State Land Policy, Land Markets and the Geographies of Manufacturing: the Case of Beijing, China

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Abstract
The aim of this article is to explore the relationship between state land policies, land markets and geographies of manufacturing in Beijing. Beijing has experienced industrial decentralization from the centre and agglomeration in various types of development zones in the outer city. The new patterns of industrial location in Beijing are to a significant extent due to state policies. State land policies impact manufacturing geographies through land prices, the land supply system and land property reforms. However, industrial relocation involves not only negotiations between government and firms, but is also a game played among different levels of government. National, provincial, municipal, county and even rural level governments bargain with each other to shape and gain from the relocation of industries.

Key words: Land Policy, Land Market, Manufacturing, Industrial decentralization, multi-level governance
1 Introduction

The great economic reforms and rapid industrial growth that have occurred in China since the 1980s have created new geographies of manufacturing. Chinese cities have experienced a decentralization of industry from the centre, and industrial agglomeration in various types of development zones away from the cities’ central areas (He et al, 2007; Feng et al, 2008). Most commentators attribute this change in the geography of industrial activities in China to the loosening of state control, the creation of a form of state capitalism and a “transitional market economy” model (Nee, 1989; Lin and Bian, 1991; Lin, 1995; Walder, 1995; Guthrie, 1997), although this argument conflates markets and capitalism and, as we shall show, under-emphasizes the significance of government regulation and planning. The Chinese government has pursued a path of market-led development to promote export-oriented industrialization in special economic and open zones, most notably in eastern coastal cities (Fan, 1995; 1997). These measures are applicable to spatial restructuring at a national or provincial level. The spatial relocation of manufacturing at a more micro level in China, and particularly at a municipal level, has received little attention.

A rich body of theoretical and empirical work deals with the spatial distribution of manufacturing activities. Early studies concentrated on the interaction of enterprise strategies and geographical circumstances, while more recent studies have paid greater attention to institutional factors. In China state-market relationships and especially land use policies play a particularly important yet often overlooked role in shaping the changing geography of manufacturing at the municipal level (Lin, 1999).

In this paper we shall argue that new patterns of industrial location in Beijing to a significant extent a result of state policies, and that processes of industrial relocation involve not only relations between government and firms, but also between different levels of government. More specifically, we shall show that state action operates at multiple scales, and that land use change in the central urban area is affected mostly by state- and provincial-level policies, while suburban districts and rural areas are mainly controlled by lower level governments. These results challenge economic geography literature that underestimates the role of the interactions between different levels of government in shaping industrial space and under-emphasizes the significance of land-use and land policy issues in Chinese metropolitan industrial dynamics.
The paper is divided into five parts. In the next we shall outline a conceptual framework that incorporates land use issues into analyses of urban industrial dynamics and identifies aspects of the Chinese land use system that have shaped changes in Beijing’s industrial geography in the last two decades. Section 3 deals with the methods used. In section 4 we explore the city’s changing geographies of manufacturing. In section 5 the role of state land policies and land market mechanisms in promoting and constraining industrial relocation are examined. In the final section we shall consider the implications of a closer concern with land use issues in economic geographies of manufacturing.

2 Theoretical background: land-use and geographies of manufacturing decentralization

In western economic and urban geography numerous studies of metropolitan scale industrial decentralization were conducted in the 1950-1980 period (see Scott, 1982 for a critical survey). In the nineteenth century large-scale material intensive industries were located near central city transport terminals, while small-scale labour intensive industries were concentrated in clusters in central locations. In the first half of the following century there was a massive decentralization of manufacturing, as capital-intensive plants in inner-city areas were closed or contracted, and were relocated, newly established or expanded at cheaper sites in suburban and peripheral areas, while labour intensive clusters remained in highly accessible central locations.

In the 1980s it was increasingly recognized that intra-metropolitan industrial location must be understood in terms of the interaction of (1) the structural characteristics and restructuring or internal dynamics/evolution of industrial enterprises, (2) the evolving characteristics of urban places, and (3) their reciprocal impacts. Capital-intensive firms grew in size to exploit the advantages of standardization and scale economies and assumed new functions. As industrial structures and strategies changed, so did the firm’s requirements for capital (investment in plant and equipment, working capital and material and immaterial inputs), labour, land, infrastructure and agglomeration economies. These changes reduced their dependence on the resources of existing agglomerations. The distribution and accessibility of these resources depended however on the actions of other economic and political actors, as well as of the enterprise itself, whose own location and growth changed its environment by attracting resources to places where they did not formerly exist. The costs of labour depended variations the evolving distribution of the population, accessibility and reproduction costs. The costs of
land per unit of floor area declined away from centre but at rates that depended on local conditions and national rules. Obsolete plant in central locations was abandoned, and the rental value of central sites appropriated, while different functions were located in different places, with manufacturing and later routine office jobs growing around the edge of the expanding metropolis. Small-scale labour intensive industries were predisposed to remain concentrated/clustered due to intensity of transactions and to occupy central position in urban areas due to their high accessibility.

