

# Local Determinants of Economic Structure: Evidence from Land Quota Allocation in China

Meina Cai\*  
Department of Political Science  
University of Wisconsin-Madison  
Email: cai2@wisc.edu

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## Abstract

China's economic structure stands in stark contrast to transitional countries and many developing countries at similar levels of economic development in its emphasis on industry and relative underdevelopment of the service sector. This distorted structure indicates that economic reforms require a shift in resource allocation among sectors of the economy. This paper focuses on land, a fundamental means of production, which remains under state and collective ownership more than three decades after economic reforms were launched. In the face of massive arable land loss, the central government imposed a land quota system that restricts the maximum amount of land used at the subnational level, but gives local governments enough autonomy to determine sectoral allocation of land quotas within their jurisdictions. What political economic factors drive sectoral allocation of land quotas in China? This paper argues that both the local revenue structure and the time horizon of local politicians have impacts on local land quota allocation. Using an original dataset for a probability sample of 120 cities, this paper finds that more land quotas are distributed to industry when the local revenue base relies more on the value-added tax and less on business tax, when local Party secretaries, but not mayors, have long time horizons, and when the locality is assigned more quotas.

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# 1 Introduction

The structure of centrally planned economies was distorted compared to market economies, primarily reflected by a relative overdevelopment of heavy industry and underdevelopment of services (Ofer 1987; Kornai 1992; Roland 2000). The transition from a command to market economy thus requires a shift in resource allocation among sectors of the economy. The so-called Washington consensus, with strong emphasis on liberalization, stabilization, and privatization, was carried out in the process of transition in many communist countries in the former Soviet Union and East Europe, with the expectation that this reform would induce the seriously distorted economic structure to move in the direction consistent with market economies. Deviating from this standard reform recipe, China developed some unique institutions, such as dual-track liberalization and township and village enterprises (TVEs), while still maintaining its authoritarian control by the Chinese Communist Party (CCP). Nonetheless, China has impressed the world by its astonishing economic success, with an average growth rate of about 10 percent for the past 30 years. In 2010, China surpassed Japan to become the world's second largest economy behind the United States. China is therefore often viewed as a great success, at least from the perspective of economic transition.

Contrary to expectations, after more than three decades of economic reforms, the Chinese economic structure still stands in stark contrast to transitional countries as well as many developing countries at similar levels of economic development. While postcommunist countries experienced a significant structural shift from industry to services, China still maintains the bias toward industry and relatively small share of services: between 1990 to 2009, while value added by industry as a share of GDP declined from 46 to 29 percent in East Europe, from 48 to 33 percent in Russia, and from 39 to 35 percent in other countries in the former Soviet Union,<sup>1</sup> in China it increased from 41 to 46 percent, as shown in Figure 1. Within the same period, value added by services as a share of GDP grew much faster in postcommunist countries than in China: the ratio increased from 39 to 64 percent in East Europe, from 35 to 62 percent in Russia, and from 32 to only 43 percent in China, as shown in Figure 2. Holding time invariant, China's economic structure still stands out in comparison with developing countries at similar level of economic development, measured by

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<sup>1</sup>The countries in East Europe and the Baltics in the dataset include Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Slovenia, and Slovakia. The countries in the CIS in the dataset include Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

GDP per capita in 2005 purchasing power parity (PPP) dollars (Figures 3 and 4). Those showing a similar pattern of economic structure with China are often oil-rich countries, such as Angola and Azerbaijan. Both cross-time and cross-sectional comparisons suggest that China's economic structure is far from optimal. Huang and Tao (2010) found that economic structure in China suffers from serious distortions in labor, capital, land, energy, and the environment.

[Figures 1-4 about here]

This paper examines the political economic determinants of land allocation between industry and services in China. The focus is on land because it is one of the fundamental means of production allowing economic activities to take place. More importantly, land remains under state and collective ownership and thus is an instrument with which local governments intervene in the economy. With the emergence of a land market where land use rights can be leased out for a period of time varying from 40 to 70 years, land has become an important revenue source for local governments. In 2009, the *land conveyance fee* alone – a form of revenue generated by transferring land use rights from the state to other land users – was up to 1424 billion RMB, accounting for 77.7 percent of the state fund budget,<sup>2</sup> or equivalent to 20.8 percent of the state budget.<sup>3</sup> Land also functions as collateral to help local governments apply for bank loans to develop local infrastructure (Whiting 2011).

China's arable land loss parallels its economic growth, as shown in Figure 5. In the face of massive arable land loss, the central government imposed a land quota system that restricts the maximum amount of land used at the subnational level, but gives local governments enough autonomy to determine sectoral allocation of land quotas within their jurisdictions. What political economic factors drive sectoral allocation of land quotas in China? This paper argues that both the local revenue structure and the time horizon of local politicians have impacts on local land quota allocation between industry and service sectors. Using an original dataset compiled from various statistical yearbooks and career histories of local politicians for a probability sample of 120 cities, this paper finds that more land quotas are distributed to industry when the local revenue base

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<sup>2</sup>Fund budget or *jijin yusuan* is another important revenue component for the state, in addition to the budget revenue. Fund budget is collected from the society through land use rights transfer and public lotteries. It is used to support specified infrastructure and social development.

<sup>3</sup>Ministry of Finance, available at [www.mof.gov.cn/zhengwuxinxi/caizhengshuju/201005/t20100511\\_291390.html](http://www.mof.gov.cn/zhengwuxinxi/caizhengshuju/201005/t20100511_291390.html)

relies more on the value-added tax and less on business tax, when local Communist Party leaders have long time horizons, and when the locality is assigned more quotas.

[Figure 5 about here]

The paper ties in with three strands of literature. A first strand builds on the grabbing hand model of government by Andrei Shleifer (1997) and his various coauthors (Murphy, Shleifer and Vishny 1991; Frye and Shleifer 1997; Shleifer and Vishny 1998). A general consensus in this literature is that political factors matter enormously for resource allocation, driving economic outcomes deviating from the Pareto optimum. For instance, Murphy, Shleifer and Vishny (1991) examine the allocation of human capital and find that in countries where rent seekers can claim a substantial part of wealth through official and unofficial expropriation, the most talented people join rent-seeking rather than entrepreneurial activities, thereby reducing economic growth. Recent experiences of transition economies show that the state is a central barrier to economic development in postcommunist countries (Shleifer 1997; Frye and Shleifer 1997). Although Poland and Russia adopted similar reform packages, Russia lags significantly behind Poland in the transition of its government. Consequently, the Polish economy prospered while Russia continues to produce the wrong products.<sup>4</sup> Gehlbach (2008) provides a political economy logic of the distorted Russian economy. He argues that politicians have an incentive to disproportionately provide collective goods to sectors that are important sources of state revenue and are anticipated to be more tax compliant. As a result, in the former Soviet Union, where the revenue base was largely inherited from the old regime, politicians were systematically biased against the new private enterprises that are less taxable, whereas in Eastern Europe, the revenue base was restructured to include the new private sector, thereby encouraging politicians to promote the new economy. Along this line, this paper examines the role that local governments play in allocating land quotas.

The second strand in the literature begins with the pioneering work of Mancur Olson (1993) examining the incentive structure of politicians. The state is after all staffed by politicians who are themselves subject to institutional restrictions affecting their time horizon. Olson's analogy of roving and stationary bandits best illustrates the logic of time horizon. A "roving bandit" with

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<sup>4</sup>For instance, in Russia the vodka sector was created in localities where comparative advantage in vodka industry is absent (Gehlbach 2008).

a short time horizon has a strong incentive to confiscate wealth and abrogate contracts without considering the long-run consequences of his choices. Such predation destroys the incentive for citizens to engage in productive activity, contributing to a decline in economic output. In contrast, a “stationary bandit” with a long time horizon has an incentive to provide public goods, respect individual property and contract enforcement rights so as to extract the maximum possible net surplus in the long run. This action encourages citizens to invest and produce, and consequently generates economic growth under a dictatorship. Clague et al.(1996) find a compelling empirical evidence that the time horizon of politicians has an impact on property and contract rights. Wright (2008) demonstrates that autocrats with long time horizons use foreign aid more effectively than those with short time horizons. This paper applies the logic of time horizons to the Chinese context and finds support for this line of thought.

The third strand build on the vast literature on the Chinese political economy. China’s economic success relies critically on local governments. The mechanism that aligns local government incentives with promoting economic growth lies in the fiscal contracting system (Oi 1992; Montinola, Qian and Weingast 1996; Oi 1999; Jin, Qian and Weingast 2005). This fiscal arrangement however, was replaced by tax sharing system in 1994, which differs significantly from the previous fiscal system. Moreover, previous literature examining how local governments promote economic growth did not take land into account (Oi 1999; Whiting 2000); this is because at the time when this research was conducted, the land market was largely absent: land was distributed to land users by the state, free of charge. Although research on China’s land reform is now growing, it pays exclusive attention to how land has become an important instrument for local government in promoting the local economy (Lin 2009; Hsing 2010; Man and Hong 2011; Whiting 2011). The land quota restriction has been largely ignored: a few studies have very briefly noted the land quota system (Lin 2009; Hsing 2010), but failed to examine it in detail.

According to my interviews with officials across localities and across all levels of local governments, land quotas appeared to be the largest constraint in promoting local economic growth, indicating that land quotas have become a scarce resource to local governments.<sup>5</sup> This is especially

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<sup>5</sup>Interviews ZJ12160109, GD01311110, GD03040110, GD03040210, GD03050110, ZJ03190110, ZJ03190210, ZJ03290110, JS04020110, JS04060110, JS04071110, ZJ04120110, ZJ04130110, ZJ04160110, ZJ04160210, ZJ04190110, ZJ04190210, ZJ04200110, ZJ04200210, CQ04250110, CQ04280110, CQ05060110, CQ05060210, CQ05110110, CQ05121210. Interviews were conducted in Zhejiang, Jiangsu, Guangdong and Chongqing and cover a wide range of local leaders from provincial-level officials to village party secretaries. See appendix A for discussion of interview

the case along the east coast, where the economy has developed the most in China. For instance, when I asked why a piece of unoccupied land located within an economic development zone could not be used for industry in Wenzhou, the official responded: “We ran out of this year’s quotas, and we are waiting for new quotas” (Interview ZJ04190210). My in-depth qualitative interviews identify land quotas constraining local government officials in attempting to promote the local economy. Using the grabbing hand model and the time horizon model as theoretical departures, this paper examines how the new fiscal arrangement affects local politicians in sectoral allocation of land quotas.

The contribution of this paper is three-fold. First, by highlighting the largely overlooked yet important institutional constraint of land quotas, the paper contributes to the growing literature on China’s land reform. Second, it systematically examines how the new fiscal system and land change the dynamics of how the local economy is operated. By establishing empirically the relationship between the fiscal system, land, and local resource allocation strategies, this paper updates the literature on the Chinese political economy. Third, it offers a political economic logic of resource allocation between economic sectors. It shows that the length of politician tenure is one of the main driving forces, thus adding another layer to our understanding of the distortion of economic structure.

The rest of the paper is organized as follows. Section 2 discusses local governments, the main players considered in this paper, and their preferences. It examines the political, fiscal, and land quota constraints facing local politicians. Section 3 details the political economy of sectoral allocation of land quotas. It develops a simple two-period model to theorize the arguments and derive hypotheses. Section 4 describes the data and construction of variables. Section 5 estimates the effects of economic and political determinants on local land quota allocation and explores the robustness of findings. Section 6 concludes.

