within the stipulated range) to the annual agricultural output (Shen & Zhu, 2004) or directly adopted an average compensation standard (Lin et al., 2013; Wang et al., 2006). For the prices of serviced land, most studies have used urban benchmark prices as estimates (Chen et al., 2009; Shen & Zhu, 2004), while in other studies, urban benchmark prices were employed to estimate rural land prices (Zhu & Cao, 2012); only a few studies have employed urban average granted land prices as the proxy of serviced land prices (Lin et al., 2013; Ma & Qu, 2006; Zhu & Cao, 2012). As regards the costs of land development, most studies have simply neglected it, while some studies adopted a fixed value (Zhu & Cao, 2012), and others estimated it by
subtracting acquisition costs from industrial land prices (Wang et al., 2006). Therefore, the most detailed measurement so far with project level data was reported by Wang et al. (2006) who, based on the rural land expropriation and land granting projects from 2001 to 2004 in Kunshan, Tongcheng and Chengdu, found that land appreciation accounted for 22.8%, 45.8% and 1.4% of the land granting price in each of these three regions, respectively.

3. Land development process and costs in Beijing

3.1. Land development procedures

Since May 2005, profit-oriented development (including commercial, tourism, recreational and residential housing development) of expropriated rural land in the Beijing Metropolitan Area is required to be prepared by removing existing structures that are unsuited to the new use, clearing and leveling the ground and providing essential public utilities and facilities (Beijing Municipal Government, 2005). This process is the so-called primary land development (tu di yi ji kai fa), which is distinct from the building development proper. If the land is supplied through granting (chu rang), it should be granted through tender, auction and/or listing (TAL) instead of negotiation (Beijing Municipal Government, 2002).

Beijing established the Land Consolidation and Banking Center (LCBC) in 2001 to take charge of land banking as well as to organize and/or execute primary land development. LCBC may expropriate land and conduct primary development on its own; it can also select developers through a bidding process to carry out land expropriation and primary development (LEPD), or it can select developers to help manage and supervise the implementation of LEPD (Beijing Municipal Bureau of Land and Resources, 2005). The costs of the LEPD will be recouped from future land users when the land is transacted on the land market (either through land granting or administrative allocation [hua bo]) after primary development. Land users will not only need to pay for the developable land they actually use, but also need to afford the LEPD costs incurred on the accessory land used for open space and for transportation infrastructure of their developments.

During the preparatory phase of LEPD, implementation agents need to draft a project implementation proposal, apply land expropriation, land-use conversion and planning permit, commission for various types of impact assessment of the project to be conducted by independent professional entities and budget the cost of each procedure. Once the project is approved, implementation agents can contract with the villages and/or affected farmers for compensation and initiate land expropriation. Within the perimeter of the development site, the primary development mainly focuses on demolishing existing structures and leveling the ground; outside of it, it provides public utilities and facilities that link the development site to existing urban infrastructure networks, including roads and utilities. The exact composition of the services may vary between parcels. The amenities within the site perimeter will be provided by future building developers. When the project is finished, it needs to pass the acceptance inspection and undergoes a financial audit to review and verify the costs. (The verified
costs will be taken as reference to determine the amount of the profit that developers can recover.) Then, the land can be supplied on the land market.

### 3.2. Land development costs and land appreciation

Thanks to a comprehensive literature review, expert interviews and case studies, we can identify all the items of cost incurred during the LEPD process in Beijing. These costs can be classified into five categories according to their beneficiaries: (1) the compensation to the affected farmers, (2) the costs of professional services, (3) the costs of primary land development, (4) the net profit received by developers and (5) the taxes and fees charged by local governments. The difference between the land granting price and the sum of these costs is the net land appreciation received by local governments. These costs are listed and summarized in **Table 1**. A graph depicting the land-value stages in Beijing is presented in **Figure 1**. Most of the compensation to farmers affected by expropriation is in the form of social security benefits, except for the compensations for the loss of housing and other attached assets owned by the farmers. In recent years, compensating the farmers whose rural houses were demolished because of expropriation with a resettlement house (**hui qian fang** or **an zhi fang** in Chinese) has become a