In subsequent decades industrial geography saw a series of rapid innovations: a political economy approach; transaction cost economics (centred on identification of the increasing importance of the horizontal integration of related activities rather than vertical integration as drivers of industrial landscapes), sociologically influenced analyses of the regional embeddedness of economic action, studies of innovation, technology and knowledge, increased emphasis on untraded interdependencies (or externalities), relational economic geography that concentrates on connections, relations, ties and networks (at the expense of nodes and agents), institutional economic geography and evolutionary economic geography (Grabher, 2009).

These approaches considerably deepened the analysis of the dynamics of industrial landscapes and the creation and evolution of industrial development paths. These theories are however subject to certain limitations. The first is that, in examining underlying processes of location, clustering, relocation, dispersal and the creation of new centres of activity, too much emphasis is placed on chance events and too little on their economic and regulatory context (Martin and Sunley, 2006, 2010). A second is that the role of some actors is under-emphasized with in particular too little attention to institutions (Mackinnon et al. 2009). This absence is especially important in the case of industrial decentralization in Chinese cities.

A particularly important limitation is the absence of attention to the relationships between industrial development and the drivers of the land use in city regions. (an exception is Sénécal, Malézieux and Manzagol, 2002). Figure 1 puts the decisions of actors concerning the type, land-intensity and location of industrial activities (one type of in-place activity) in their urban and regional land-use context. These decisions about land-use give rise to and are influenced by an implied set of communications and flows (between-place activities including exchanges with other industries and with markets): land-use generates a demand for transport of people, information and freight, and transport supply generates land-use. The character and geography of these decisions about land use, and the consequent demand for land and for nonresidential and residential floor-space, is, however, shaped by the supply of land, specifically-designed,
multi-purpose or configurable floor-space (adapted spaces such as industrial sites, premises and zones) and communications networks (channel spaces including multimodal transport facilities that shape relative accessibility).

The nature and geography of floor space arises from the operation and a land and property development system driven by estimates of the demand/requirements for different types of space. This land and property development system is itself constrained by the transport network, the existing distribution of in-place activities, geographical conditions and spatial policy and planning. The interaction of supply and demand for land and transport helps determine land prices, living and production costs, congestion and environmental impacts.

![Diagram: Economic and social activities vs. Built environment](image)

**Figure 1 Urban and regional land use and the built environment**

Source: adapted from Echenique, Crowther and Lindsay, 1969; see also Echenique, 1994; Echenique et al., 2012.

This representation of an urban and regional system is associated with developments in land-use transport modeling. The weaknesses of this approach lie in the analysis of the political economy of land-use. Its value however lies in its demonstration of the significance of land-use policies for industrial dynamics (within and between place industrial activities and the physical and virtual spaces in which they occur). In China empirical evidence points in the same direction: Wei (2007) found that industrial land, which is provided mainly within development zones, was ranked by firms as the most important factor in industrial location, while state policy was also ranked highly: this finding underlines the importance of land and industrial property development to industrial development.

To explain urban land use, mainstream theories identify families of bid rent curves reflecting the willingness and ability of users to pay rent. The outcomes are a succession of land uses and declining density as distance from core areas (employment and service areas) increases. These theories rest on the idea that land use is driven by the rental value of land. On the supply side
profit maximizing producers’ net revenue (after payment of wages, profits and transport costs) declines with distance from the market (or from other producers with whom they interact) due to rising transport costs. Competition for land for one use drives rents to equal net revenue, while competition among alternative land uses allocates land to the highest bidder. On the demand side consumers maximise utility in making residential choices (for a comprehensive survey see Rodriguez-Bachiller, 1986). Comparative static and dynamic models are used to explain radial expansion and contraction, and the succession of uses of particular sites. In dynamic accounts land uses are distributed in ways which maximise profits/utility with respect to already located activities, with more complex accounts examining the role of a range of actors: renters of land and properties (firms and households), owners seeking to maximise rental income, real estate developers and speculators making decisions about demolition and construction, and construction companies.

These models examine the drivers and the impacts of land rent and land values in shaping the geography of land use and the built environment. All of these models dwell however on the role of market actors. In the case of China land values are important drivers of urban development, but market mechanisms are subject to substantial institutional regulation and control, while the state itself retains a very significant active role in resource allocation and economic development. The Chinese state is a complex and heterogeneous entity (He and Wu, 2009): national and several sub-national levels have different rights and responsibilities, with vertical line ministries present at each level. In the reform period China’s decentralization empowered sub-national government to participate directly in and promote the development process as planners, policy makers, reformers and developers/entrepreneurs, going far beyond simply providing public goods (Wei, 2002; 2007). More recently, a range of problems have seen a re-centralization and re-consolidation of some aspects of state control over land development (Xu and Yeh, 2009) so that different levels of government have a varying range of tools and policies to achieve their objectives. China’s evolving land use institutions and rules and intergovernmental arrangements are vital aspects of an analysis of urban land development and manufacturing location (Hsing, 2010; Wu and Phelps, 2011).

