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# The Incentive Role of Creating "Cities" in China

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## Abstract

This paper examines a distinctive mechanism of providing incentives to local governments – upgrading counties to "cities". In China, awarding city status to existing counties is the dominant way of creating new urban administrative units, during which the local government gets many benefits. Using a large panel data set covering all counties in China during 1993-2004, I investigate the determinants of upgrading. I find that the official minimum requirements for upgrading are not enforced in practice. Instead, economic growth rate plays a key role in obtaining city status. An empirical test is then conducted to distinguish between a principal-agent incentive mechanism and political bargaining. The findings are consistent with the hypothesis that the central government uses upgrading to reward local officials for high growth, as well as aligning local interests with those of the center. This paper highlights the importance of both fiscal and political incentives facing the local government. The comparison between incentive mechanism and bargaining sheds light on an important question about China's politics of governance: where does power lie in China?

*JEL Classification:* P26, H77, H11, O40, R11

*Keywords:* economic growth, incentive mechanism, bargaining, political centralization, fiscal decentralization, county-to-city upgrading, central-local relationship

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## 1. Introduction

In transition and developing countries, a major concern of the central government is to give local governments incentives to spur market development and economic growth. Democracy achieves this goal by putting the local government under the direct pressure of citizens who vote. In contrast, under a hierarchical political system, the central government relies on its political authority to create incentive mechanisms. For example, the "Cadre Evaluation and Appointment System" is used by the Chinese central government to induce desirable economic outcomes (Huang, 2002; Mei, 2007). At the same time, fiscal decentralization provides market incentives to local governments by making them the residual claimant over local revenues (Montinola et al., 1995; Jin et al., 2005).

This paper examines a very distinctive mechanism of providing incentives. In China, awarding "city" status to existing counties is the dominant way of creating new urban administrative units. The creation of a large number of cities through so-called "county-to-city upgrading" has changed China's basic administrative structure, making the Chinese city system unique. City status gives localities both political and fiscal benefits, thus providing the center with an effective tool to reward counties. I present evidence that the central government uses the creation of cities as part of the incentive system for local officials, which is very important for China's successful reform (Zhuravskaya, 2000; Li and Zhou, 2005).

By viewing county-to-city upgrading as an incentive mechanism, I cast the relationship between center and localities as that between principal and agents. However, it has been argued that the central-local relationship in China is much more like political bargaining (see Shirk, 1993). As local governments get more and more discretion through decentralization, they gradually accumulate bargaining power that is used to negotiate political benefits from the center. Bargaining differs from the incentive mechanism in that it is based on the assumption of much stronger local political power. Despite the great attention paid to the central-local relationship by both political scientists and economists, few studies have attempted to determine whether political bargaining or principal-agent incentive mechanisms occur. My paper fills this gap by differentiating

between these two mechanisms and providing evidence on the dominance of incentive mechanisms in China's central-local relationships.

Using a panel data set covering all counties in China during 1993-2004, I show that the formal minimum requirements for county-to-city upgrading are not enforced in practice. Instead, economic performance has played a critical role in upgrading. I provide strong and robust evidence on the relationship between a county's growth rate and its probability of getting city status after controlling for requirements such as industrial output, urban population and fiscal strength. Moreover, I conduct a test to distinguish between the incentive mechanism and the bargaining mechanism. Using local extra-budgetary funds as an example of divergence between central and local interests, I find that city status helps the center to align local interests with national ones. This finding is consistent with the hypothesis that upgrading is used as an incentive mechanism, instead of being the result of bargaining.

This paper relates to the existing literature in three ways. First, it highlights the coexistence of fiscal decentralization and political centralization in China. This unique institutional setting is attracting growing interests among economists (Blanchard and Shleifer, 2001; Zhang, 2006; Zhuravskaya, 2007). While the role of fiscal decentralization in stimulating economic growth has been discussed extensively (see, e.g. Qian and Weingast, 1997; Qian and Roland, 1998; Zhang and Zou, 1998), some recent studies argue that the centralized power structure is also crucial in creating yardstick competition among local officials and constraining them from practicing local protectionism (Cai and Treisman, 2004; Li and Zhou, 2005; Bai et al., 2007). Blanchard and Shleifer (2001) explicitly point out the complementarities between the "carrot" of fiscal revenue sharing and the "stick" of political centralization. In this paper, upgrading is the result of centralized decision-making; at the same time, it gives local officials more discretion over revenue collection. Thus, it reflects both political centralization and fiscal decentralization.