| Category                                      | Item                                                                                           |
|-----------------------------------------------|------------------------------------------------------------------------------------------------|
| Compensation for expropriated agricultural land | Land compensation fee *sensu stricto*                                                         |
|                                               | Affected farmers’ resettlement allowance fee                                                    |
|                                               | Attached assets compensation fee                                                               |
| Compensation for expropriated rural-built land | Housing replacement compensation for demolished houses                                          |
|                                               | Location compensation for homestead land                                                       |
|                                               | Affected farmers’ resettlement fee                                                              |
|                                               | Attached assets compensation fee                                                               |
| Costs paid to professional entities           | Cost of drafting project proposal                                                               |
|                                               | Cost of drafting implementation proposal of primary land development                            |
|                                               | Cost of land-use planning                                                                       |
|                                               | Cost of land surveying and mapping                                                              |
|                                               | Cost of environmental impact assessment                                                         |
|                                               | Cost of transportation impact assessment                                                        |
|                                               | Cost of geological hazard assessment                                                            |
|                                               | Land transaction service fee                                                                    |
|                                               | Land granting value appraisal fee                                                               |
|                                               | Cultural relic investigation fee                                                                 |
|                                               | Demolished housing value appraisal fee                                                           |
|                                               | Housing demolishing fee                                                                         |
|                                               | Interests on bank loan                                                                         |
| Land primary development costs                | Costs of leveling the ground, supplying utilities and road to the project premises             |
| Taxes and fees to local government            | Constructing, maintaining and managing fees of flood protection projects                        |
|                                               | Cultivated land reclamation fee                                                                 |
|                                               | Cultivated land occupation tax                                                                  |
|                                               | Urban and town land-use tax                                                                     |
|                                               | Business tax, urban construction and maintenance tax and education fee                           |
|                                               | Housing demolition management fee                                                                |
|                                               | Housing demolition service fee                                                                   |
| Profit of land developer                      | 2% of the audit verified costs on land expropriation and primary land development                |
|                                               | 8% of the audit verified costs on land expropriation and primary land development for carrying out LEPD |

**Table 1.** Summary of the costs incurred in land expropriation and primary land development.

**LEPD:** Land expropriation and primary development.
common practice (Du, Thill, & Feng., 2014); the resettlement houses are usually sold to the farmers at preferential prices for certain floor area and sometimes come with some restrictions on resale. The value difference between the preferential price of the resettlement house and the free market price of comparable commodity houses is an in-kind compensation that is not explicitly included in the cash accounting of the compensation package. Therefore, the compensation paid to affected farmers is a gross income; the actual compensation is higher than the value estimated taking the market value of the resettlement house into account. The profit received by developers is a net outlay calculated on the basis of the audited costs incurred in the LEPD process and the administratively approved profit rate. The revenue received by local governments includes the land-related taxes and fees and the land appreciation. It should be noted that land appreciation is calculated at the parcel level. The only infrastructure costs that are counted in this assessment are those that connect the plot to the surrounding urban infrastructure networks.

4. Quantification of land appreciation in Beijing

The costs of LEPD are never released publicly, which makes the assessment of land appreciation problematic. This section employs restricted-access data (through collaboration with local officials) on primary land development secured from local LCBCs in two suburban districts of Beijing (Shunyi and Changping) to produce a direct measure of the magnitude of land appreciation in the process of conversion of land from rural to urban use. Like all 10 suburban districts of Beijing, these 2 districts mainly consist of new town developments conceived on the basis of the same process of urban expansion. The data of both districts cover all the LEPD cases recorded from 2003, the first year
after the establishment of district-level LCBC and initiation of the LEPD, to the most recent transactions available (April 2014). The records in both districts include information on total costs of LEPD (as itemized in Table 1) and on the granted land price; although no breakdown of the LEPD costs is available, these data enable us to quantify the exact magnitude of land appreciation. The total number of records in district Shunyi and Changping is 101 and 75 parcels, respectively. The compensation, serviced land price and land appreciation are calculated in unit price of yuan per square meter based on total expropriated land area. All three indicators are deflated to real term as of 2003 according to the consumer price index published by the Beijing Statistical Bureau. The geographic distribution of expropriated land parcels is shown in **Figure 2**.

For all 176 parcels in both districts, the total LEPD costs range from 140 to 19,387 yuan per square meter; the average and the median costs are 2,752 and 2,063 yuan per square meter, respectively. The land granting prices range from 518 to 40,879 yuan per square meter; the average and the median prices are 5,569 and 3,887 yuan per square meter.