## **2 Players, Preferences, and Institutional Context**

This paper considers local politicians as the main players. A local politician is assumed to be a revenue maximizer, subject to constraints. Social scientists have long stressed the importance of

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subjects and interviewee coding.

revenue extraction. Edmund Burke (1790) succinctly asserted over two centuries ago: “The revenue of the state is the state. In effect all depends upon it, whether for support or reformation.”<sup>6</sup> Although it is common in the political economy literature to assume that a rational self-interested ruler is a revenue maximizer (Bates 1981; North 1981; Levi 1988; Olson 1993), it still requires some elaboration in the China context. Unlike democracies, where politicians are restricted by voters, officials in authoritarian China are managed through the *nomenklatura* system, through which the Communist Party holds the ultimate authority over personnel management (i.e., appointment, promotion, transfer, or removal) of all Party and state main leaders (Manion 1985; Burns 1994; Lam and Chan 1996). The career prospects of leading officials are based on their performance, evaluated regularly using the target responsibility system (TRS), a set of performance criteria that induce local officials to act in ways commensurate with the preferences of the Party-state (Tsui and Wang 2004; Whiting 2000, 2004).

For example, the performance of local political leaders<sup>7</sup> in a prefecture-level city in Guangdong province is evaluated yearly based on the ten indicators detailed in Table 1. A target for each indicator is set for each locality prior to the evaluation. Each indicator is assigned a baseline score: a higher score means more weight in the overall score calculation. Score calculation varies across indicators: some are dichotomous, indicating whether or not the target has been reached, while others provide a relative measure, comparing different localities. An examination of the evaluation scoring in Table 1 offers two stylized facts. First, local budgetary revenue is assigned the highest score, indicating its priority status among the indicators. Recent statistical analysis shows that provincial-level officials who contribute more revenue to the central government are more likely to be promoted (Sheng 2011; Shih et al. 2011). Second, consistent with the literature (Edin 2003; Landry 2003, 2008; Li and Zhou 2005), the evaluation is biased toward economic performance: 5 out of 10 indicators are economy-related and the sum of the baseline scores of these indicators accounts for 50 percent of the total baseline score.<sup>8</sup> The score calculation for the economy-related indicators takes into account the ranking in target fulfillment across local jurisdictions, which promotes competition

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<sup>6</sup>Quoted in Pollack 2009, p. 1.

<sup>7</sup>To protect my source, I do not identify the city. The local political leaders subject to evaluation by the city comprised the following positions from each district under its jurisdiction: party secretary and deputy party secretary of a district’s party committee, members of the standing committee, director and deputy director of district government, people’s congress, people’s political consultative conference, and secretary and deputy secretary of the commission for disciplinary inspection.

<sup>8</sup>I consider the first four indicators and the development of hi-tech zone to be economy-related.

across local jurisdictions. Evaluation results have an impact on individual wealth accumulation of local political leaders and, more importantly, on their career advancement.

[Table 1 about here]

Despite being a top priority, the economy-related criteria are hard to fulfill due to substantial budgetary revenue shortfall. The rapid economic growth in China since the 1990s has been maintained by substantial urban bias, massive infrastructural investment, and preferential treatment to large state-owned enterprises (SOEs) and foreign direct investment (FDI). This form of growth is conceptualized as “state-led capitalism” that relies heavily on investments from local governments (Huang 2008). The problem is that local politicians, who desperately need revenue to promote the local economy, run budget deficits themselves. Economic competition across jurisdictions motivates local politicians to provide preferential treatment (e.g., tax breaks) to attract investors, resulting in lower local tax collection. More importantly, fiscal pressure on local politicians was intensified by the tax sharing system (TSS) launched in 1994, which fundamentally changed the dynamics of how central and local governments divide tax revenue. The TSS successfully transferred revenue from local governments to the center, but it failed to adjust expenditure responsibilities for local governments, as shown in Figure 6. As a result, local politicians experienced a sharp decline in local revenue while they are still expected to take on the same expenditure responsibilities for the provision of a wide range of public goods and services (e.g., education, healthcare, and social welfare), thereby creating the potential for substantial budget deficits (World Bank 2002; Wong 2009). The deficit problem gets more severe as you look down the administrative hierarchy, because a local government has to share its tax collection with all local governments above it administratively, in addition to the central government (Oi and Zhao 2007).<sup>9</sup> Figure 7 is a scatterplot of the budget deficit measured by the ratio of local expenditure to budgetary revenue against local GDP in 2005 for a probability sample of 120 cities in China.<sup>10</sup> Of the 120 cities surveyed, 117 cities had ratios greater than 1, meaning they spent more than they took in.<sup>11</sup> The figure also indicates a negative correlation between the budget deficit and local

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<sup>9</sup>There is some variation in how local governments at different levels share local revenue. For example, in Zhejiang province, local revenue at the county level is shared with the provincial government but not the municipal government administratively above it.

<sup>10</sup>For further discussion on sampling selection of the 120 cities, see section 4.1 on data.

<sup>11</sup>The three cities that ran budget surpluses are Hangzhou, Fuzhou, and Urumqi.



GDP: the richer the city, the smaller the fiscal gap between expenditure and revenue.

[Figures 6 and 7 about here]

The mismatch between subnational governments revenue and expenditure mandates leads to greater reliance on intergovernmental fiscal transfers, which have not yet offset the local fiscal gap (World Bank 2002; Whiting 2011). A large amount of intergovernmental transfers are pegged to the size of the local government payroll, meant to guarantee the minimal maintenance of local governments, leaving unsolved the problem of insufficient revenue to promote the local economy (Shih et al. 2010). A combination of heavy expenditure responsibilities and ineffective intergovernmental transfers creates revenue-starved local politicians who must resort to extrabudgetary revenue to supplement inadequate government funding. A high-ranking provincial-level official described his tough fiscal situation very bluntly: “The center takes the larger piece of the local tax revenue pie, while the local government gets the smaller piece. However, we local governments have to do all the work. We need money. We can rely on nothing but land, so we grab land and we must maintain a monopoly over land” (Interview CQ05060110). Not only does this quote describe the budget deficit problem facing local politicians, but it also provides the single solution to the problem: land.

Local politicians are motivated to expropriate land, as reflected in the quote above. More importantly, their land expropriation is protected by legal and state regulations. Under the existing land tenure system, land is segmented into urban land owned by the state (meaning the local government or some other government agency) and rural land owned by rural collectives. The state can expropriate rural land for the sake of the “public interest” (Constitution, Article 10). Under this principle, the state that claims to represent the “public interest” retains ultimate authority over all land, urban or rural (Hsing 2010). Since the introduction of the land leasehold market in 1988, land use rights are separated from land ownership rights and can be leased out in the market for a fixed number of years.<sup>12</sup> However, the sale of long-term leases for construction land use rights is limited to the urban land market.<sup>13</sup> The revenue from leasing urban construction land

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<sup>12</sup>The land-lease time limit is determined by the purposes of land use. Land use rights can be leased out for 70 years, 50 years, and 40 years when land is used for residential, industrial, and commercial purposes, respectively. See State Council, Interim Regulations on Transfers of Urban State-owned Land Use Rights, 1990, Article 12.

<sup>13</sup>From a land use perspective, land is categorized into agricultural land, construction land, and unused land. Land Administration Law, Article 4.

use rights is received as a lump sum payment made at the time of the transaction, officially called the “land conveyance fee” (*tudi churangjin*), and it constitutes the dominant component for local extrabudgetary revenue. Governed by this dual land system, rural land must be first converted to urban land in order to fully realize its market value. As a result, the state – the exclusive body with the authority to expropriate land – obtains land from rural households and provides relatively low compensation.<sup>14</sup> The state, which monopolizes the primary urban land market,<sup>15</sup> then leases land use rights at a price substantively higher than the land compensation paid to rural households. The price differential between rural and urban land arising from the distorted land market generates monopoly rents, easily captured by local governments. In the past two decades, the difference between the land compensation paid to farmers and the market price of the seized land is about 2 trillion RMB for 14.7 million hectares of land (China Daily 2010). Local politicians not only grab land in the city outskirts by converting rural land into urban land, but also fight fiercely with other urban land owners, or “socialist land masters,” who occupied their land through administrative allocation in the pre-reform era (e.g., SOEs and military units) within urban areas (Hsing 2010).

Under the unique land tenure system, land has become a key source of fiscal revenue for local governments (Perkins 2009; Man 2011; Whiting 2011). It helps local politicians relieve their fiscal stress and fulfill unfunded expenditure mandates. Meanwhile, the rapid shrinkage of rural land has become a major source of social instability and food insecurity, both of which concern the central government. Forced eviction and inadequate compensation during land expropriation are the main cause of social unrest. Reportedly, about 65 percent of mass protests in rural areas are triggered by land disputes (China Daily 2010). The central government, concerned first and foremost about regime stability, has aggressively increased its control over land supply.<sup>16</sup> It announced a one-year moratorium on arable land conversion to non-agricultural use in May 1997 and a six-month freeze

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<sup>14</sup>Compensation is composed of land compensation fees, resettlement fees, and compensation for what was attached on the expropriated land. The Land Administration Law specifies the compensation to rural households whose land is expropriated (Article 47).

<sup>15</sup>There are two types of urban land market: primary and secondary. The primary land market exists between the government, the exclusive land use rights sellers, and land users who receive land use rights from the government through negotiation (*xieyi*), bid invitation (*zhaobiao*), auction (*paimai*), and quotation (*paimai*). In the secondary land market, land use rights switch from one land user to another through transfer (*zhuanrang*), sublease (*zhuanzu*), and mortgage (*diy*).

<sup>16</sup>Deng Xiaoping emphasized the overriding importance of political stability. In the absence of a stable environment, China would not be able to achieve anything and might even lose what has been accomplished. See Yang 2004, pp. 4-6.

on agricultural land conversion in April 2004.<sup>17</sup>

In 1998, the central government substantially revised the Land Administration Law to take agricultural land preservation more seriously. The central government attempts to control the total amount of construction land at the subnational level by setting mandatory land quotas.<sup>18</sup> These quotas are distributed top-down, along the administrative hierarchy: the central government sets national quotas and disaggregates them to provinces; each province then disaggregates its quotas to its municipalities, and each municipality to its counties.<sup>19</sup> To facilitate local compliance, the central government has invested in satellite remote sensing technology to detect local land violations. Land quota restrictions pressure local governments to use land more efficiently. Some provinces (e.g., Zhejiang, Guangdong) have experimented with including land use efficiency as an indicator in their performance evaluation of officials. Referring back to the evaluation scoring in the prefecture-level city of Guangdong in Table 1, land use efficiency was a sub-indicator under the category of development of a Hi-tech zone. Failure to meet the quota requirement results in sanctions (e.g., warning) and a reduction in land quotas for the following year.<sup>20</sup>

To sum up, the main players in this analysis are politicians at the subnational level. Although economic decentralization grants local politicians considerable discretionary power within their jurisdictions, they are still subject to the political (i.e., control of career prospects), fiscal, and land quota restrictions imposed by the central governments. Local politicians prefer to maximize revenue not only because revenue is a crucial indicator in the cadre evaluation, but also because they must first extract sufficiently large revenue to promote the local economy and meet other targets specified in the evaluation so as to increase the likelihood of career advancement. As such, the revenue-maximizing local politician assumed in this paper does not conflict with the office-seeking

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<sup>17</sup>For the first moratorium on land conversion, see State Bureau of Land Administration and State Planning Commission, Regulation on Freezing Non-agricultural Construction Project Occupying Arable Land, May 20, 1997. For the second freeze, see General Office of the State Council, Urgent Notification of Regulating Land Market and Strengthening Land Management, April 29, 2004.

<sup>18</sup>These land quotas include agricultural land conversion to construction land, arable land to be maintained, and arable land to be created through development and reclamation. See State Council, Regulations on the Implementation of the Land Administration Law, December 27, 1998, Article 13. These quotas are also specified in several local government documents, which are not publicly accessible, but are available in redacted form by contacting the author.