In China state land policies have changed dramatically in the period since 1949, and in doing so have played a significant role in the process of manufacturing re-location. Two main periods can be identified: a stage (1949-77) associated with traditional planning involving public ownership, free land use and non-transferable land-use rights; and a stage (from 1978 to the present) of gradual conversion from a centrally planned system to a dual-track system.
After the founding of the People’s Republic of China in 1949, a land reform was launched to reduce social inequality. Privately owned land was purchased or confiscated and placed in state or collective ownership. By 1958, over 90% of the land was nationalized (Zhang, 1997; Ding, 2003). At that time, urban land was state owned. Each Dan Wei\textsuperscript{1} was allocated land free of charge for an indefinite period with the location and amount of land allocated depending on political connections and the political environment in which socioeconomic functions and production were planned and organized (Wong and Zhao, 1999). Hence, land was de-commodified, land markets disappeared, land-use rights and land ownership were institutionally inseparable and land transactions were considered unconstitutional (Ding, 2003). Public ownership, state control over land distribution, free at the point of use, and non-transferability of land-use rights were important characteristics of China’s land policy before 1978 (Zhang, 1997).

In the early stages of the development of the PRC, industrialization was a top priority. This kind of land policy made the channeling of massive amounts of economic capital into industrial sectors possible. State-controlled land distribution made a significant contribution to industrial development, but the land allocation system also produced enormous land-use inefficiencies, manifested in low land-use density, and the presence of warehouses and factories in central locations (Dowall, 1993; Li, 1999).

Economic reform and promulgation of an “open-door” policy in the late 1970s saw China embark on a transition from a centrally planned to a market economy, and from a closed to an open economy. This transition led to a growing demand for land-use reform. On one hand, unpaid for and non-transferable administrative allocation of land had led to inefficiencies; on the other, plans to attract foreign investment required re-examination and reform of the existing urban land use system. In 1978, land policy reform was set in motion separating land use rights from land ownership and opening up a new market for the conveyance of land use rights to commercial users. The first step was a transition from free to paid-for land-use and from non-transferable to transferable land-use rights. This transition involved a long struggle between the Danwei controlling large plots of land and municipal governments that ended with the establishment of municipal control after August 31 2004 when any lease without a payment

\textsuperscript{1} A Dan Wei is a special socioeconomic unit in China, owned by the state. It is more properly used to refer to a place of employment during the socialist planned economy period or in the case of state-owned enterprises. Prior to Deng Xiaoping’s economic reforms, a work unit acted as the first step of a multi-tiered hierarchy linking each individual with the central Communist Party infrastructure. Work units were the principal method of implementing party policy. Each danwei created its own housing, child care, schools, clinics, shops, services, post office, etc. With economic reform, the role of the danwei has changed a lot. By 2000, much of the work unit’s power had been removed.
The second was the 1987 Land-use Planning Act. This act was a major milestone that tried to formalize the land planning system in China: only after acquiring a land-use planning permit was urban planning and land use deemed legal. The third step involved regulating the conversion of agricultural land into construction land to protect agriculture and ensure food security. For the purposes of management and regulation, land in China is classified as agricultural, construction and unused land.  

Agricultural land owned by a collective can be distributed to collective members and collectively owned entities for use as sites for housing, enterprises, public works and public welfare undertakings. Because of agricultural land loss, protected primary farmland regions were established in 1991, while, in 1998, the government rewrote the Land Management Law, and established a new system to protect agricultural land. The new law required each province to keep at least 80% of agricultural land as primary farmland. As this land cannot be used for construction, this law significantly tightened the rules governing the use of agricultural land for construction and helped prevent agricultural land loss.

The result was a distinctive dual-track system (Naughton, 1994; Lin and Samuel, 2005) involving a gradual approach to the conversion of a centrally planned to a half-market, half-planned system. Initially confined mainly to the “Special Economic Zones”, administrative mechanisms were expected eventually to be replaced by market mechanisms (Zhang, 1997). These reforms were initially successful in improving land-use efficiency, rationalizing land allocation and establishing land markets (Ding, 2003), but also brought some problems, including an overheated land market and a hidden land market (Zhang, 1997; Ding, 2003). Most strikingly however these reforms gave local governments the capacity and incentive to lease land, construct infrastructure and attract investment to increase government revenue: in the suburbs development zones and strategic growth centres were established, new transport infrastructure increased the accessibility of suburban locations, commodity and public housing and real estate investments altered the distribution of the workforce and administrative annexation converted adjacent counties into urban districts; in central areas demolition, relocation and renewal

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2 The 1979 Sino-foreign Joint Venture Enterprises Law marked the start of China’s urban land reform by terminating the free land use right of foreign investment-related enterprises, requiring those enterprises to pay a land-use fee, which was based on lease period and land location. With successful reform in several experimental cities, in 1990 the State Council announced A Tentative Regulation on China’s Urban Land Use Rights Lease and Transfers, which laid the foundation for the construction of a market land system, where the price mechanism and market competition influence the process of land allocation, and land-use rights can be transferred and traded in competitive markets (Zhang, 1997).