![Figure 2. Distribution of the land parcels in Beijing.](image-url)
Land appreciation ranges from 92 to 23,072 yuan per square meter; the average and median land appreciations are 2,816 and 1,464 yuan per square meter, respectively. The ratios of average and median land appreciation to the average and median price of granted serviced land are 44.8% and 44.0%, respectively.

The distribution of the total costs of LEPD, land granting price and land appreciation are heavily skewed, as shown in Figure 3(A, B and C, respectively), with a few cases dramatically higher than the others. The annual average land appreciation is characterized by dramatic variability and significant overall increase over the study period from 2003 to 2014; especially from 2012 to April 2014, the magnitude has more than quadrupled; the ratio of land appreciation to land granting price has been rather unstable, with sharp ups and downs (Figure 4). With regard to the spatial patterns

Figure 3. Cumulative distribution of total LEPD costs, land granting price and land appreciation. The three detailed case studies are highlighted on all three plots.

Figure 4. Magnitude of land appreciation from 2003 to 2014 in Changping and Shunyi. The number of granted parcels is reported below the chart for each year.
within the two Beijing districts under study, as shown in Figure 5, all three variables of interest (total costs of LEPD, land granting price and land appreciation) are significantly influenced by proximity to the Beijing city center (which is to the south of the

Figure 5. Spatial pattern of total LEPD costs, land granting price and land appreciation.
study area) rather than the district centers. The parcels located within the sixth ring road of Beijing not only exhibit notably higher granting price, need higher LEPD costs, but also generate higher appreciation for local governments. Among the parcels granted at the highest price (higher than 13,000 yuan per square meter), 11 parcels are located within the sixth ring road, while only 1 is located outside of it; of the parcels for which the total cost is over 6,000 yuan per square meter, 10 are located inside the sixth ring road while only 1 lies outside of it; as for the parcels generating a land appreciation in excess of 9,000 yuan per square meter, 8 are within the sixth ring road and a single 1 outside of it.

5. Case studies of land-value staging and land wealth distribution

In order to further study how land wealth is distributed among involved parties (including the affected farmers, developers, local governments and professional entities) in the process of LEPD, we select three typical cases for which itemized costs incurred during the LEPD process are closely examined. Collectively these cases represent a broad variety of development situations spreading the full range of values of the total cost of LEPD, land granting price and land appreciation variables, as presented in Figure 3. All the costs and prices have been converted to unit price of yuan per square meter.

5.1. Description of the land expropriation cases

The first case of land expropriation was initiated in December 2006 and all the land was granted at once in May 2008. The total expropriated land area was 39.09 ha, including 33.64 ha of agricultural land (of which the cultivated land accounted for 22.47 ha), 0.82 ha of rural-built land and 4.63 ha of unused land. After primary development, the developable land area was 29.04 ha, while the residual was intended for transportation and open space. The land was expropriated in two villages and granted as three parcels, but to a single developer. The dominant planned land-use types were residential for one parcel and financial for the other two. The total compensation for the expropriated land was 150 yuan per square meter in one village, but 375 yuan per square meter in the other. The land granting prices for the three parcels were 8,939, 8,880 and 8,982 yuan per square meter for developable land (land grant revenue divided by developable land area for each parcel), or 7,110, 5,943 and 6,598 yuan per square meter for the entire land area (land grant revenue divided by the total area of the developable land and the accessory land of each parcel). The average land granting price (the sum of the land grant revenue divided by the total land area of the three parcels) for the total expropriated land was 6,641 yuan per square meter.

The second case of expropriation was initiated in May 2009. The land was expropriated from two villages and granted as three parcels. The compensation was identical for the two villages, at a price of 247.5 yuan per square meter. The total expropriated land area was 94.12 ha, including 55.25 ha of agricultural land (cultivated land, 30.75 ha), 32.57 ha of rural-built land and 6.3 ha of unused land. After primary development, the developable land area was 50.49 ha; 38.10 ha was used for open space and transportation.9 One parcel was granted in April 2010 at the price of 1,833
yuan per square meter for developable land, or 1,297 yuan per square meter for the entire land area. The planned land-use type was mixed-use. The other two were granted on the same day in November 2010 to two different developers. One parcel was granted at the price of 10,920 yuan per square meter for developable land, or 6,672 yuan per square meter for the total land area. The dominant land-use type was residential with public housing. The other parcel was granted at 7,476 yuan per square meter for developable land, or 5,114 yuan per square meter for the entire land area. The planned land-use types included residential with public housing, accessory commercial and education. The average land granting price was 3,336 yuan per square meter for the total expropriated land area.