<sup>19</sup>In practice, there is some variation in quota assignments across provinces. For instance, in Zhejiang, the provincial government bypasses municipalities and directly assigns quotas to its counties (Interview ZJ04200110). The interview subject was a deputy mayor of a county-level city in Zhejiang.

<sup>20</sup>General Office of the State Council, Urgent Notification of Regulating Land Market and Strengthening Land Management, April 29, 2004, Article 4.

local politician when he faces serious fiscal pressure.

## 3 Theory

### 3.1 Political Economy of Sectoral Allocation of Land Quotas

Revenue structure has an important impact on revenue extraction strategies adopted by politicians (Easter 2002; Gehlbach 2008). A big challenge facing post-communist countries during the transition to the market economy is to reconstruct the revenue base and restore capacity to raise revenue, because economic reforms (e.g., liberalization and privatization) destroyed old revenue sources under communism while creating new untapped sources (e.g., the private sector). In China, similar to other communist countries, the tax base prior to economic reforms depended overwhelmingly on a few thousand large state enterprises. In the late 1970s, over 80 percent of budgetary revenues were extracted directly from the state industrial sector, in the form of taxes and profits collected from state-owned enterprises (Naughton 1992). Unlike its communist counterparts, however, the economy in China first gained its momentum in the rural areas through the development of collectively-owned township and village enterprises (TVEs). Decollectivization of agricultural production transferred the bulk of agricultural income from rural collectives to individual households, forcing local cadres to develop alternative sources of revenue to supplement the loss from the previous revenue base (i.e., revenue from agriculture) (Oi 1992, 1999). The relaxation of state monopoly control of industry allowed non-state economic actors to enter into the industrial sector, thereby providing a new revenue source for local governments (Naughton 1992). Perhaps more fundamentally, the fiscal contracting system<sup>21</sup> in 1978-1993 granted local governments residual rights over the local revenue, thereby creating incentives for local governments to promote the local economy (Oi 1992; Montinola, Qian and Weingast 1996; Oi 1999; Jin, Qian and Weingast 2005). Under this fiscal system, firms submitted their taxes and fees to the level of government that owns them. TVEs thus became an important revenue source for rural governments. This particular fiscal arrangement “allowed the local residual to grow to maximum proportions, even at the cost of denying the central state maximum tax revenue. Localities were allowed to benefit

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<sup>21</sup>The fiscal contracting system required local governments to submit only a portion of their revenues to their superiors according to the contract with their superiors; local governments retained all, or at least most, of the remainder.

disproportionately from local economic growth. . . .The Chinese reforms succeeded in generating local economic growth because the central state did not get the taxes right” (Oi 1999, 57). However, not all local cadres chose to develop TVEs. In areas with a historical legacy of weak collective enterprise development, most typically in Wenzhou in Zhejiang province, local cadres developed their revenue sources by aggressively promoting the private sector (Whiting 2000).

Local revenue maximization did not translate into tax maximization, because local cadres shifted their revenue source from tax to non-tax income by imposing various non-tax fees and levies, both of which fall into the category of extrabudgetary revenue (Oi 1992). As a result, despite successful rural industrialization, total government budgetary revenue nevertheless declined dramatically from 31 percent of GDP in 1978 to 11 percent in 1994 (China Fiscal Yearbook 2009, 475). In contrast, extrabudgetary revenue grew from 10 percent of GDP in 1978 to 14 percent in 1992 (China Fiscal Yearbook 2009, 497). Not only did budgetary revenue diminish, but the central government’s share of budgetary revenue also declined dramatically. Beginning in 1994, when the tax system was reformed, both budgetary revenue and the share claimed by the central government started increasing.

Under the new fiscal scheme launched in 1994, local government’s tax base is comprised primarily of business tax, value-added tax (VAT), and income tax from all enterprises other than central state-owned enterprises. The three taxes combined account for 60-70 percent of local budgetary revenue.<sup>22</sup> Examining who pays what indicates that the major tax components vary considerably across sectors.<sup>23</sup> Both industry and service (tertiary) sectors pay corporate income tax, but the former contributes to VAT, whereas the latter contributes to business tax with only a few exceptions: the construction sector is categorized as industry but pays business tax, whereas the wholesale and retail sectors are categorized as service sector but pay VAT. Table 2 provides details on tax variation by sectors. Of all VAT contributors, manufacturing industry contributes the most: its contribution to VAT was about 60 percent from 2001 to 2006 (China Tax Yearbooks 2002-2007).

[Table 2 about here]

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<sup>22</sup>This range is calculated by the author from a dataset compiled from *China Fiscal Yearbook*, 1995-2009.

<sup>23</sup>The economy is divided into three sectors: primary, industry, and tertiary (service). In China, the primary sector refers to agriculture. The industry sector is comprised of mining, manufacturing, production and supply of electricity, gas, and water, and construction industries. All economic activities not included in the primary and industry sectors fall into the category of the service sector, such as real estate, banking, and retail.

While local budgetary revenue is primarily composed of taxes, the land conveyance fee dominates local extrabudgetary revenue. Similar to tax revenue, the land conveyance fee also varies significantly across sectors. From a land use perspective, construction land is categorized into land for industrial, commercial, and residential uses. Industry occupies land for industrial use, whereas most sectors that fall into the category of tertiary industry occupy land used for commercial and residential purposes. In general, the land conveyance fee generated from land for commercial and residential use is much higher than that generated from land for industrial use, as shown in Figure 9: the land profit generated by the former was four times the profit from land used for industry in 2004 and almost eight times in 2008.

[Figure 9 about here]

Although the service sector generates land revenue that is more sizable and more immediate than that generated by industry, such revenue is a one-time payment. Once the land transaction is over, the land revenue dries up. The business tax generated by service sector has an initial spurt but stabilizes at a low level afterwards (Tao et al. 2010). For instance, the real estate sector, the primary business tax contributor, produces high business tax at the time houses are sold. Unlike many developed countries, China has not introduced property tax. Once housing sales are over, government business tax drops quickly. In contrast, industry usually cannot generate high revenue at the early stage and often has a longer take-off period, but it can generate a steady revenue stream in the long run. Moreover, the development of the manufacturing industry, the primary VAT contributor, has a spillover effect on the economy. After manufacturing firms are established, their employers create demand for housing, entertainment, shopping and so on, thus contributing to the development of the local service sector. In short, there is a trade-off in the local revenue contribution between industry and service sectors once time is taken into account: the latter generates more land revenue, which is a one-time payment, but the former produces a steadier revenue stream in the long run. Applying Olson's logic to resource allocation in China now becomes straightforward. A local politician with a long time horizon, like a stationary bandit, is more likely to allocate more resources to industry that generates sustainable local economic growth so as to profit from the larger revenue pie in the future. A local politician with a short time horizon, like a roving bandit, will distribute more resources to the service sector that generates immediate

revenue.

In the Chinese context, there are two institutional arrangements of the personnel management system that are expected to influence the time horizon of government officials: mandatory retirement and rotation of officials. In an effort to streamline and rejuvenate the cadre corp, age-based retirement from office was introduced to replace the de facto lifelong tenure in 1982 (Manion 1993).<sup>24</sup> The rules generally set retirement ages at fifty-five for women and sixty for men. Officials in specified positions of leadership retire later, at sixty or sixty-five, depending on position (CCP Central Committee 1982, Article 3).<sup>25</sup> Empirical survey data show that the implementation of mandatory retirement policy improved over time and is now strictly enforced (Li and Zhou 2005; Landry 2008).

Officials are constrained not only by age-based retirement that sets a maximum value on their expected remaining political life, but also by the rule of rotation that sets a tenure limit for a particular position. To prevent the entrenchment of local political bosses, a leading official of a local party committee and government must be transferred if he or she has worked in the same position for ten years. Officials can be transferred between different localities, departments, levels of government, and across party, government, enterprises and public organizations (CCP Central Committee 1995, Article 38).<sup>26</sup> Positions in party committees and governments at the county level or above have a term limit of five years (General Office of the CCP Central Committee 2006, Article 3 and 6). That is, no one can stay in the same position for more than his institutionally given two terms. By the end of the second term in office, a politician faces one of the following political fates: promotion within the same locality or elsewhere, transfer to a position of identical bureaucratic rank, exit from office if he reaches retirement age, and, in the worst cases, removal from office for

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<sup>24</sup>The central government started promoting retirement reform for officials in 1978. Between 1978 and 1981, the retirement age was set in regulations, but the criteria of poor health and inability to continue work, not old age per se, were the actual determinants of retirement. In 1982 age-based retirement was established as a general rule, without reference to health or ability to perform official duties. For more discussion on age-based retirement, see Manion 1993.

<sup>25</sup>The following officials, men and women, retire at sixty-five: government ministers and Central Committee department heads, provincial party committee first secretaries, and provincial governors. The following officials retire at sixty: deputy ministers and Central Committee department depute heads, provincial party committee secretaries (other than first secretaries), provincial deputy governors, bureau chiefs and their deputies in State Council and Central Committee bureaus, heads and deputy heads in provincial party committee and provincial government departments, prefectural party committee secretaries and deputy secretaries, and prefectural mayors and deputy mayors. See CCP Central Committee, Decision on Institutionalization of Retirement of Aging Cadres, February 20, 1982, Article 3.

<sup>26</sup>The rotation requirement for officials was reiterated in 2002. See CCP Central Committee, Regulation on Selection and Appointment of Leading Party and Government Officials. July 9 2002, Article 52.

some reason (e.g., corruption). It is expected that a local politician at the start of her term has a long time horizon. As she moves to the end of her term, her time horizon shortens. Knowing she will not serve in the same position after her term is over, she is less interested in maximizing revenue in the long run.

In sum, the 1994 tax sharing system introduced significant changes to local revenue structure. It not only redefined the fiscal relationship between the central and local governments, but also shifted local revenue structure from an ownership-based structure to a sectoral-based structure. Local politicians are thus expected to develop sectoral, rather than ownership, preferences in resource allocation so as to generate revenue.

### 3.2 Model

A local politician is a revenue maximizer, subject to the land quota assigned from above. Let  $\bar{k}$  be the land quota available to her. The politician values all sources of revenue, budgetary and extrabudgetary. Budgetary funds come from tax revenue collected from firms. Let  $\tau$  be the tax rate imposed by the higher-level government. Extrabudgetary funds are primarily derived from leasing land use rights. Let  $s$  be the land conveyance fee collected per unit of land by the local politician. Let  $c$  be the cost incurred by the local politician in preparing expropriated land for leasing out. This cost includes compensation to previous land users as well as infrastructure built on the land to sell. I consider two sectors in the economy: manufacturing industry (denoted as 1) and tertiary industry (denoted as 2). A local politician assigns  $k$  units of land to a sector. I denote the sector's production function with  $k$  units of land input by  $f(k)$ . I further define  $f_1(k_1) = A_1 k_1$  and  $f_2(k_2) = A_2 k_2^\alpha$  where  $0 < \alpha < 1$ . The two sectors take different functional forms in their production functions because a manufacturing firm is unlikely to be sensitive to location. Hence, a linear function is sufficient to capture the characteristic that every additional unit of land used for industry produces a constant return. By contrast, land used for residential and commercial purposes is sensitive to location: land closer to the city core is likely to be more expensive than land further away from the city core, and this is captured by a concave function.

A local politician collects both tax (budgetary) and non-tax (extrabudgetary) revenues. Consider a simple two-period model: in the first period, a local politician sells construction land use rights and receives a land conveyance fee, but she cannot receive tax revenue because it takes



time for land users to generate tax. For instance, a land developer can generate tax revenue only after she builds houses and successfully sells them. In the second period, the politician collects tax revenue from both sectors, but not a land conveyance fee, which is a one-time lump sum payment at the time of land transaction. A politician's time horizon is captured by the discount rate  $d$ .