Second, since upgrading provides many benefits to local officials, it is a substitute for promotion. This paper thus relates to the literature on the career concerns and political

promotion of local officials.<sup>1</sup> Treating local officials in a county as a whole, I examine the effect of economic performance on their chance of getting political rewards. Similar to Li and Zhou (2005), I find a strong effect of economic growth. In contrast, my results do not support Bo (2002), who claims that fiscal performance is more important.

Third, the emergence of a large number of cities has attracted lots of attention both inside and outside China (see, e.g. Au and Henderson, 2006). Existing studies on this subject have largely ignored the political economic reasons behind city creation. This paper is the first to discuss its incentive role, thus shedding light on the urban economics and regional science literature.<sup>2</sup>

Two specific advantages of examining county-to-city upgrading bear highlighting. First, using county-level data gives many more observations than other studies that use provincial-level data, thus increasing the power of tests. Second, as a measure of rewards, upgrading suffers much less from omitted variable bias relative to the promotion of local officials, which is the focus of many other studies. The reason is that upgrading is very costly and irreversible, so that the decision is made in a very deliberate way (Wu, 2000). In fact, applications for upgrading are submitted to the Ministry of Civil Affairs through the provincial government, and the final decision is made directly by the State Council. Such a strict process is well beyond the influence of county leaders. In contrast, the promotion decision of local officials is made by the government at just one level higher so that the unobserved factors, such as personal relationships, could be relatively important.

The remainder of the paper is organized as follows. Section 2 describes the background of county-to-city upgrading. Section 3 lays out the model and hypotheses. Section 4 describes the data. Section 5 presents the results. The last section concludes.

## **2. Institutional background: county-to-city upgrading in China**

There are four local administrative levels in China: province, prefecture (*diqu*),

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<sup>1</sup> See Bo (2002, Chapter 1) for a literature review on the political mobility of Chinese local officials; see Besley and Case (1996) for theoretical and empirical evidence on how career concerns generate yardstick competition in a democratic situation.

<sup>2</sup> For a general discussion on the political economy of city formation, see Henderson and Becker (2000).

county and township. At each level, jurisdictions are classified either in a normal form, or in a form with the name "city" or "town".<sup>3</sup> For example, a province and a City Directly under the Central Government (*zhixiashi*) are both at the provincial level; a prefecture and a prefecture-level city are both at the prefecture level; a county and a county-level city are both at the county level, a *xiang* and a town are both at the township level.<sup>4</sup> In this paper, county-to-city upgrading refers to the reclassification of a county into a county-level city.<sup>5</sup> From 1983 to 2001, 430 county-level cities were established, most of which were created through upgrading. Only 25 of them were created by separating out a relatively urbanized area from a county and setting up a new government.

This unique way of creating cities through upgrading stands in contrast to the experience of most countries, where "city" and "county" fall into different administrative categories. Cities only govern urban centers where population is concentrated. Instead of reclassifying a whole county, a new city is normally created inside a county. Also, the decision is often made through a voting. For example, in the U.S., a new city could be created by adopting a home rule charter. While in Brazil, new municipalities are established through local voting.

The administrative units created through upgrading are different from cities as we normally understand the term (Chan, 1997). During upgrading, the entire county, not just the town, is labeled "city". Thus, cities include not only the urban centers, but also large expanses of rural areas. For example, Eerguna is a county-level city in Inner Mongolia. It covers an area of 11,000 square miles, 2/3 of which is forest and another 1/6 is grassland. Its population density is about 7 persons per square mile, only 1/50 of the national average. Such a "rural" administrative unit was nonetheless awarded "city" status in 1994. *The Economist* (2007b) describes Sansha, a county-level city consisting mostly of water and desolate islands in the South China Sea, as "no more than a bizarre misnomer". The confusion caused by upgrading even leads to a lawsuit (see the story about "Huangshan" city in Chung and Lam, 2004). Overall, the magnitude of upgrading is very substantial.