4 The Land Management Law of the People’s Republic of China, adopted in 1986 and revised in 1988 and 1998, defines “agricultural land” as “land used directly in agricultural production”, “construction land (land used for non-agricultural purposes)” as “land on which buildings or other structure are built, including land used for urban and rural housing and public works,.....,etc.”, and “unused land” as “land other than agricultural land and construction land”.

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generated significant increases in land values. On the metropolitan fringe villagers also sought to benefit from the construction of new housing and the use of “reserved construction land”, while township governments sought to consolidate village land and construct illegal housing and industrial sites (Hsing, 2010).

These state land policies and land markets along with other drivers of the urban and regional system (Figure 1) played a significant role in changing manufacturing location. Proving this assertion involves two steps. The first involves identifying the main changes in the geography of manufacturing. The second involves showing how the transition from free to paid use, the land supply system and planning guidance and the transformation of rural land into construction land help explain these geographies of manufacturing.

3 Method

3.1 Study area

Beijing is the national political capital of China with a total population of 19.61 million in the year 2010. The whole Beijing Municipal area is 16,800 km², comprising fourteen districts and two counties. To analyze the data, the case study area was sub-divided in three ways into: (1) three concentric areas according to administrative regions: the Central Urban District (comprising four districts, Dongcheng, Xicheng, Chongwen, Xuanwu), the surrounding Suburban District (including four districts, Chaoyang, Haidian, Shijingshan, Fengtai), and the Semi-Rural Fringe (including eight districts, Mentougou, Fangshan, Changping, Shunyi, Tongzhou, Daxing, Pinggu, and Huairou and two counties, Miyun, and Yanqing); (2) four areas according to the ring road system: inside the 2nd-Ring Road; Inter 2nd and 3rd Ring Road; Inter 3rd and 4th Ring Road; outside the 4th Ring Road; and (3) grid squares using a 2km x 2km grid.

3.2 Data collection

In this investigation of Beijing we use unpublished plant-level (large and medium enterprises, hereafter LMEs⁴) data for 1985 and 2004 and district-level data for 2008, along with a telephone survey of 292 of the LMEs, and in-depth interviews with 24 of manufacturing enterprises,

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⁴Large and medium enterprises: According to the new classification standards published in 2003, large industrial enterprises are enterprises with more than 2000 employees, or with product sales revenue of more than 300 million RMB, or with total assets worth more than 400 million RMB. Medium enterprises are enterprises with 300 to 2000 employees, or product sales revenue between 30 million and 300 million RMB, or total assets between 40 million and 400 million RMB.
government officials, and the administrative agencies for the development zones, the latter being completed between April 2007 and June 2009 in Beijing.

The LMEs data for the year 1985 are derived from The Second Industrial Census of China. The LMEs data for the year 2004 and 2008 are derived from the first and second Economic Census of China. The original plant-level data for 1985 and 2004 includes full addresses, the total assets of the plant, the industrial output value, and the number of employees.

Although state land policy reform started in 1978, most of the changes in Beijing occurred after the Land Management Law was published in 1986. Hence data for 1985 and 2004 effectively illustrate the situation in Beijing before and after the state land policy reform, while data for 2008 captures some of the major changes that occurred as Beijing prepared for the 2008 Olympic Games. Due to inflation and economic development, the classifications of LMEs are different in 1985 and 2004 and 2008 (which are the same). In 1985, 2004 and 2008, the shares of LME’s total assets were 78.2%, 75.6% and 67.6% of Beijing’s industrial total assets, respectively, while the shares of industrial output value were 65.5%, 65.4% and 73.9%. This stability in the shares of total assets and industrial output value make the three data sets relatively comparable (Table 1).

Table 1 LMEs data for 1985, 2004 and 2008. Source: Calculated from The Second Industrial Census of China and The First and Second Economic Census of China.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Plants</th>
<th>Total Asset of Plants</th>
<th>Industrial Output Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LMEs</td>
<td>LMEs/Total</td>
<td>LMEs</td>
</tr>
<tr>
<td>1984</td>
<td>N=334</td>
<td>8.2%</td>
<td>11.72 *</td>
</tr>
<tr>
<td>2004</td>
<td>N=496</td>
<td>1.6%</td>
<td>243.08*</td>
</tr>
<tr>
<td>2008</td>
<td>N=651</td>
<td>2.2%</td>
<td>1691.85*</td>
</tr>
</tbody>
</table>

* Current Prices, Billion RMB.