The third parcel was expropriated in July 2009 and was granted at once in November 2010. It expropriated 97.50 ha of land from three villages, including 63.24 ha of agricultural land (including 54.01 ha of cultivated land), 34.23 ha of rural-built land and 0.02 ha of unused land. The compensation to the three villages was identical at 345 yuan per square meter. After primary development, the planned developable land area was 62.56 ha; the land used for transportation and open space was 15.65 and 19.29 ha, respectively. The total land area that was granted covered 26.79 ha; the developable land area was 18.33 ha. The land granting price was 4,474 yuan per square meter for developable land, or 3,061 yuan per square meter for the entire land area. The planned land-use types were primarily residential, as well as accessory commercial and education.

5.2. Land wealth distribution

The statistics on land wealth distribution for the three featured cases are presented in Table 2. According to the project implementation proposals, the total LEPD costs for the three cases were 780, 1,668 and 2,493 yuan per square meter, respectively (the 7th row in Table 2 equals to the sum of the first six rows). The final audited costs for the second and third case were 1,648 and 2,215 yuan per square meter, as presented in the 8th row in Table 2 (no such information is available for the first case). Of these costs,

| Table 2. Statistics of land wealth distribution in land development. |
|---------------------------------------------------------------|
| **Value (yuan/sq. m)** | **Case one** | **Case two** | **Case three** |
|-------------------------|-------------|-------------|---------------|
| 1 Compensation to affected farmers | 277 | 891 | 1,727 |
| 2 Taxes and fees charged by the authorities | 81 | 123 | 184 |
| 3 Costs of primary land development | 290 | 179 | 160 |
| 4 Unanticipated cost | 42 | 99 | 77 |
| 5 Profit of developers | 55 | 117 | 175 |
| 6 Costs of professional services | 34 | 259 | 170 |
| 7 Total costs of land expropriation and development | 780 | 1,668 | 2,493 |
| 8 Audited cost | NA | 1,648 | 2,215 |
| 9 Land granting price | 6,641 | 3,336 | 3,061 |
| 10 Land appreciation received by local governments | 5,861 | 1,668 | 568 |
| 11 Actual land appreciation | 5,861 | 1,688 | 846 |
| 12 Local governments’ total income | 5,943 | 1,811 | 1,030 |
| 13 Land value gap between land granting price and compensation | 6,364 | 2,445 | 1,334 |
| 14 Difference between land-value gap and land appreciation | 502 | 777 | 766 |
| 15 Overestimation rate | 8.6% | 46.6% | 134.8% |
| 16 Ratio of wealth distributed between local governments and farmers | 21.4 | 2.0 | 0.6 |

NA: Not applicable.
the wealth scheduled to be received by affected farmers in the form of compensation (1st row in Table 2) amounted to 277, 891 and 1,727 yuan per square meter, respectively. The net profits (5th row) received by the primary land developers were 55, 117 and 175 yuan per square meter, respectively. The costs of primary land development (3rd row) were 290, 179 and 160 yuan per square meter, respectively. Other costs received by professional entities (6th row) were 34, 259 and 170 yuan per square meter, respectively. The average land granting prices for the three cases were 6,641, 3,336 and 3,061 yuan per square meter (the 9th row). Therefore, the actual land appreciation received by local governments was 5,861, 1,688 and 846 yuan per square meter (11th row = 9th row – 8th row). Adding the taxes and fees charged by the authorities (2nd row), the total land revenues received by local governments were 5,943, 1,811 and 1,030 yuan per square meter, respectively (12th row = 11th row + 2nd row).

The profit received by primary developers is relatively stable across the different cases. However, these cases illustrate that the wealth distribution implied by the relative size of other costs varies significantly from case to case. The wealth distribution between affected farmers and the governments is inversely related; when more revenue is received by local governments, farmer compensations are constricted. In all three cases, local governments received 21.5, 2.0 and 0.6 times (12th row/1st row) the wealth received by affected farmers, respectively. The total costs of LEPD accounted for 11.7%, 49.4% and 72.4% of the land granting price, respectively (8th row/9th row, it is 7th row/9th row for the first case); the average ratio was 44.5% across all three cases. Accordingly, the land appreciation accounted for 88.3%, 50.6% and 27.6% of the land granting price, respectively (11th row/9th row); the average ratio was 55.5%.