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<sup>3</sup> For a detailed description of the Chinese city system, see Chung (1999).

<sup>4</sup> Here are examples of cities at different levels. Shanghai city is at the provincial level, Suzhou city (which attracts the largest amount of foreign investment among all cities) of Jiangsu province is at the prefecture level, Shunde city (where massive enterprise privatization took place) of Guangdong province is at the county level.

<sup>5</sup> Similarly, there is another type of upgrading, prefecture-to-city upgrading, during which the entire prefecture is labeled "city". From 1983 to 2001, more than 160 prefectures were upgraded to prefecture-level cities.

Since 1983, nearly 15 percent of counties have obtained city status.

The official rule to regulate county-to-city upgrading first appeared in 1983, when cities had shown advantages in attracting investment and the demand for city status increased in the coastal provinces. Under some rough requirements proposed by the Ministry of Personnel and Ministry of Civil Affairs, nearly 100 cities got city status during 1983-1986. In 1986, the minimum requirements for city status were raised, but were still considered to be very low (Chung and Lam, 2004). The number of cities continued to rise and the central government further raised the requirements in 1993, setting different standards for counties with different population density. As more and more counties became enthusiastic about city status, the central government realized that urbanization cannot be achieved by just changing the title to "city". Instead, large-scale upgrading has exaggerated the actual urbanization level. It eventually stopped approving county-to-city upgrading in mid 1997, only allowing prefectures to be eligible to get city status. Until now, county-to-city upgrading has not been resumed.

Table 1 summarizes the main minimum requirements on industrialization level, urbanization level and fiscal strength announced in 1993. One interesting thing to note is that counties with lower population density were given lower standards. This seems to imply that, in the mind of the central government, setting up cities does not follow the usual idea of urban agglomeration.

Although getting city status does not change a county's rank in the administrative hierarchy, its government certainly gains much more political power, which is the reason to use the term "upgrading". For example, the party secretaries of many county-level cities are able to enter the standing committee of the prefecture-level party committee and enjoy deputy-prefecture political rank. The administrative authority is also expanded in areas such as finance, trade and transportation (see Table 2). In Zhejiang and Hubei, there is experiment that placing the budget of county-level cities under the direct supervision of the provincial government, thus bypassing the prefecture level.<sup>6</sup> Table 2 also lists other benefits associated with city status. Among them, the most prominent one is that cities obtain a huge amount of revenues from the conversion of land into non-farm usage (Ping,

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<sup>6</sup> This is called "line item under province", or *Shengji Jihua Danlie*.

2006). Moreover, these benefits are not only for the local officials (such as bigger government size and higher official rank), but for the whole county as well. For example, additional revenues and favorable policies usually result in more urban infrastructures and better public services.

The political privilege mentioned above also brings the local government closer to higher-level governments, thus facilitating the supervision from above. As will be shown later, such supervision will make local governments less likely to defy the center when they have potential conflict with the center. However, these small costs are overshadowed by the political and fiscal benefits and we observe great enthusiasm for city status among counties in the mid 1990s.

At the same time, upgrading is costly to the central government. For example, the expanded government size will increase salary expenses that are paid out of the central budget. In many upgrading cases, the central government needs to make subsidies to new cities for their infrastructure construction. Besides these fiscal burdens, inequality could also rise as a result of upgrading policy. Since counties that get upgraded are generally rich ones, the favorable policies and subsidies they receive after becoming cities are likely to increase regional disparity. In addition, no city has been downgraded to a county so far. Such irreversibility greatly increases the cost of upgrading if it is not desirable to the central government *ex post*.

### **3. Hypotheses and empirical strategy**

In this section, I formalize my arguments about the incentive role of upgrading into three hypotheses. The first hypothesis relates to the non-enforcement of formal rules, the second states the importance of economic growth in determining upgrading. The third one is actually composed of two alternative hypotheses that correspond to the incentive mechanism and bargaining mechanism, respectively. I also present empirical methods used to test each hypothesis.