A local politician maximizes:

$$\begin{aligned} \max_{k_1, k_2} \quad & s_1 k_1 + s_2 k_2 - c(k_1 + k_2) + \frac{1}{1+d} [\tau_1 f_1(k_1) + \tau_2 f_2(k_2)] \\ \text{s.t.} \quad & k_1 + k_2 \leq \bar{k} \end{aligned}$$

The interior solution is as follows:

$$\begin{aligned} k_2^* &= \left( \frac{\tau_1 A_1 + (1+d)(s_1 - s_2)}{\tau_2 A_2 \alpha} \right)^{\frac{1}{\alpha-1}} \\ k_1^* &= \bar{k} - \left( \frac{\tau_1 A_1 + (1+d)(s_1 - s_2)}{\tau_2 A_2 \alpha} \right)^{\frac{1}{\alpha-1}} \end{aligned}$$

(1)  $\frac{\partial k_1^*}{\partial(\tau_1 A_1)} > 0$ ,  $\frac{\partial k_2^*}{\partial(\tau_1 A_1)} < 0$ , we expect to observe that:

**Hypothesis 1:** As industry generates more local tax revenue, local politicians allocate more land quotas for industrial use and consequently fewer land quotas for commercial and residential use.

(2)  $\frac{\partial k_1^*}{\partial(\alpha \tau_2 A_2)} < 0$ ,  $\frac{\partial k_2^*}{\partial(\alpha \tau_2 A_2)} > 0$ , we expect to observe that:

**Hypothesis 2:** As the service sector generates more local tax revenue, local politicians allocate fewer land quotas for industrial use and consequently more quotas for commercial and residential use.

(3) Given that the land conveyance fee generated per unit of land used for commercial and residential purposes is higher than that from land for industrial use, i.e.,  $(s_1 - s_2) < 0$ , we get  $\frac{\partial k_1^*}{\partial d} < 0$ ,  $\frac{\partial k_2^*}{\partial d} > 0$ , we expect to observe that:

**Hypothesis 3:** Local politicians with longer time horizons allocate more land quotas for industrial

use and consequently fewer quotas for commercial and residential use.

## 4 Data and Measurement

### 4.1 Sample

I compiled an original dataset for a probability sample of 120 prefectural-level cities to test the hypotheses. These 120 cities are a probability sample constructed by the World Bank in its survey of “China Governance, Investment Climate, and Harmonious Society: Competitive Enhancement for 120 Cities in China” in 2005 (World Bank Report No. 37759-CN, 2006). Cities in China vary in administrative levels: there are four provincial-level municipalities, 15 deputy provincial cities,<sup>27</sup> 268 prefectural-level cities, and 368 county-level cities (China City Statistical Yearbook, 2009). The survey selects cities at the prefectural level and above. In particular, all 19 cities from the first two categories are included in the sample. The 120 cities are from all provinces except Tibet. For each province, the capital city is included. The inclusion of additional cities for a particular province depends on provincial GDP. A map in Figure 8 shows where the 120 cities are located: 287 cities at the prefectural level and above are represented by dots, and the 120 cities included in the sample are highlighted. The 120 cities account for 70-80 percent of China’s GDP in 2005, when the survey was conducted.

[Figure 8 about here]

### 4.2 Data Compilation

Data on the 120 cities comes from official Chinese publications and sources. Tax revenue data comes from *Financial Statistical Material for Prefectures, Cities, and Counties Nationwide*, issued by the Ministry of Public Finance. *China Land and Resources Statistical Yearbook*, issued by the Ministry of Land and Resources, has land revenue data disaggregated at the prefectural level. Economic data (e.g., GDP per capita, city population, and economic structure) comes from *City Statistical Yearbook*. Data on political elites is compiled from career histories of city leaders, including both

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<sup>27</sup>The four provincial-level municipalities are Beijing, Tianjin, Shanghai, and Chongqing. The 15 deputy provincial level cities are Haerbin, Changchun, Shenyang, Dalian, Jinan, Qingdao, Nanjing, Hangzhou, Ningbo, Xiamen, Guangzhou, Shenzhen, Wuhan, Chengdu, and Xi’an.

Party secretaries and mayors. Data from the various sources cited above is collected for the probability sample of 120 cities to form a new original dataset.

### 4.3 Measurement of Key Variables

**Dependent Variable:** Land quota allocation between industry and services is the dependent variable. As discussed in the previous section, industry occupies land for industrial purposes, whereas tertiary industry occupies land for commercial and residential purposes. Ideally, we want to know how many land quotas are distributed to each sector. With this option not available at the city level, land allocation between the two sectors is proxied by land allocation between nonmarket and market transactions, because land revenue differentiation by sectors is caused by the way that land leases are transacted. Local governments have four methods to lease urban construction land use rights: one non-market approach of arranging one-on-one meetings with potential land users to negotiate the land lease, and three market approaches of bid invitation (*zhaobiao*), auction (*paimai*), and quotation (*guapai*). In any of the last three approaches, the price of land leases is driven by market forces, thus is substantially higher than the negotiated price. Most industrial land use rights are leased out by nontransparent negotiation between local officials and firms. In 2006, 97 percent of land used for industry was leased by negotiation, and nearly 80 percent of land used for commercial and residential purposes was leased by market approaches (i.e., bid invitation, auction, and quotation combined).<sup>28</sup>

[Figure 10 about here]

I use the ratio of land transacted by negotiation to the total amount of land available to measure land quotas allocated to industry. Since a ratio is bounded between 0 and 1, a logit transformation is employed to convert the bounded dependent variable into an unbounded one. Figure 10 plots both histogram and density for the logit transformation of land quota allocation ratio. The logit transformation of the dependent variable is normally distributed centering at the

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<sup>28</sup>This proxy is not a good measurement after 2007, when the central government required state-owned construction land to be leased out using market approaches only. See State Council, Circular of the State Council on Intensifying Land Control, 31 August 2006, Article 5; Ministry of Land and Resources, Provisions on the Assignment of State-owned Construction Land Use Right through Bid Invitation, Auction, and Quotation, 28 September 2007, Article 4. In 2007, 74 percent of land used for industry was leased out by negotiation. In 2008, this ratio dropped to 17 percent.

mean of 0.7, meaning that an average of 65 percent of land quotas are allocated to industry.

**Independent Variables:** Three sets of variables are of theoretical interest: economic determinants, political determinants, and the constraint of land quotas.

*Measurement of  $\tau_1 A_1$ :* The tax rate in China is determined hierarchically. Under the TSS, the central government sets the tax sharing ratios with the province only, leaving the latter with substantial flexibility in determining the tax sharing ratios with their prefectures, and the prefecture with its counties, and so on. As a result, the tax rate  $\tau_1$  is expected to vary across cities. Ideally for  $A_1$ , we want to have some measure on firm productivity aggregated at the city level. Data for neither variable is publicly accessible for all 30 provinces covered in the survey. Hence, I identify VAT to measure  $\tau_1 A_1$  indirectly. VAT is shared between the central and local governments at a ratio of 3:1.<sup>29</sup> It is a major local tax revenue source paid primarily by industry on the added value derived from production. If we assume  $\tau_1$  to be the value-added tax rate, an increase in both  $\tau_1$  and  $A_1$  is expected to produce higher VAT retained by local governments. Arguably, land, as a productive input, may affect VAT in some indirect way, so that the measure produces an endogeneity problem. Empirically however, land value-added tax is an independent category and paid separately from the VAT under the existing TSS system. To reduce the potential endogeneity, I construct a variable called *VAT ratio* measured by the proportion of VAT in the total local budgetary revenue.

After the central government collects local revenue (e.g., 75 percent of VAT), it redistributes the collected revenue to local governments in the form of intergovernmental fiscal transfers. The intergovernmental transfer in China is primarily comprised of tax rebates and earmarked transfers. The proportion of tax rebates in total transfers has been declining whereas the proportion of earmarked transfers has been increasing over time. For instance, in 1996, tax rebates accounted for 72 percent of intergovernmental transfers, and this ratio declined to 45 percent in 2001 (World Bank 2002, 19). Tax rebates are further categorized into tax rebates for income taxes, and tax rebates for VAT and consumption taxes. To include the VAT in the form of intergovernmental transfers, I construct a variable called *tax rebates ratio*, measured by the proportion of tax rebates for VAT and consumption tax in total intergovernmental fiscal transfers received by each city. The

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<sup>29</sup>This VAT shared ratio means that the central government takes 75 percent of VAT, whereas the 25 percent is shared by all subnational government units, i.e., province, prefecture, county, and township. The shared ratio is determined hierarchically.

tax rebates for income taxes are not included in the numerator because they are contributed by both industry and services.

**Measurement of  $\alpha\tau_2A_2$ :** The major tax generated by tertiary industry is business tax. Consistent with the *VAT ratio* measure, I construct a variable called *business ratio* measured by the proportion of business tax in total local budgetary revenue.

**Measurement of  $d$ :** Recall that  $d$  represents the discount factor, having an inverse relationship with time horizon: a local politician with a long time horizon values the future more than one with a short time horizon, thus having a smaller discount factor. Clague et al. (1996) use the age of an autocratic regime to measure autocratic time horizon. Similarly, I use the tenure in office of a local politician to measure his time horizon. For each city, I consider the two most important leading positions in the analysis: party secretary and mayor. I construct two variables, *CCP secretary tenure* and *mayor tenure*, to measure how many years a local party secretary or a mayor has been holding his current position, as of the year 2005 when the World Bank survey was conducted. Since both positions are limited to two terms with each term 5 years, both variables are discrete, ranging from 1 to 10. As a local politician increases his tenure in office, his time horizon shortens. Such a measure, however, fails to take the term constraint into account: an official who starts his second term may have a longer time horizon than one who is close to the end of his first term but will not serve a second term. Another concern arises when politicians have not completed their terms but know they will be taking different positions elsewhere, causing their time horizon to reach the smallest value long before their full term ends. Thus, the tenure effect on the time horizon may be nonlinear. To address this concern, I add a quadratic form of tenure in office for both party secretaries and mayors.

Normally, a party secretary and a mayor in a city are two different individuals. Two out of 120 cities surveyed (Quanzhou in Fujian and Xianyang in Shaanxi) had the same person serving concurrently as party secretary and mayor. Since the appointment time for the same person with respect to the two positions differs, thereby generating different values for the time horizon, I treat the concurrent party secretary and mayor as two different persons.

**Measurement of  $\bar{k}$ :** Recall that  $\bar{k}$  is the constraint in the model. In the empirical analysis, I construct a variable called *land quota per capita* measured by the ratio of total amount of land available for lease to the total population for each city. Annual land quotas are distributed from

above at the beginning of each year. Because the time horizon is measured by year, it is possible that political leaders who start their appointment in year 2005 are unable to be involved in the decision-making on land quota distribution for that year. For this consideration, the land data is measured in year 2006.