3.3 Research setting

To measure spatial changes of manufacturing in Beijing, the analysis involved four steps: first, plants lacking a detailed street address were excluded; second, a Beijing Manufacturing Database was built in ARCGIS format using Beijing land-use maps at a scale of 1:100000 and plant locations; third, the number of plants, the number of employees, and industrial output value of each unit was calculated for each of the three sets of geographical areas in 1985 and 2004 and for the districts in 2008; finally, the results for 1985, 2004 and 2008 were compared.
To trace manufacturing enterprise relocation, the official homepage of all the LMEs in 1985 was searched to obtain at least the 1985-LMEs present location and telephone number. After excluding 10 firms with no information on their website and 25 firms which had already gone bankrupt or been closed by the government, 299 telephone surveys were conducted with the remaining 1985-LMEs to provide location and relocation information for all of these firms. In-depth interviews were conducted with 24 large firms, government officials, and the administrative agencies for the development zones. These data and interviews enabled the completion of a nearly comprehensive analysis of the changing geography of manufacturing in Beijing, and of the impact on it of state land policies and land markets.

4 Changing manufacturing geographies in Beijing

In 1985 to 2004, the total number of manufacturing enterprises in Beijing increased from 4,753 to 31,671, with large and medium enterprises increasing from 334 to 496. In 2008, the number of manufacturing enterprises was 29,287, of which 651 were large and medium enterprises. In 1985 to 2008 Beijing experienced a process both of industrial decentralization from the centre and agglomeration in various types of development zones across the city.

4.1 Manufacturing decentralization and suburbanization

The extent of manufacturing decentralization and suburbanization is very evident. In 1985, 20.96% of the enterprises were located in the centre of the city, 60.18% in suburban districts, and only 18.86% in the rural fringe. The main decline of manufacturing density in the core occurred in the 1990s. With enterprise relocation and rural industrialization, the percentage of plants, employees and industrial output value in suburban districts decreased to 18.75%, 14.76% and 18.43%, respectively. More than 80% of manufacturing activity was located outside of Beijing’s 4th Ring Road by 2008 (Table 2).

Table 2. Spatial Changes of Manufacturing in Beijing (1985-2008)

<table>
<thead>
<tr>
<th>Area</th>
<th>Percentage of Plants(%)</th>
<th>Percentage of Employees (%)</th>
<th>Percentage of Industrial Output Value (%)</th>
</tr>
</thead>
</table>

The percentage change in the number of plants = Number of plants in the suburban district in 1985 / Number of all plants in 1985 - Number of plants in the suburban district in 2004 / Number of all plants in 2004. The other percentages of employees and industrial output value were calculated in the same way.
The relocation of enterprises is the most radical and commonly observed change. Of the 299 firms (1985-LMEs) telephoned, 41 (13.7 percent) entirely relocated to suburban areas, 126 (42.1 percent) firms kept their headquarters at the original place and relocated manufacturing facilities to suburban areas, and 68 (22.7 percent) firms converted their industrial land to residential or commercial land, keeping a small headquarters’ site, and moved their manufacturing facilities or built a manufacturing branch in suburban areas or even in other cities. Only 64 (21.4 percent) entirely remained in their initial location and most of them were already in suburban areas. At the same time, the suburbanization of newly established firms accelerated the decentralization process. Among the 396 firms founded after 1986, 337 (85.5 percent) located in suburban areas. Only 57 firms located inside the 4th ring road. Most of them were food, printing or electronics manufacturing factories.

4.2 The uneven redistribution of manufacturing in Beijing

Manufacturing enterprises were unevenly re-distributed across the city. In 1985, Chaoyang district, located in the eastern suburbs, was the main manufacturing cluster, with more than 30% of the LMEs. Twenty years later, by the end of 2004, Daxing (including Beijing District Area) and Shunyi, which are located in rural counties to the south and east of Beijing, with designated, specialized agglomeration zones, had become the main areas of manufacturing accounting for more than 25% of the industrial output of Beijing (Figure 2). By 2008, the percentage had reached 34.3%.6

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6 In 2004, the percentage of plants, employees, and industrial output in Daxing district reached 9.62%, 7.64% and 11.69% respectively and in Shunyi district reached 7.58%, 7.47% and 14.69%. In contrast, the percentage of plants in Chaoyang district declined to 11.91%, and the percentage of employees and industrial output decreased to 10.88% and 12.68%. Recently, some areas, such as Yizhuang town (Beijing District Area, Daxing district), Chengguan subdistrict (Fangshan district), Changxindian subdistrict (Fengtai district), Wulituo subdistrict (Shijingshan district),
4.3 Development Zones are the Main Carriers of the Re-location Firms

Most enterprises that relocated chose locations within development zones, contributing to manufacturing agglomeration. The first development zone was founded in 1998; by the end of 2006, there were 28 development zones in Beijing, among which three are national level, and sixteen are municipal level. The development zones cover 319.23km$^2$, of which 65.07km$^2$ is industrial land. All the development zones are located in the suburban districts and rural counties. In 2004, 49.33% of manufacturing enterprises were located in development zones. These enterprises accounted for 53.83% of employees, and 64.66% of Beijing’s industrial output (Figure 3). By 2006, 87.74% of the electronic information industrial output, and 70.14% of the bioengineering and new medical industrial output were located in development zones. These industries have been designated “pillar” industrial sectors of Beijing (Beijing Statistics Bureau, 2007).