#### **3.1 Non-enforcement of the formal rules**



As shown in section 2, the central government sets certain rules to regulate upgrading. A natural hypothesis is that the center wants to enforce these rules. However, many scholars (e.g., Liu and Wang, 2000; Chung and Lam, 2004) have observed that the official minimum requirements for upgrading are not enforced in practice: while eligible counties compete to get upgraded, some ineligible counties nevertheless received city status because of special treatment. Chung and Lam (2004, p. 953) even report that the Ministry of Civil Affairs "was not in a good position to verify the statistics supplied by the counties". Thus, the first hypothesis of this paper is:

***Hypothesis 1:*** The formal minimum requirements for upgrading are not enforced.

The data allows me to directly check whether all counties that got an upgrade meet the requirements listed in Table 1. To formally test this hypothesis, I will use an empirical model (to be introduced in the next sub-section) to examine the importance of these requirements. More details will be discussed in section 5.

### **3.2 Main hypothesis and the empirical model**

If those formal rules were not enforced, upgrading should not be just an instrument for urbanization. The central government must have other considerations when making decisions. That is, there exist some informal rules that were not explicitly written in policy documents, but nonetheless played an important role in the upgrading decision. It turns out that growth rate is such a critical factor. To give a brief preview of the importance of growth rate, Figure 1 displays the number of upgrading cases from 1981 to 1997, as well as the corresponding yearly GDP growth rate. We can clearly observe several waves of upgrading around 1983, 1988 and 1993, which roughly correspond to the periods when China experienced high economic growth. Figure 1 suggests that high growth may generate high demand for upgrading, thus inspiring me to examine the correlation between growth rate and probability of upgrading at the county level.

To test the positive effect of growth rate on the probability of upgrading, I need to control for other confounding factors that affect upgrading. Obviously, industrialization level, urbanization level and fiscal strength are important socio-economic factors since they were listed in the official documents. Thus, the main hypothesis of this paper is:

**Hypothesis 2:** Conditional on industrialization level, urbanization level and fiscal strength, the higher the growth rate, the more likely an upgrading would happen.

To test this hypothesis, I view upgrading as a discrete choice problem faced by the central government and model it in the following way.<sup>7</sup> For county  $i$  at year  $t$ , the central government could choose either to upgrade it or not. A latent value  $Y_{it}^*$  represents the difference of utility the center expects to achieve under upgrading and non-upgrading.  $Y_{it}$  is a binary variable representing upgrading status. The approval decision is made according to:

$$Y_{it} = 1 \text{ (upgrading) if } Y_{it}^* > 0; Y_{it} = 0 \text{ (non-upgrading) otherwise}$$

Here  $Y_{it}^* = f(G_{it}, Z_{it}, \varepsilon_{it})$ , in which  $G_{it}$  represents growth rate,  $Z_{it}$  is a vector that includes other county-specific variables such as industrial output, urban population and fiscal revenue. The error term  $\varepsilon_{it}$  contains unobserved factors in the decision-making process.

Assume that  $f(G_{it}, Z_{it}, \varepsilon_{it})$  has a linear form, so that  $Y_{it}^* = \beta_0 + G_{it}\beta_1 + Z_{it}\beta_2 + \varepsilon_{it}$ , and  $\Pr(Y_{it} = 1) = \Pr(\varepsilon_{it} > -\beta_0 - G_{it}\beta_1 - Z_{it}\beta_2)$ . Further assume  $\varepsilon_{it}$  follows a logistic distribution, I get the following logit model:

$$(1) \Pr(Y_{it}=1) = \Phi(\beta_0 + G_{it}\beta_1 + Z_{it}\beta_2) = \exp(\beta_0 + G_{it}\beta_1 + Z_{it}\beta_2) / (1 + \exp(\beta_0 + G_{it}\beta_1 + Z_{it}\beta_2))$$

### 3.3 Why growth matters? Two alternative hypotheses

Hypothesis 2 predicts that growth matters in getting city status. However, it does not tell us the specific mechanism through which growth plays a role. In fact, there are two possible interpretations of the positive effect of growth rate on upgrading. The obvious one is that the central government uses upgrading to reward counties with a high growth rate, which suggests that upgrading serves as an incentive mechanism. This interpretation casts the central-local relationship in a principal-agent framework. Since the central