**Control Variables:** I included a number of controls for factors that might be expected to affect local land quota allocation. To capture the existing economic structure, the ratio of the secondary sector in GDP is included. To capture the fiscal gap between formal budgetary revenue and expenditure facing local governments, I construct the variable *budget deficit*, which follows the measure by Lorentzen, Landry, and Yasuda (2011), using the ratio of local expenditure to local budgetary revenue. A local government runs a surplus when the ratio is smaller than 1, and a deficit when the ratio is greater than 1. The larger the deficit, the larger the ratio. To capture city characteristics, I included the following variables: GDP per capita, urbanization measured by the ratio of urban population to total population, and a city dummy for the 19 cities at provincial and deputy-provincial levels. Another variable that may have an impact on the decision making process of local politicians is their age. Local politicians will be removed from office when they get close to the mandatory retirement age. To take the retirement regulation into account, I construct variables *distance to retirement* for both party secretaries and mayors, measured by, as of 2005, how many years until they reach age 65 for local politicians at provincial-level municipalities and age 60 for those at deputy-provincial and prefectural-level cities.<sup>30</sup>

To match the World Bank survey conducted in 2005, all variables are measured for year 2005 with only two exceptions related to land quotas. These two exceptions are land quota allocation (i.e., the dependent variable) and the land quota constraint (i.e.,  $\bar{k}$ ), which are measured in year 2006 for the reasons explained above. Table 3 presents summary statistics of the key variables. The definition and data source for each variable are detailed in Appendix B.

[Table 3 about here]

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<sup>30</sup>Retirement age varies with bureaucratic rank. See State Council, Interim Regulations on the State Civil Servant, Aug 14, 1993, Article 78.

## 5 Analysis

### 5.1 Findings

Table 4 reports the OLS regression results for land quotas allocated to industry. To allow for heteroskedasticity across observations, regressions are estimated with robust standard errors. I begin my analysis with the estimates that regress land quota allocation against all independent and control variables identified above, except the quadratic form of tenure in office, and report the results in column (1). The coefficient of CCP secretary tenure is negative and significant at the 5% level, meaning that fewer land quotas are allocated for industry as party secretaries increase their time in office. The coefficient of mayor tenure, however, is not statistically significant. Column (2) reports the estimates when the quadratic form of tenure in office is included in the regression for both party secretaries and mayors. In comparison with the regression estimates reported in column (1), this regression produces better results: not only do the coefficients of the variables significant in regression (1) remain significant, but the significance level of two variables (tax rebates ratio and CCP party secretary tenure) also improves. More importantly, the coefficient of the quadratic form of party secretary tenure in office is statistically significant at the 1% level, indicating a nonlinear relationship between tenure in office and land quota allocation. Thus, regression (2) is preferred and is treated as the baseline model.

[Table 4 about here]

I begin my interpretation of regression (2) estimates with the economic determinants, followed by political determinants, the land quota constraint (i.e.,  $\bar{k}$  in the model), and control variables. The coefficients of all three economic determinants (i.e., VAT ratio, tax rebates ratio, and business tax ratio) are statistically significant at the 5% level. The positive coefficients of VAT ratio and tax rebates ratio indicate that more land quotas are allocated to industry as local tax revenue relies more on VAT, consistent with the first hypothesis. A calculation of marginal effect shows that a 1 percent increase in the ratio of VAT to the total budgetary revenue is associated with an average increase of 0.7 percent in the ratio of land quotas for industry to the total amount of land quotas (for simplicity, I will refer to this as the industrial land quota ratio), and a 1 percent increase in the ratio of tax rebates to the total intergovernmental transfer is associated with an average

increase of 0.44 percent in the industrial land quota ratio.<sup>31</sup> The negative coefficient of business tax ratio indicates that fewer land quotas are distributed to industry, as the local tax revenue relies on business tax to a greater extent, consistent with the prediction of the second hypothesis. A 1 percent increase in the ratio of business tax to local budgetary revenue is associated with a decrease in the industrial land quota ratio by an average of 0.63 percent.

The regression confirms a negative relationship between the time horizon of local politicians and land quota allocation: a politician with a short time horizon is interested in the more intermediate revenue associated with tertiary industry, and thus he is likely to invest fewer land quotas in industry. The time horizon of local politicians varies with their time in office. The coefficients of both tenure and its square term for party secretaries are both statistically significant at the 1% level, together with their signs, indicating the relationship between tenure in office and the industrial land quota ratio is parabolic with its vertex oriented downward at the tenure of 5.4 years.<sup>32</sup> This estimation is consistent with theoretical prediction. Recall the institutionally stipulated tenure length for one term is 5 years, and our estimated tenure that produces shortest time horizon is 5.4 years. That is, as a local politician increases his time in office, fewer land quotas are allocated to industry. The industrial land quota ratio reaches its minimum when the politician stays in office for 5.4 years. After that, if he continues in his position, more land quotas will be distributed to industry.

As in regression (1), the tenure of mayors does not have an impact on local land quota allocation. Neither the coefficient of mayor tenure nor its quadratic form is statistically significant. The party secretary and mayor are the most important two local political elites, but the former, not the latter, has a significant impact on local land quota allocation. There are two plausible explanations. First, the decision-making power on land quota allocation is concentrated in the party secretary, not mayors. In an interview with a party secretary of a district in Wenzhou, the party secretary said, “Our government is now operating like a large corporation. The party secretary is the chairman

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<sup>31</sup>Note that the regressand is a logit transformation because the dependent variable, denoted as  $y$ , is a ratio bounded between 0 and 1. Denote the logit transformation as  $z = \ln(\frac{y}{1-y})$ , independent variable as  $x$ , and coefficient as  $\beta$ . To get the marginal effect of  $y$  on  $x$ , I calculate as follows:  $\frac{\partial y}{\partial x} = \frac{\partial z}{\partial x} / \frac{\partial z}{\partial y} = \beta y(1-y)$ . This expression is nonlinear, I then use the mean,  $\bar{y}$ , to calculate the average marginal effect, i.e.,  $\frac{\partial y}{\partial x} = \beta \bar{y}(1-\bar{y})$ , where  $\bar{y} = 0.645$ , shown in Table 3, and all  $\beta$ s are estimated by the regression.

<sup>32</sup>Denote the variable of secretary tenure as  $x_1$  and its coefficient is  $a$ , and the coefficient for its quadratic form is  $b$ . Thus,  $z = ax_1 + bx_1^2$ . To find the minimum, I derive the first order condition, set it equal to 0, and solve for  $x_1$ , i.e.,  $\frac{\partial z}{\partial x} = a + 2bx_1 = 0$ , thus,  $x_1 = -\frac{a}{2b} = -\frac{-0.475}{2 \times 0.044} = 5.4$



of the board and the mayor is the CEO” (Interview ZJ12160109). The quote suggests there might exist a division of labor between the two positions, despite both being crucial local figures. In an examination of government transparency using city level data in China, Lorentzen, Landry, and Yasuda (2011) found that only the mayor but not the party secretary matters for improving local government transparency on environmental regulations. This suggests that the division of labor between party secretary and mayor depends on issue area.

An alternative explanation is that the measurement of tenure in office for mayors fails to capture their time horizons. Despite the formal regulation on tenure length (i.e., five years), the CCP has nonetheless acted informally to reduce the tenure of chief government executives (not party secretaries), resulting in their actual time served in office being shorter than the full term. Using a panel data on city mayors from 1990-2001, Landry (2008) found that the average length of mayor tenure has been steadily shrinking from an 3.2 years in 1990 to a mere 2.5 years by 2001. In an examination of county chief executives from 1998 to 2002, Guo (2009) shows that 23 percent of county chief executives in their fourth year are promoted to be party secretaries locally or elsewhere. In the situation where the gap between actual tenure in office and institutionally stipulated tenure is large, some mayors may update their belief on actual time in office and alter their behavior accordingly, while others may be uncertain about whether they will be lucky enough to be promoted long before they complete their terms, and therefore their time horizons and behavior will remain as predicted in my initial discussion. If both scenarios occurred, we would expect to observe two peaks at which the time horizon of mayors reaches local minimum: one at the time when mayors are expected to be taking another position in the middle of their first term and one at the end of the institutionally designated tenure. A simple linear regressor and its quadratic form in regression (2) fail to capture such a relationship.

The coefficient of land quota constraint is statistically significant at the 1% level. The positive sign indicates that more land quotas are allocated to industry as land quota availability increases. As land quotas increase by 1 square kilometer per 1000 persons, the industrial land quota ratio increases by an average of 0.23 percent. Among all the controls, only the ratio of industry to local GDP has a small impact on land quota allocation. A 1 percent increase in the ratio of industry to local GDP is associated with a decrease in the industrial land quota ratio by an average of 0.01 percent. Surprisingly, budget deficits do not matter to local land quota allocation. A plausible

explanation might be that the formal budget deficit cannot capture the real fiscal pressure facing local politicians because of the alternative revenue sources from intergovernmental transfers and extrabudgetary revenue.

## 5.2 Robustness Check

I conduct three sensitivity tests to check that the major findings are robust to alternative specifications. Since the mayor does not have an impact on land quota allocation in regressions (1) and (2), all variables related to mayors are dropped in the sensitivity tests. The variable of party secretary tenure in my data has a mean of 3.3 years and standard deviation of 1.64, as shown in Table 3, meaning that not many party secretaries were serving their second term at the time when the survey was conducted. It is possible that party secretaries in their second terms behave differently from those serving their first term. To address this concern, a dummy variable *second term indicator* is constructed for party secretaries who remain in their positions more than five years. Column (3) reports the regression estimates. The coefficients for both economic and political determinants remain statistically significant with the same signs. The values of these coefficients are similar to those in regression (2). With slight changes in the value of coefficients, the age at which the time horizon reaches the minimum estimated in regression (3) is 4.21 years, about one year smaller than the estimation in regression (2).

A simple cross-sectional analysis like the one conducted here runs a risk of omitted variable bias. To address this, I include additional variables that might be expected to affect land quota allocation by party secretaries. A city that receives more tourists is expected to have a greater demand for tertiary industry (e.g., hotels, restaurants), thereby more land quotas allocated to tertiary industry. I include a variable called *tourist ratio* measured by the proportion of tourists received to the total local population as of 2005. An additional two variables are added to capture the possibility that individual characteristics of party secretaries may shape their preferences on one sector over the other in land quota allocation: education level and a dummy variable indicating if a party secretary was locally promoted to his current position. A local politician with better education may have a longer time horizon than the one who is less educated. A local politician who was locally promoted may care more about the local economy in the long run than one promoted from elsewhere. The results reported in column (4) indicate that none of these additional variables matters for land

quota allocation. The signs, statistical significance, and values of the coefficients of economic and political determinants are all consistent with the estimates in regression (2).

In previous analyses, the effect of age is measured by distance to mandatory retirement age. This measure assumes a linear relationship between age and land quota allocation. However, the age effect may be nonlinear, similar to the tenure effect. To allow a nonlinear relationship, I replace the linear regressor of distance to retirement by two variables: age as of 2005 and its quadratic form. Regression estimates are reported in column (5). The coefficient of age is statistically significant at the 1% level, but it is not robust. It is no longer statistically significant once I drop four provincial-level municipalities from the sample because the retirement age for officials at this level is five years greater than that for the rest of the population, as shown in column (6). All the coefficients of economic and political determinants keep their signs and statistical significance. Moreover, the coefficient of second term indicator is now statistically significant at the 5% level. The negative sign indicates that a local party secretary in his second term is likely to allocate fewer land quotas to industry than one in his first term. Overall, the main findings that both revenue structure and the time horizon of local politicians matter for local land quota allocation are robust to several sensitivity tests.

## 6 Conclusion

The 1994 fiscal reform had an important impact on local revenue structure. It reduced local budgetary revenue without adjusting expenditure responsibilities, leaving local governments in poor financial condition. The fiscal pressure facing local governments and the distorted land market made leasing urban construction land use rights an increasingly popular source of revenue to help local politicians fulfill unfunded mandates. The incentive for local politicians to expropriate land however, is constrained by the land quota system, a system that the central government imposed, attempting to preserve land for food security and social stability. This quota system limits the total amount of land that local politicians can expropriate for urban construction, but still leaves local politicians enough autonomy to determine how to distribute quotas across economic sectors. Taking advantages of sectoral differences in local revenue contribution, this paper investigates how local politicians balance their land quotas, a scarce resource, between industry and services. It argues

that both the local revenue structure and the time horizon of local politicians have an impact on local land quota allocation. With systematic analysis of 120 cities randomly sampled in 2005, the paper finds that more land quotas are distributed to industry when the local revenue base relies more on VAT and less on business tax, when local CCP secretaries (but not mayors) have long time horizons, and when the locality is assigned more quotas. These findings are robust to several sensitivity tests.