Jiuxianqiao subdistrict (Chaoyang district), Shahe town (Changpin district), Tianzhu sub-district (Shunyi district), Shuangjing sub-district (Chaoyang district), have begun to play an important role in manufacturing growth.

$^7$The manufacturing employee density of the unit = the number of manufacturing employees in the unit/Total number of manufacturing employees in the city.
4.4 Spatial Structure of manufacturing

Industrial decentralization and agglomeration in various types of development zones created a new spatial structure of manufacturing (Figure 4).

Initially, most manufacturing enterprises were located in the centre of the city generating an “urban centralized pattern”. At this time, the spatial structure of the city was disordered, with inefficient land use poorly served by infrastructure. Following the policy reforms of 1978, some enterprises moved from the urban core to the suburban or the rural layer of the city, and agglomerated in certain districts, forming a transitional “layered pattern”. At first, only a few enterprises moved, vacating scattered land plots with small transfer fees. The largest relocation of manufacturing enterprises happened in the mid-1990s. Finally, after the building of infrastructural facilities and the development of special zones, Beijing came to display a “point-axis pattern” with most of the manufacturing enterprises locating inside development zones and close to the highway system.

5 Impacts of state land policy and land market on the geographies of manufacturing

In western countries industrial decentralization involves a restructuring of manufacturing enterprises. In China state land policies and state regulation have played a particularly important role. In the period since the start of reform and opening up there were two main phases. The period up to 1995 was a ‘passive’ government-led phase in which compensation payments were limited, enterprises were reluctant to re-equip or modify production lines and where relocation generated significant
problems for employees relating to place of residence, commuting and access to education. The second was a more active market-oriented stage in which land values increased, and enterprises used relocation to obtain more space and adjust their products/processes with technological innovation funded by land transfer. Three changes were significant.

5.1 From free land use to paid land use

Initially, the land-use change and manufacturing re-location was primarily driven by government for two reasons. The first was to reduce environmental pollution. The second was the implementation of payment for land and the establishment of a land market. Before the land reform, land was owned by the government and was normally allocated to users free-of-charge. Differential land rent played no role. The 1987 land reform re-established land values through land leasing and the charging of land use fees. As rental values declined with distance from the city centre, and were higher for commercial than industrial and industrial than agricultural establishments, officials became aware of the potential to increase local government revenues by transforming central city land from industrial to commercial uses and rural land to industrial land, while industrial enterprises were aware of the possibilities of reducing land costs by moving outwards. This realization by the government that the “sale” of land was an easy and effective way to increase income, especially in the core where land started to be much more expensive than land in the suburbs was a fundamental driver of decentralization.

From 1985 to 1994, 65 manufacturing enterprises relocated, vacating 32 hectares of land. After 1995, enterprise relocation entered into a new stage, marked by the publication of a regulation which required some air-polluting and resident-disturbing enterprises to move out of the core. The relocation of enterprises increased rapidly. From 1995 to 2000, 97 enterprises relocated and vacated 285 hectares of land, which was 9 times the area of land vacated during 1985-1995. The process was accelerated by the publication of another regulation in 2000, which required all industrial enterprises located inside the 4th Ring Road to move gradually out of the core. In accordance with this act, from 2000 to 2006, 96 enterprises moved out of beyond the 4th Ring Road and vacated 315 hectares of land.

The revolution from free land use to paid-for land use unraveled the original land supply system and opened a new era. Although the government published an act to enforce the manufacturing enterprises move out of the centre in the name of environment, the main reason for the move was the increase in land values and its impact on government revenue.
5.2 Land supply system and planning guidance

The new urban land market drove enterprises to move out of the central urban district but left open the question of their destination. The land supply system and land planning guidance also played a dominant role in the process. In China, the proportion of the land that can be supplied as industrial land is decided by the land planning and urban planning processes. In the name of modernization, rationality and efficiency, urban and land-use planning are the two most important tools of territorial governance development guidance. The two plans, which have different functions, played dominant roles in manufacturing location and relocation for several reasons.