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<sup>7</sup> If we assume that 1) all counties started to have a chance of upgrading since 1983, the beginning year of the policy, and 2) upgrading to city status is an ultimate outcome for most counties if time horizon is long enough, then upgrading could be alternatively treated as a duration problem. Getting city status means the ending of spells, and the probability of upgrading is the corresponding hazard. However, since I can only follow the subjects for 5 periods, it is very difficult to extract any meaningful information on the shape of the hazard of ending the spell. Thus, duration model is not adopted in this paper.

government (principal) cannot perfectly monitor the localities' (agents) effort in economic development, it uses incentives to elicit good economic outcomes represented by a high growth rate. In contrast, some scholars have argued that the central-local relationship in China is much more like bargaining (e.g., Lampton, 1992; Shirk, 1993). Accordingly, upgrading could be viewed as a result of central-local bargaining. High levels of economic performance, approximated by a high growth rate, strengthen the bargaining power of the local government and provide it with greater leverage in getting an upgrade. This interpretation is also consistent with the result that a higher growth rate leads to a higher probability of upgrading. Thus I have the following competing hypotheses:

***Hypothesis 3A (Incentive)***: The central government uses upgrading as a reward in an incentive mechanism.

***Hypothesis 3B (Bargaining)***: Upgrading is a result of political bargaining, in which a high growth rate strengthens the bargaining power of a county, and thus helps it to get city status.

These two hypotheses display different pictures of China's politics of governance. The incentive hypothesis assumes that the center has a tight control over local governments. The bargaining hypothesis, however, puts local officials in a more powerful position in playing political games with the center. Although local officials are appointed rather than elected, it does not mean that the local government is always weak. As the notorious saying tells, "Whenever there is a policy top-down, there is a strategy bottom-up (*Shang you zhengce, xia you duice*)."

Sometimes non-cooperation is used as a strategy to confront the center. To some extent, the bargaining hypothesis suggests that the center is "forced" by local governments to give out the city recognition. When describing the administrative changes in the reform era, Chan (1997, p. 86) mentions "pressure from below for faster change and more thorough reform builds up". Chung and Lam (2004, p. 953), based on interviews with officials, claim that the Ministry of Civil Affairs "often found it difficult to resist political pressure from below" in approving upgrading applications. The non-enforcement of the official upgrading requirements further raises doubts on the central government's capacity to enforce pre-announced

policies and gives some support to the bargaining argument. Besides, anecdotal evidence also suggests the existence of case-by-case negotiation in upgrading (Su, 2000).

In fact, the bargaining hypothesis has a long tradition in the study of Chinese politics. Lampton (1992, p. 34) writes that "bargaining is one of the several forms of authority relationship in China. ... bargaining remains a key feature of the system [after 1989]." Naughton (1992) states that both the center and localities are equipped with bargaining power when specific policies of economic reform are being decided. Shirk (1993) studies the central-local relation from the perspective of accountability. Since the top leaders were elected by the Central Committee members, among whom provincial leaders form the largest bloc, she argues that central leaders have to compete for the support of provincial leaders, so that the bargaining position of the provinces is strengthened. These studies treat bargaining and mutual compromise as the working mechanism between the central and local governments, and form the background for my bargaining hypothesis.

Mei (2006) uses a simple graph to highlight the difference between the principal-agent and the bargaining models based on their emphasis on local officials' political power (Figure 2). By putting these two models together with models of full centralization and full decentralization, this graph clearly shows that the bargaining model ascribes more political power to the localities relative to the principal-agent model, while both models are not as extreme as full centralization or decentralization.

Empirical literature on the bargaining mechanism is also fairly developed. For example, several studies have shown that the provincial representation in the Central Committee affects resource allocation across provinces (Sheng, 2005; Su and Yang, 2000; Huang, 2001). Maskin et al. (2000) further shows that the provincial representation depends on the power of a province composed by its population, economic size and fiscal contribution. Thus, this strand of literature is consistent with the bargaining hypothesis that economic performance strengthens local bargaining power. This paper goes one step further by directly comparing the bargaining mechanism with the principal-agent incentive mechanism.