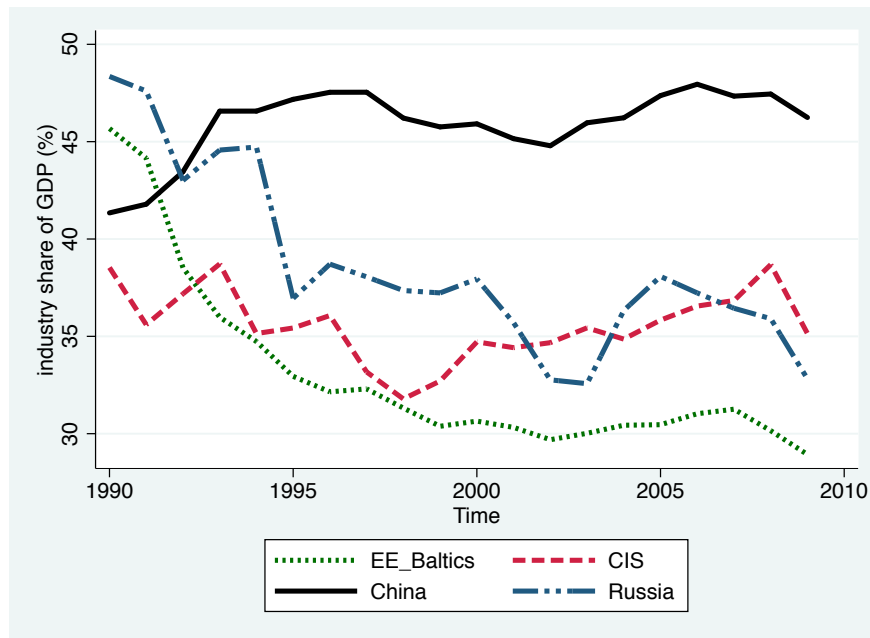
Some scholars argue that the 1994 fiscal reform motivated local governments to shift their economic development strategy from promoting industry to services, because local politicians do not share with the central government their business tax generated by services, but must surrender 75 percent of VAT, generated by industry, to the central government (F. Zhou 2006; X. Jiang et al. 2007). This argument is consistent with the development of local tax structure over time: the proportion of business tax in local budgetary revenue has been increasing from 28 percent in 1994 to 32 percent in 2008, whereas the proportion of VAT has been declining from 25 percent to 19 percent within the same period. However, the data aggregated at the national level disguise the subnational variation in the local tax base. Using sectoral allocation of land quotas as a case, this paper provides both an economic and a political logic, explaining the subnational variation in local revenue extraction strategy and refining the argument on the impact of the fiscal reform on local economic development.

My data show that land quota allocation is always a mix of industry and services. Why would not we observe the situation where one industry owns all quotas and the other gets none? To manage a complicated business like land quota allocation, local politicians have many considerations other than their time horizon and the local revenue structure, highlighted in this paper. An official who was in charge of a national economic development zone in Zhejiang explained, “We cannot earn money by selling land [use rights] to manufacturing firms, and oftentimes we lose money because the profit from land sales is not enough for us to cover the cost of building infrastructure to attract them to invest here. What we expect to gain from them is not land profits, but their tax contribution in the long run. . . . Our loss from land sales to manufacturing firms can be offset by the profits gained from real estate” (ZJ03190110). Local politicians must balance their budgets (Budget Law, Article 3). Therefore, even local politicians with the longest time horizon, who prefer the development of manufacturing industry, must allocate land quotas to tertiary industry. Similarly, those with the

shortest time horizon, who have a strong preference for windfall land profits from real estate, are forced to allocate quotas to the manufacturing industry so as to fulfill mandates like budgetary revenue and FDI attraction.

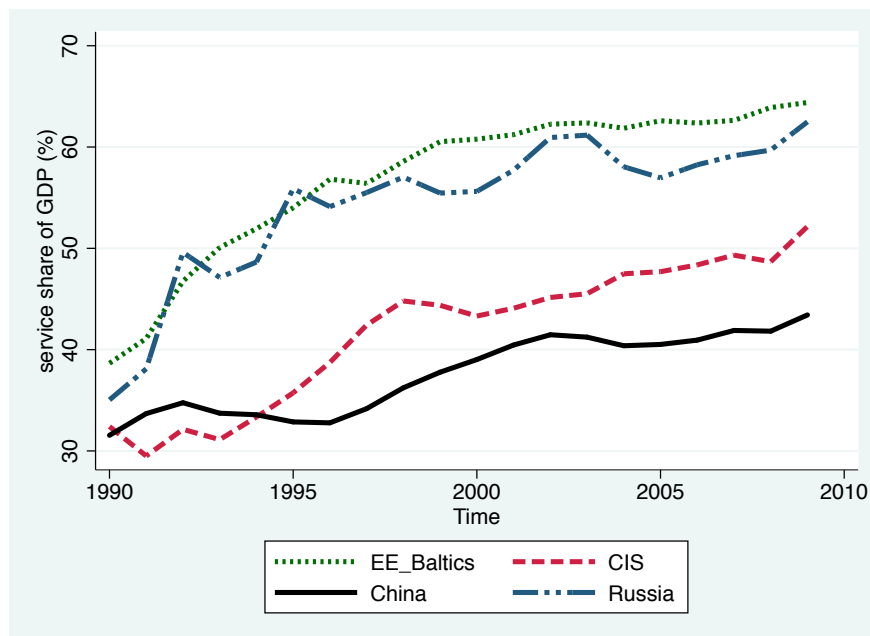
Finally, although this paper focuses on land, the economic and political determinants derived from quota allocation may have broad applications. In China, the state still maintains monopoly control over many resources (e.g., mining), not only land. It is reasonable to expect that politicians will take the revenue structure and their time horizon into account in allocating the resources they control, as long as they care about revenue.

Figure 1: Value added by industry as a share of GDP of transitional countries, 1990-2009



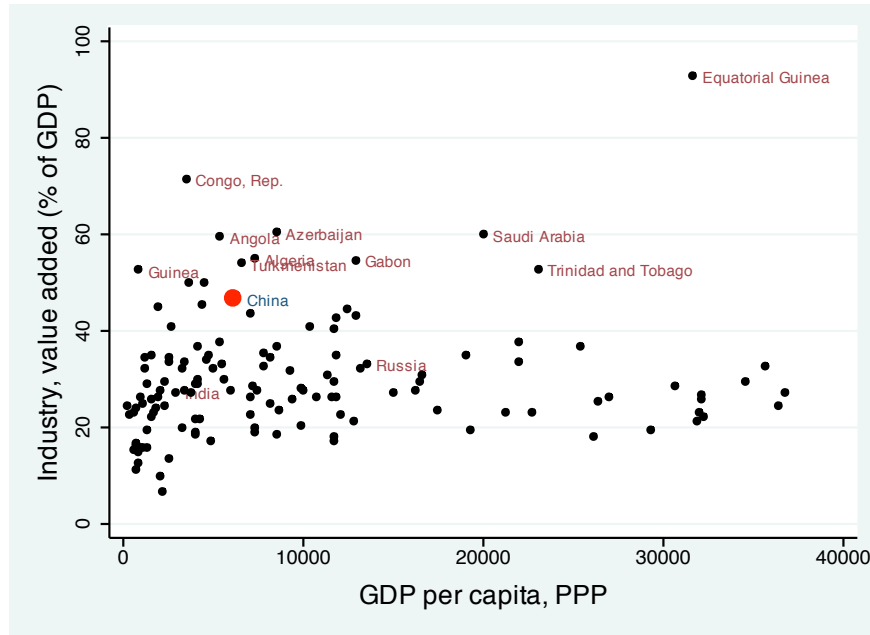
Source: World Bank, World Development Indicators, available at <http://databank.worldbank.org>.

Figure 2: Value added by services as a share of GDP of transitional countries, 1990-2009



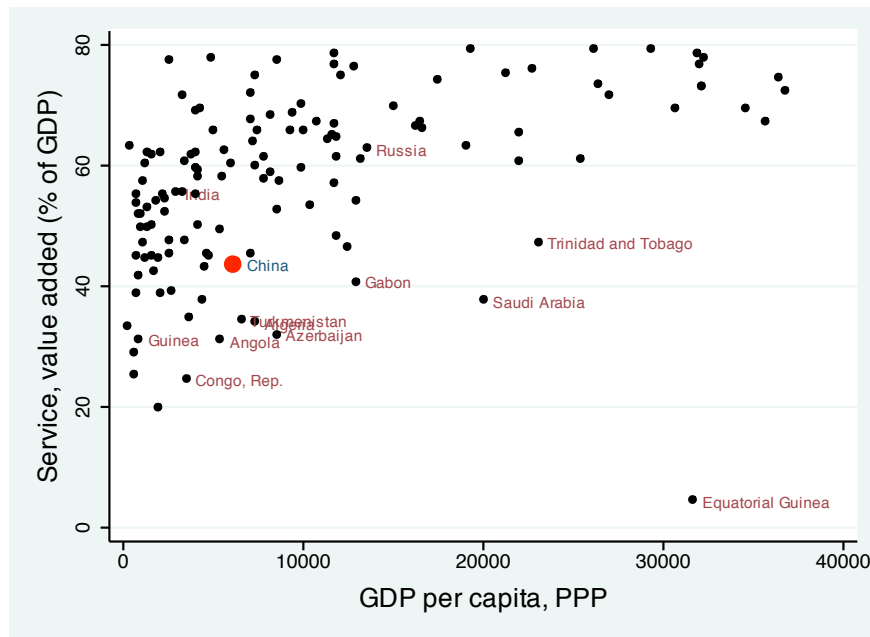
Source: World Bank, World Development Indicators, available at <http://databank.worldbank.org>.

Figure 3: Industry (value added) share of GDP, worldwide, 2009



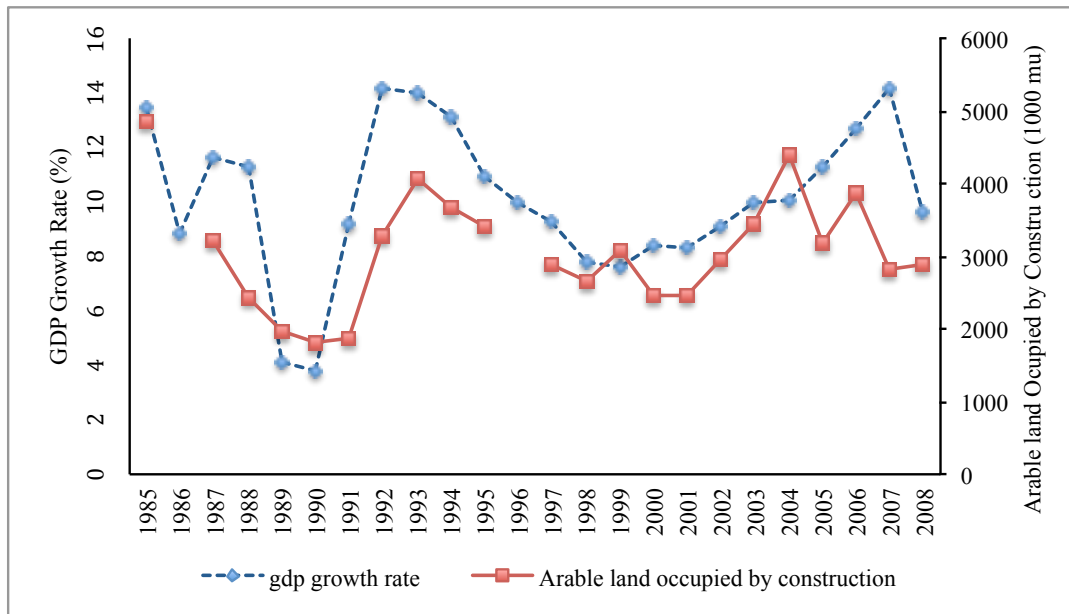
Source: World Bank, World Development Indicators, available at <http://databank.worldbank.org>.