5.3. Land-value gap and land appreciation

The detailed accounting of costs for the three cases enables us to compare the estimated land appreciation, which accounts for all expropriation fees and primary development costs, with the land-value gap, which only captures the former. Conventional land-value gap estimation between the land granting price and farmer compensation (13th row = 9th row – 1st row) would be estimated at 6,364, 2,445 and 1,334 yuan per square meter for each of the three cases, respectively. Therefore, the magnitude of overestimation (14th row = 13th row – 10th row) amounts to 502, 777 and 766 yuan per square meter, respectively. Corresponding overestimation rates (15th row = 14th/10th × 100) for the three cases are 8.6%, 46.6% and 134.8%, respectively. Therefore, given that the practical range of overestimation is arguably larger than the range of our detailed case studies, the overestimation produced by the land-value gap is nontrivial and can be sizeable in a large number of cases, when we seek to infer to the whole data set.

6. Discussions and conclusions

For a low- or middle-income country in great need of capital to initiate and sustain economic takeoff, it is inevitable (even necessary) to tap and mobilize all accessible resources in support of economic development. China’s rural land expropiation policy is a controversial mechanism. On the one hand, it guarantees land supply to accommodate urban development and raises revenue to finance infrastructure expansion and
economic development; on the other hand, it artificially enlarges the value gap between the compensation for the expropriated rural land and the price of the serviced land. There are very few studies, however, that have systematically examined the magnitude of land appreciation in the process of LEPD and illustrated the distribution of land wealth. This paper filled this gap by examining the institution and practice by which local governments raise land revenue through land expropriation, development and granting in Beijing. To the best of our knowledge, this study is the first to provide an accurate and comprehensive assessment of the magnitude of land appreciation captured by local governments in the process of LEPD. With this sounder understanding of land appreciation, we have unpacked the black box of land wealth distribution among involved parties, including affected farmers, local governments, developers and professional entities.

This study demonstrates that the land-value gap between the serviced land price and the compensation for expropriated land substantially overestimates the magnitude of land appreciation. Previous studies indicated that the average land-value gap between the land granting price and the compensation paid to affected farmers was 3,858 yuan per square meter in Beijing from 2009 to 2012 and it accounted for 84.8% of the average price of serviced land (Du, Thill, & Feng., 2014). However, this study has provided evidence that the average magnitude of land appreciations was 2,816 yuan per square meter for the two studied Beijing districts during 2003–2014 and the ratio of the average land appreciation to the average price of granted serviced land was only 44.8%. The more precise approach proposed for the estimation of land-value increment in the process of rural land expropriation and development may enhance the accuracy of the information available to involved parties, and this may in turn help to avoid or mitigate social conflicts arising from government expropriation practices. However, more ready access to the detailed cost data held by local institutions is required for the widespread implementation of this more accurate estimation methodology.