First, industrial land supply is fixed by these two plans. Within the urban planning and land-use planning process, the location, amount, function, and supply system of land parcels determines manufacturing location. These plans are shaped by many factors, including geological conditions, spatial development strategy, and special central government demands. In the case of Beijing: (1) geological conditions to the west and north, where there are chains of mountains, a green belt and an essential water catchment area for a city requiring water conservation, all make industrial development very difficult. This hilly region has had numerous debris flows, landslides, ground fissures and subsidence events, making it geologically unsuitable for industry (Figure 6). Hence the plains to the south and east have been the main destination for Beijing’s development. (2) The spatial development strategy is based on a “dispersed groups” distribution within the urban built-up areas of Beijing. In particular, the new master plan of Beijing (2004-2020) proposes “two axes, two belts and multiple centres” as the spatial development strategy (Figure 5). Some of the multiple centres, which are located in the suburbs and rural fringe of Beijing, have become the new growth points for manufacturing. (3) Hosting the Olympics in 2008 was also a special factor. To guarantee a “Green Olympics, Humanistic Olympics, Technological Olympics”, the new master plan strengthened the industrial decentralization process.
Second, the two plans guide the direction of development by improving infrastructure and offering preferential policies. Under urban planning guidelines many development zones provide a hospitable environment for investment, including the development of infrastructure, the provision of the so-called “five (or seven) connections and one levelling” (Wu Qi Tong Yi Ping). At the same time, since 1991, development zones have offered preferential tax policies. In 2006, the preferential tax policies were cancelled, although some development zones still have special services or priorities. The Beijing Development Area Administrative Commission (BDA), for example, which is authorized to carry out unified leadership and administration on behalf of the People’s Government of Beijing, announced that firms relocating to the development zones would receive a “One Stop” service that includes banking services, the Industrial and Commercial Administration, the Tax Administration, Security Administration, Telecom Administration, Electricity Supply Administration, Water Supply Administration, and Steam Supply Administration, etc. At the same time, to improve the investment environment and service efficiency, the BDA Department of Investment and Promotion is solely responsible for handling all projects from acceptance of project proposals to the signing of land contracts and plant transfers, providing a “One Window” service. Although the land-use price inside

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8 “Five connections and one leveling” means connecting roads, electricity, telecommunication, water and drainage and leveling sites, while “seven connections” adds gas and heat.

9 Inside the development zones foreign-invested enterprises pay a preferential 15% Enterprise Income Tax (EIT), while those operating not less than 10 years, upon approval of their application by the Tax Administration, are granted a two-year tax holiday followed by a three-year 50% reduction starting from their first profit-making year. Upon termination of this preferential period (a two-year EIT holiday and three-years with 50% reduction), Export-Oriented Enterprises and enterprises whose annual export value is at least 70% of their annual production pay their EIT at the preferential rate of 10%; and those which are approved as Enterprises of Advanced Technology enjoy an extension for the next three years paying their EIT at the preferential rate of 10%.
development zones is a little higher, most manufacturing enterprises prefer to locate inside the zones, because of the provision of infrastructure, services and preferential policies.

5.3 Rural industrialization and land transition from agricultural land to construction land

Industrial decentralization has seen not only the relocation of industries but also the development of a fully-fledged suburban and rural economy. From 1984 to 2004, China witnessed a dramatic development of rural industries, of which most were township and village enterprises (TVEs)^10. The rural land system and the transition from agricultural land to construction land in rural areas made significant contributions to rural industrialization.

Figure 6 describes how different enterprises obtain land from the land system and what kind of transition fees is charged. In-depth interviews with government staff revealed that, of these transactions, two are the most popular, and impact significantly on rural industrialization. One is the transition from collective-owned agricultural land to state-owned construction land, which is then leased to manufacturing enterprises. The other is the transition from collective-owned construction land or even agricultural land to manufacturing TVEs in legal or illegal ways.

![Fig.6 Industrial Land Transition Forms in China](image)

^10In Beijing, from 1995 to 2004, the number of manufacturing TVEs increased from 63,000 to 151,000, the number of employees increased from 987,000 to 1,208,000 and output increased from 52.89 billion RMB to 170.26 billion RMB.
These transactions were motivated by the 1985 and 1994 public finance reforms. These reforms separated local government and central government fiscal budgets, making it difficult for local governments to raise funds to invest in infrastructure and the built environment (adapted spaces) and increase accessibility (channel spaces) with a view to increasing land values and attracting investment. With land reform, local governments realized that they could use the money generated from land sales to fund infrastructure projects and set in motion a cumulative spiral of growth.

Until the mid-1990s, the transition from rural agricultural land to state-owned construction land for lease to manufacturing enterprises was the most popular method for rural enterprises to obtain land. However, urban governments (at the municipal and district/county levels), which have a higher rank in the hierarchy than rural governments (at township or village levels), controlled the land-use and land-supply process. As of 1988, the land lease market was only open to state-owned land. Collective land could only be leased out after conversion to state ownership. As a result rural collective land could only be developed after it had been expropriated by urban governments through their exclusive right to requisition rural land and convert it into state-owned land. Given their self-defined “public-interest” role, urban governments made widespread use of their own development companies or teamed up with developers to build industrial parks and development zones in rural areas, thereby accelerating rural industrialization (Yeh and Li, 1999). At the same time, urban governments also developed several tools in order to preserve their unique right to use collectively-owned land. Through the urban planning system, urban governments could limit the use of land by rural townships and villages, while legitimizing their own expansion into rural areas. Through the quota system for the conversion of agricultural into construction land, urban governments could control the amount farmland a rural township could convert. As the conversion quota is allocated down through the administrative hierarchy, urban governments would bargain with their supervising government agencies for a larger share of the agricultural land conversion quota, while townships and villages at the bottom of the hierarchy were often left with small quotas. In practice, these policy tools automatically made most cases of rural government-led agricultural land conversion illegal (Hsing, 2006). So until the mid-1990s, urban government-led conversion was the major transaction.