Figure 4: Service (value added) share of GDP, worldwide, 2009



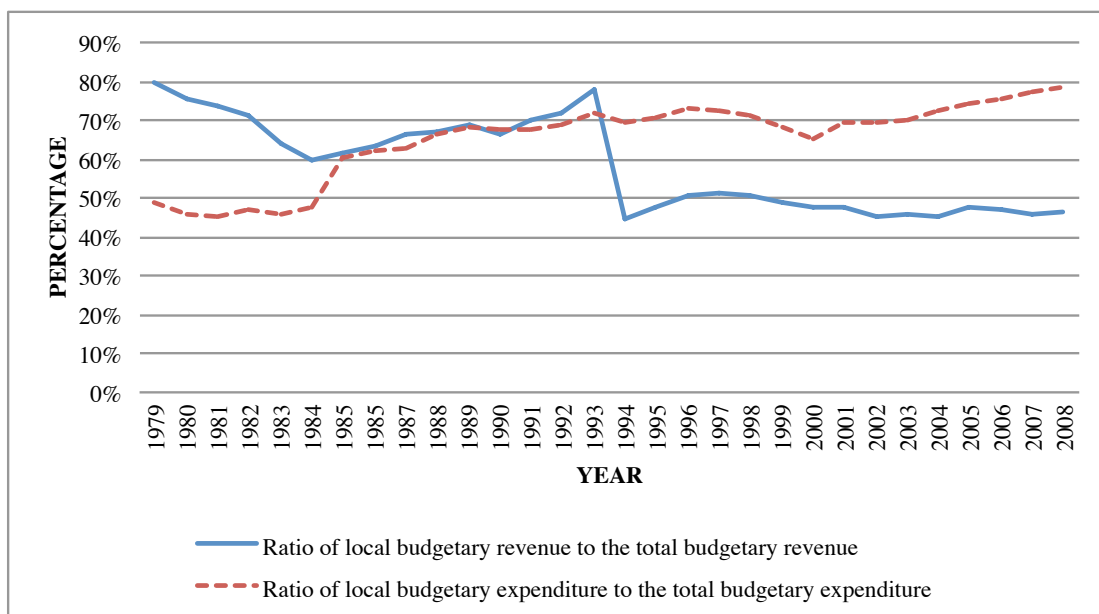
Source: World Bank, World Development Indicators, available at <http://databank.worldbank.org>.

Figure 5: GDP Growth Rate and Arable Land Occupied by Construction in China, 1985-2008



Source: On GDP growth rates, World Bank, World Development Indicators, available at <http://databank.worldbank.org>. On arable land data, China Land and Resources Statistical Yearbook, 2006, p. 19; 2009, p.19; Hu et al., Analysis of Land Use in Guanzhou, 2009, p. 48; China Rural Statistical Yearbook, 1991, p. 235; 1993, p. 229; 1995, p. 70; 1996, p. 54.

Figure 6: Subnational Budgetary Revenue and Expenditure, 1978-2008



Source: China Fiscal Yearbook, 2009, pp. 486-89.



Table 1: Cadre Evaluation of a Prefecture-level City in Guangdong Province, 2009

Evaluation Indicator	Baseline Score	Bonus/Subtraction Score	Score Calculation
GDP growth rate (%)	13	Rank 1 to 5 and obtain additional points consisting with the ranking: 1.3, .91, .65, .52, .39	1. Obtain the baseline score if the target is reached.
Local budgetary revenue growth rate (%)	15	Rank 1 to 5 and obtain additional points consisting with the ranking: 1.5, 1.05, .75, .60, .45	2. Obtain the baseline score subtracting the additional score if the target is not reached but fulfilled at least 90%.
Local fixed-asset investment growth rate (%)	8	Rank 1 to 5 and obtain additional points consisting with the ranking: .80, .56, .40, .32, .24.	3. Score 0 if the target is fulfilled less than 90%.
Real FDI growth rate (%)	7	Rank 1 to 5 and obtain additional points consisting with the ranking: .70, .49, .35, .28, .21	4. Obtain baseline score plus bonus score if the target is over-fulfilled.
GDP energy consumption reduction rate (%)	13	No ranking	Get full score if the target is fulfilled and 0 otherwise.
SO <sub>2</sub> emission	10	No ranking	
Chemical oxygen demand (COD) emission	7	No ranking	
Development of Hi-tech Zone	7	Rank 1 to 5 and obtain additional points consisting with the ranking: .70, .49, .35, .28, .21	Each indicator is further divided into many categories measured by sub-indicators. The indicator is scored 0 as long as one of its sub-indicators is not fulfilled.
Social security	10	No ranking	
Social safety control (I): Production safety control	5	Rank 1 to 5 and obtain additional points consisting with the ranking: .50, .35, .25, .20, .15	
Social safety control (II): Fire accident control	5	No ranking	
Total Score	100		

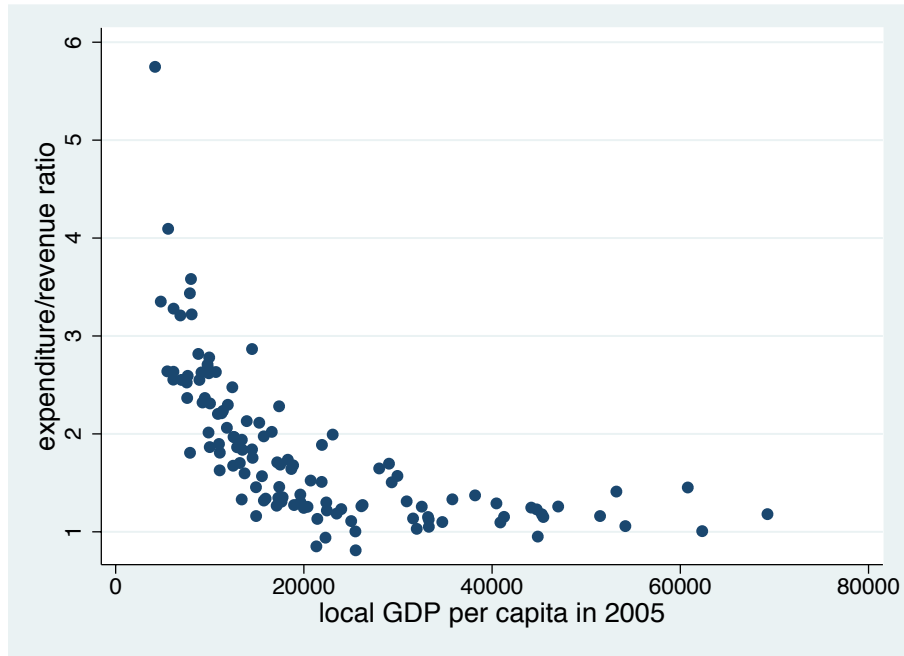
Source: Internal government document obtained from fieldwork, 2010.

Note:

This prefecture-level city is comprised of five districts. Thus, the ranking is from one to five.

The first four indicators are ranked based on the formula:  $\frac{\text{actual performance value} - \text{target value}}{\text{target value}} \times 100\%$ . Indicators #2, #3, and #4 are also ranked in absolute term, i.e.,  $(\text{actual performance value} - \text{target value})$ , the numerator of the previous formula. That is, GDP final score is a sum of baseline score and one additional score, while the final score for indicators 2-4 constitute a baseline score and two additional scores. The indicators of development of hi-tech development zone and production safety control are further divided into several sub-indicators. The two indicators are ranked according to the sum of their sub-indicator scores.

Figure 7: Budget Deficit against Local GDP of 120 Cities, 2005



Source: Author's dataset. Data on local GDP per capita is compiled from China City Statistical Yearbook, 2006. Data on local budgetary revenue and expenditure is compiled from Financial Statistical Material for Prefectures, Cities, and Counties Nationwide, 2005.

Figure 8: A Sample of 120 Cities



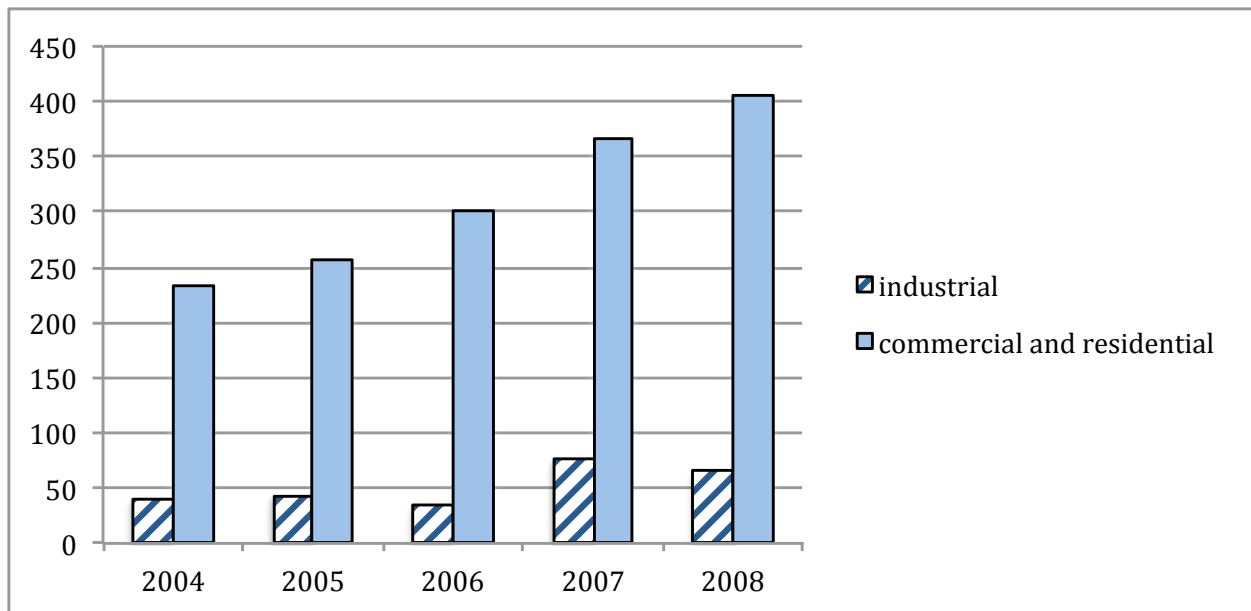
Table 2: Local Tax Contribution, by Sectors, 2003-2008

	Sectors	VAT	Business Tax	Income Tax
Industry	Mining	×		×
	Manufacturing	×		×
	Production and supply of electricity, gas, and water	×		×
	Construction		×	×
Service	Transport, Storage, and Post		×	×
	Wholesale and retail*	×		×
	Finance		×	×
	Information transmission, computer, and software		×	×
	Business services		×	×
	Real estate		×	×
	Others		×	×

Source: China Tax Yearbook.

Note: \*Data from the China Tax Yearbooks in years 2001 and 2002 indicates that the wholesale and retail industry pays both VAT and business tax, and the yearbooks after 2003 shows that it pays VAT only.