With regard to the distribution of the land wealth, although the compensation paid to affected farmers has improved in absolute terms, the land granting price has been escalating at a faster pace. Thus we observed that, during our study period from 2003 to 2014, the magnitude of land appreciation received by local governments has trended up; the proportion of land appreciation to serviced land price increases with a more pronounced tendency. For the developers, taking part in primary land development provides several benefits. First, it enables them to gain access to valuable information that may give them an edge in the subsequent land granting competition. Second, as a large proportion of their expenses can be borrowed from financial institutions and interests are accepted as a cost in the financial audit, the actual profit rate based on their own capital is much higher than the administratively stipulated rates. While no expenses in the LEPD process are directly imputed to local governments, they collect a decent amount of taxes and fees which supplement land appreciation revenue to support further urban development. Future housing and/or industry developers also benefit from the highly efficient land supply and preparation process, which enables them to quickly respond to changing housing and/or product market conditions. The final land users, however, need to pay for the soaring real-estate prices, which is a controversial issue under debate and deserves further examination.
Concerns over land expropriation and land appreciation policies have recently emerged to the forefront of the national political debate. China has now resolved to establish a unified urban–rural land market, as stipulated in the new reform blueprint of “Decision on Major Issues Concerning Comprehensively Deepening Reforms” released after the Communist Party’s third plenum of the 18th Central Committee in December 2013. The sale of rural profit-oriented construction land will be permitted on the land market as long as planning requirements and land-use regulations are met. These pieces of real-estate property will be entitled “equal rights” and “equal prices” with state-owned land. This will position farmers to reap the land appreciation in non-expropriation circumstances. With respect to the implementation of the reform proposal and the redesign of the land expropriation policy, the scope of expropriation should be restricted to specific situations that remain to be defined. Only true public use, such as infrastructure projects, military and defense sites, may justify the expropriation of rural land. The new compensation policy should be designed to avoid the imbalances of the past. For instance, a market-based value that would average out the effect of land-use types and of the land granting mechanism over parcels within the expropriated parcel’s vicinity should be employed as a reference. This approach would provide affected farmers with a compensation that is comparable to market rates under prevailing market conditions. Last but not least, under the reformed regime, local governments will lose a significant part of their fiscal income once farmers become the beneficiaries of land appreciation. In reforming the financial and taxation system, it is suggested that, on the one hand, a balanced revenue income and expenditure system for different levels of governments should be established and, on the other hand, that local governments may be permitted to extract a certain proportion of the land appreciation through taxation.

Notes

1. By “serviced land”, we mean that land lot has gone through the primary land development process, the ground has been cleared and leveled, unnecessary structures have been demolished, land has been improved with infrastructure and facilities (such as road, water supply, gas, electricity, cable and sewer) and is ready for building development.

2. In some cases, especially land granted for manufacturing development, local governments supply land at a price below the compensation to maximize tax revenue, generate gross production and increase employment. In these cases, local governments have to pay for the value gap. More detailed discussion can be found in Su et al. (2012) and Tao et al. (2010).

3. A more detailed discussion of the land expropriation policy and practice in Beijing can be seen in Du, Thill and Feng (2014).

4. Land granting through tender means that the land administration branches of the municipal or county governments issue land granting announcements and select land users based on the submitted tenders from potential buyers according to a set of criteria. Land granting through auction means that potential buyers openly bid for the land at a certain place and certain time, and the highest bidder gets the land. Land granting through listing means that, following a period of open submission of bids, land granting agents select the land users according to the bid prices by the closing date of the bidding period.
5. For land granted through TAL, the authorities usually set a floor price based on development cost and/or appraisal value. If the bidding price is below the floor price, the authorities would not grant the land but retain it for future granting instead.

6. The compensation package is determined through negotiation between the implementation agents of expropriation and the villages and farmers whose land is intended to be expropriated. The compensation of rural-built land consists of the replacement value of the house and the locational value of the land. The value of the resettlement houses is determined according to and simultaneously with the compensation standards; if the compensation is high and close to the free market value, the price of the resettlement house will also be high, and vice versa. The discount of the resettlement house is usually progressive with the size of the demolished house and regressive with the floor area that the farmers intended to buy. The price of the resettlement house the affected farmer needs to pay is usually lower than the cost of development; the value difference between development cost and discounted price is usually taken into account in the cost of primary land development in Beijing. The value difference between the discounted price offered to affected farmers and the market price of comparable commodity houses is the implicit compensation to the farmers, which is usually encumbered by land developers. That happens because, in order to incentivize developers to participate in the project, local governments usually grant them a plot of the land for commodity housing or commercial development; the profit from this commodity housing or commercial development will cover the loss of resettlement house development. Therefore, although our measurement of the land wealth received by affected farmers may be lower than the actual magnitude in some cases, it is arguably the most accurate measurement so far.

7. Land-related taxes and fees are taken as development costs to be recouped from future land users so that local governments can avoid revenue loss.

8. Data source: http://www.bjstats.gov.cn/

9. There were 5.53 ha of expropriated land left without further information; therefore, we excluded them from the calculation of costs and prices. This omission may be because the proposed expropriation area is not the final actual expropriated area.

10. Data related to land expropriation are collected from project implementation proposals, including expropriated land area, land-use types, compensation and various types of budget. Therefore, they are not necessarily the actual data. An independent cost item is also budgeted for unanticipated events. Data related to land granting are collected from land granting records, including the developable land area, accessory land area, planned land-use types, planned FAR. The audited costs of LEPD and the land granting price are the actual data.

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