After the mid-1990s, a second transaction converting collective-owned land into manufacturing enterprise land assumed a dominant role in rural industrialization. 1994 saw a new public finance reform. The new fiscal decentralization arrangements contributed to a fiscal crisis for rural (township and village) governments. As they were at the bottom of the administrative hierarchy, they had limited formal authority to raise revenue, and most of them fell deeply into debt. Faced with a
deteriorating financial situation, the collectives were reluctant to see their land converted to state ownership when they received no part of the conveyance fee.\textsuperscript{11} Financial pressure, political uncertainty, and the temptations of the profits to be made from land-use conversion saw rural government leaders launch their own land development projects by-passing the scrutiny of urban government. In some cases the projects were completely legal, as when collective land designated as construction land was leased to investors to build factories. Since the mid-1990s, a commercial track has developed where TVEs and new rural enterprises can rent or negotiate for the right to use a certain amount of collectively owned land from the rural government. But most of the projects are more complicated and illegal.

There are three main types of illegal transaction between a rural government and a manufacturing enterprise: (1) by under-reporting the conversion quota and “selling” the collective-owned land to the manufacturing enterprise. This method is part of the “black market” system. Because higher-level governments had to rely on lower-level governments to report the amount of land conversion, rural government leaders often under-reported, and allowed some land to be used or “sold” illegally, with the money going into somebody’s pockets. At the rural level, the amount of land involved in these transactions was huge: when land transition estimates were obtained from remotely sensed images and compared with the data reported by rural governments, large discrepancies were discovered. It was found that government statistics under-reported the loss of agricultural land by more than 50%. (2) By dividing large projects into smaller ones, and multi-year projects into “independent” annual projects. Under the 1986 Land Management Law, state construction projects using over 3 mu\textsuperscript{12} of farmland, or over 10 mu of non-agricultural land required approval by the County Land Bureau. A rural government could divide a project into several smaller ones in order to keep land use conversion under this threshold. (3) As the Land Management Law issued many regulations for land-use but was silent about land used by TVEs, rural governments were ceded a space to offer collectively-owned land to TVEs. In sum, local and rural governments found it more profitable to sell rural land to developers or engage in property development than to grow crops and fruit trees during the property boom period. A loss of rural land is inevitable during a period of rapid growth. In Beijing it included a wave of rural industrialization driven by the land conversion laws which itself contributed significantly to industrial decentralization.

\textsuperscript{11}The central government takes roughly 30% of the conveyance fee, and the remaining 70% is divided among local governments (usually only those at or above the county level). None of the conveyance fee goes to the rural collectives.

\textsuperscript{12}Mu is a unit of land area. 1 km\textsuperscript{2} = 1500 mu.
6. Conclusions

In this article, we have explored the under-examined interconnections between manufacturing geography and state land and land market policies. In the case of Beijing manufacturing underwent a wave of decentralization and agglomeration. Although decentralization was accompanied by industrial restructuring, in China the geography of manufacturing is to a significant extent driven by preferential state policies, socialist aspects of China’s socialist market economy and the rights, responsibilities, strength and strategies of governments at a range of levels.

Manufacturing industries in Beijing have decentralized from the centre and agglomerated in various types of development zones across the city with the successive development of an “urban centralized”, “layered” and “point-axis” spatial patterns. State land policies played a more important role than land markets in this restructuring process because: (1) the switch from rent free land-use to paid for land-use promoted industrial decentralization and a more efficient spatial arrangement of manufacturing; (2) the land supply and planning system directed the development of manufacturing industry by fixing industrial land supply details and offering preferential policies; (3) land property reforms and the transition from agricultural land to construction land in rural areas accelerated the process of rural industrialization and the development of industrial parks in rural area.

Different levels of governments played significant and varying roles. Our research finds that: (1) the central area of the city was affected most by the state level and provincial level government. Within the 3rd-ring road, most of the enterprises were forced to decentralize in accordance with provincial policies, ultimately with the holding of the 2008 Olympic Games leading state and provincial governments to require manufacturing enterprises located inside 4th ring road to move out; (2) suburban districts were controlled mainly by provincial-level government (which gave industrial development guidance in the shape of spatial development strategies to each suburban district) and the city-level government, which controlled each district and manipulated the industrial development process; while (3) rural level governments played an extremely important role in the rural county areas by offering collective-owned land for land conversion.

The Beijing case indicates that the literature in economic geography should pay more attention to the provision of land and sites for industrial development. The exclusion of land as a relevant factor of production is a significant oversight. In the case of Chinese economic geography at least the role of the state and public policies as well as to “intra-government” relations also require great attention. In China local governments are gradually emerging as major players in translating central government
land policy into local patterns of land use (Skinner et al, 2001) with significant implications for studies of the geography of manufacturing and of land-use policies.

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