Figure 9: Sectoral Difference in land revenue (10,000RMB/hectare), 2004-2008



Source: China Land and Resources Statistical Yearbooks, 2005-2009.

Figure 10: Histogram and Density for Land Allocation Ratio, 2006

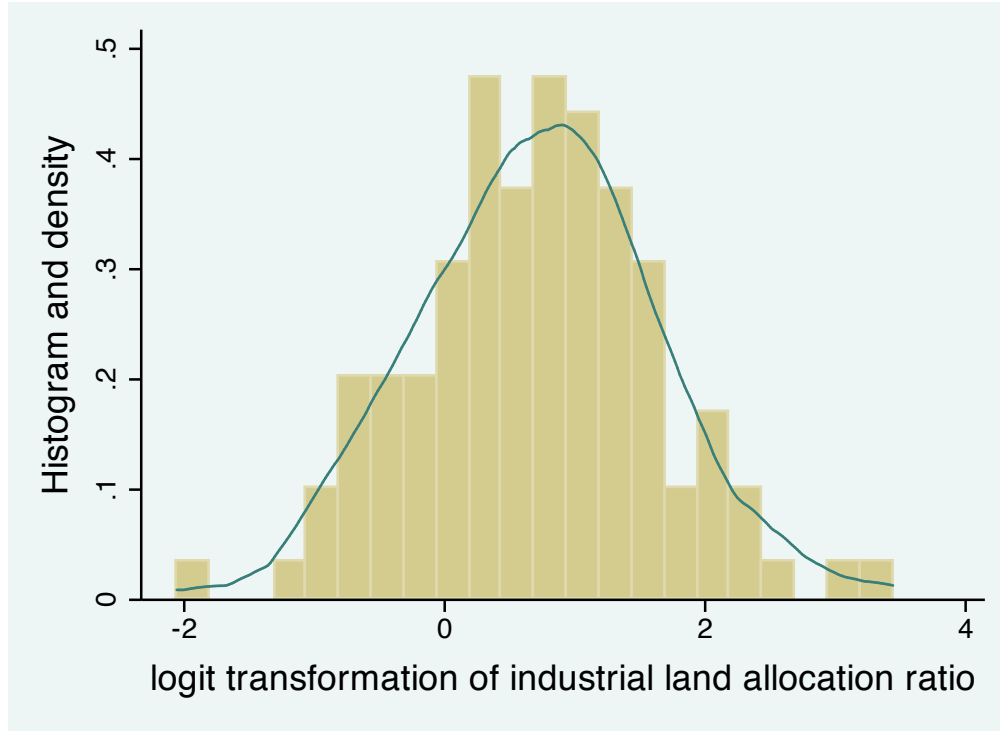


Table 3: Summary Statistics of Key Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Land quota allocation	118	.645	.181	.113	.962
Land quota allocation (logit)	118	.700	.912	-2.058	3.228
VAT ratio	120	.178	.052	.077	.312
Tax rebates ratio	120	.239	.124	.0193	.559
Business tax ratio	120	.239	.073	.087	.470
CCP secretary tenure	120	3.325	1.641	1	9
Mayor tenure	120	3.342	1.585	1	10
Land quota per capita	119	2.593	2.491	.098	15.272
Ratio of secondary industry in GDP	120	48.499	9.092	27	85.92
Secretary distance to retirement	120	7.833	3.8272	-1	17
Mayor distance to retirement	120	9.35	4.272	1	19
Budget deficit	120	1.834	.765	.811	5.749
GDP per capita (log)	120	9.750	.624	8.340	11.146
Urbanization	120	.404	.199	.116	1
City level	120	.158	.367	0	1

Table 4: OLS Estimates for Land Quota Allocated for Industry

Dependent variable=land quota allocated to industry in logit transformation

	(1)	(2)	(3)	(4)	(5)	(6)
VAT ratio	3.014** (1.519)	3.041** (1.493)	3.338** (1.326)	3.216** (1.327)	3.554*** (1.354)	3.842*** (1.334)
Tax rebates ratio	1.721* (0.906)	1.913** (0.880)	2.229*** (0.784)	2.399*** (0.796)	1.991** (0.793)	1.811** (0.849)
Business tax ratio	-2.741** (1.211)	-2.750** (1.188)	-2.116* (1.081)	-2.066* (1.094)	-2.235* (1.178)	-2.333* (1.235)
CCP secretary tenure	-0.132** (0.056)	-0.475*** (0.139)	-0.614*** (0.192)	-0.581*** (0.187)	-0.651*** (0.176)	-0.863*** (0.219)
CCP secretary tenure square		0.044*** (0.016)	0.073** (0.030)	0.068** (0.028)	0.082*** (0.026)	0.117*** (0.034)
Secretary second term indicator			-0.848 (0.570)	-0.794 (0.565)	-0.957* (0.550)	-1.239** (0.573)
Mayor tenure	-0.019 (0.071)	0.153 (0.158)				
Mayor tenure square		-0.019 (0.016)				
Land quota per capita	0.112*** (0.042)	0.100*** (0.038)	0.084** (0.041)	0.098** (0.044)	0.078* (0.041)	0.079* (0.042)
Industry to GDP ratio	-0.030** (0.014)	-0.033** (0.013)	-0.027** (0.013)	-0.027** (0.013)	-0.028** (0.013)	-0.025* (0.013)
Secretary distance to retirement	-0.027 (0.027)	-0.028 (0.027)	-0.029 (0.025)	-0.023 (0.021)		
Mayor distance to retirement	0.013 (0.019)	0.017 (0.019)				
Secretary age as of 2005					0.586* (0.341)	0.461 (0.377)
Secretary age square					-0.005 (0.003)	-0.004 (0.004)
GDP per capita(log)	-0.211 (0.400)	-0.088 (0.407)	-0.167 (0.367)	-0.156 (0.403)	-0.117 (0.362)	-0.116 (0.372)
Urbanization	0.883 (0.809)	0.850 (0.805)	0.792 (0.785)	0.800 (0.815)	0.833 (0.772)	0.814 (0.789)
Budget deficit	-0.137 (0.221)	-0.067 (0.206)	-0.048 (0.170)	-0.042 (0.174)	-0.039 (0.164)	-0.021 (0.162)
City dummy	-0.161 (0.228)	-0.274 (0.225)	-0.235 (0.223)	-0.297 (0.226)	-0.182 (0.230)	-0.114 (0.240)
Tourist ratio				-0.020 (0.061)		
Secretary education				-0.024 (0.100)		
Secretary local promotion				0.077 (0.143)		
Constant	4.154 (3.874)	3.182 (3.937)	3.916 (3.298)	3.800 (3.531)	-12.452 (9.398)	-9.112 (10.279)
Observations	118	118	118	117	118	114
$R^2$	0.343	0.382	0.387	0.405	0.402	0.415

Robust standard errors are in parenthesis.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

# Appendices

## A Interviewee List

The interviewee code is organized as follows. The two letters indicate the provinces in which the interview was conducted. The first four digits after the letters indicate the month and date of the interview. The next digit indicates if the interview subject was a group or an individual (coded 1 for group and 0 for individuals). This is followed by a digit indicating the order of group or individual interviewed on that day. The last two digits indicate the year in which the interview was conducted. To make interview subjects unidentifiable, I release only the name of the provinces, rather than more specific locality information. The table below identifies the interview subjects by level (where relevant) and type of workplace institution.

Code	Locality	Level	Interviewee	Institutions
ZJ12160109	Zhejiang	Urban district	Party secretary	Party committee
GD01311110	Guangdong	Prefecture	Group of government officials	Bureaus of Land and Resources, Public Finance, Development and Reform, Urban Planning, Hi-tech Economic Zone management committee
GD03040110	Guangdong	Township	Section chief	Economic development zone
GD03040210	Guangdong	Township	Entrepreneur	Government sponsored land development company
GD03050110	Guangdong	Village	Party secretary	Village party committee
ZJ03190110	Zhejiang	Deputy provincial city	Section chief	National Economic development zone
ZJ03190210	Zhejiang	Deputy provincial city	Director	National economic development zone
ZJ03290110	Zhejiang	N/A	Researcher	University
JS04020110	Jiangsu	County-level city	Director	National economic development zone
JS04060110	Jiangsu	Village	Party secretary	Village party committee
JS04071110	Jiangsu	County-level city	Group of government officials	Hi-tech Development zone
ZJ04120110	Zhejiang	Prefecture	Director	Bureau of Agriculture
ZJ04130110	Zhejiang	Prefecture	Director	Provincial economic development zone
ZJ04160110	Zhejiang	County-level city	Director	County party committee
JZ04160210	Zhejiang	Prefecture	Department chief	Bureau of Land and Resources
JZ04190110	Zhejiang	County-level city	Director	Provincial economic development zone
JZ04190210	Zhejiang	Township	Director	Economic and Trade Office
JZ04200110	Zhejiang	County-level city	Vice mayor	Government
JZ04200210	Zhejiang	County-level city	Deputy director	Provincial economic development zone
CQ04250110	Chongqing	N/A	Researcher	Research Institute
CQ04280110	Chongqing	Province	Director	Bureau of Land and Resources
CQ05060110	Chongqing	Province	Vice secretary general	Party committee
CQ05060210	Chongqing	Province	Section chief	Bureau of Reform and Development
CQ05110110	Chongqing	Urban district	Director	Economic development zone
CQ05121210	Chongqing	Urban district	Group of government officials	Bureau of Land and Resources

## B Definition and Sources of Variables

Variable	Definition	Source
Industrial land quota	Logit transformation of the ratio of land transacted by negotiation to total amount of land available	China Land and Resources Statistical Yearbook
VAT ratio	Ratio of VAT to the total budgetary revenue	Financial Statistical Material for Prefectures, Cities, and Counties Nationwide
Business tax ratio	Ratio of business tax to the total budgetary revenue	Financial Statistical Material for Prefectures, Cities, and Counties Nationwide
Tax rebates ratio	Ratio of tax rebates to the total intergovernmental transfer	Financial Statistical Material for Prefectures, Cities, and Counties Nationwide
CCP secretary tenure	Tenure of CCP secretary in years	Compiled by the author from various sources
Mayor tenure	Tenure of mayor in years	Compiled by the author from various sources
Land quota per capita	The ratio of total amount of land to total population	China Land and Resources Statistical Yearbook
Ratio of Industry in GDP	Ratio of secondary industry in GDP	China City Statistical Yearbook
Secretary distance to retirement	Distance to the retirement age for CCP secretaries (i.e., the required retirement age – the age as of 2005)	Compiled by the author from various sources
Mayor distance to retirement	Distance to the retirement age for CCP secretaries	Compiled by the author from various sources
Budget deficit	Ratio of local expenditure to total budgetary revenue	Financial Statistical Material for Prefectures, Cities, and Counties Nationwide
GDP per capita	Logarithm of GDP per capita in a city	China City Statistical Yearbook
Urbanization	Ratio of urban population to the total population	China City Statistical Yearbook
City Dummy	Dummy variable for the 19 cities at provincial or deputy-provincial level	
Tourist ratio	The ratio of received tourists to the total population	China Tourism Statistical Yearbook
Secretary second term indicator	Dummy variable indicating if the secretary serves his second term, coded as 1 if tenure is greater than 5 and 0 otherwise	Compiled by the author from various sources
Secretary age of 2005	The age of secretaries as of 2005	Compiled by the author from various sources
Secretary education	Education level of secretaries, coded as 1 for doctor, 2 for Master, 3 for college, and 4 for others	The World Bank survey
Secretary local promotion	Dummy variable indicating if the secretary was locally promoted, coded as 1 for local promotion and 0 otherwise.	The World Bank survey

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