Since counties cannot negotiate directly with the central government due to their low position in the administrative hierarchy, bargaining takes place between governments at

adjacent hierarchical levels. For example, as the county government gains political privileges and administrative authority through upgrading, the prefecture government will necessarily lose some power. Therefore, to get the prefecture government's support on its upgrading attempt, the county will have to negotiate with the prefecture. More importantly, since the application for upgrading is through the provincial government, there is central-local bargaining between the center and provinces. In fact, provincial governments, as representatives of their subordinate counties, have played an important role in competing for city status.<sup>8</sup> The bargaining power of provincial governments will be partly determined by the economic performance of counties in candidacy.

### **3.4 Incentive versus bargaining: empirical strategy**

In order to distinguish the two competing hypotheses, incentive versus bargaining, I examine the behavior of city and county governments in situations where the center and localities have divergent interests. The logic is as follows.

According to the bargaining hypothesis, counties get upgraded because of their strong bargaining power. Since city status brings political privileges to local officials, local bargaining power should be strengthened through upgrading. Thus, when there is any divergence between central and local interests, city status makes localities more capable of pursuing local interests against the center. Moreover, the best time to do so is right after upgrading when local bargaining power would be at its strongest. Thus, we should see a larger divergence between central and local interests just after cities get upgraded.

In contrast, the incentive hypothesis suggests that the center maintains control over localities, and it alone decides which counties get upgraded. City status facilitates administrative supervision, thus helping the center to better align local interests. This hypothesis predicts that cities are less likely to act against the central government. Moreover, the detailed evaluation process of upgrading is equivalent to performing *ex ante* monitoring over local governments, meaning that newly upgraded cities are least likely to make decisions that diverge from the center's wishes.

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<sup>8</sup> Ren and Wang (1999) give an example showing that the provincial bureau of civil affairs is crucial in helping counties to get city status.

In sum, these two hypotheses have different predictions on how city status is going to affect the way local governments promote local interests at the cost of the central government. By comparing counties with cities, and furthermore, newly upgraded cities with old cities, I can test one hypothesis against the other.<sup>9</sup> This requires me to have a proper measure of divergence between central and local interests.

In China, the existence of local "extra-budgetary funds" (EBFs) as opposed to "within-budgetary fiscal revenue" provides a good example of the conflict between central and local interests. EBFs consist of all resources managed directly or indirectly by administrative branches of the government outside the normal budgetary process. EBFs are concentrated at the sub-national level and not subject to treasury management or budgetary oversight (Wong and Bird, 2005). In times of fiscal stress, local governments respond by introducing a large number of fees, charges, and revenues from land leasing, which are not shared with, and often not reported to, higher-level governments. Park et al. (1996) show that local governments have become very practiced in hiding income in extra-budgetary accounts, making it extremely difficult for the central government to monitor true deficits. Ping (2006) finds that increases in the administrative cost of local governments are due to EBFs, which softens the budget constraint of local governments.

With these properties, EBFs could be regarded as a measure of local budgetary independence. It is in local governments' interest to maintain or even increase the size of EBFs. In contrast, the central government would like to minimize EBFs relative to within-budgetary fiscal revenue in order to extend its control over local officials. In fact, the central government has tried hard to curb local extra-budgetary fiscal activities. Huang (1996, p. 47) has shown that "since 1986 the State Council has attempted to manage the extra-budgetary revenues and expenditures more centrally." In 1997, the central government ruled that as many as thirteen types of "local government funds" should be brought from extra-budget to within-budget, which shows the center wanted to impose supervision over EBFs. However, this rule failed to fundamentally change the ability of local government to control EBFs (Ping, 2006). The fight over EBFs is going

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<sup>9</sup> This method is consistent with Huang (1996, Chapters 6-8), who distinguishes between a bargaining hypothesis and a control hypothesis when studying the impact of local officials' bureaucratic status on the way they handle the central-local investment conflicts.

on between the center and localities and it clearly reflects the conflict of central and local interests.

Thus, the ratio of EBFs to within-budgetary fiscal revenue serves as a good proxy for the divergence of local interests from the center's. If the bargaining mechanism dominates, I expect this ratio to be higher for cities than for counties. Among cities, newly upgraded ones should have a ratio higher than old ones. If the incentive mechanism dominates, the opposite should happen. The empirical model is:

$$(2) \text{ Ratio}_{it} = \beta_0 + \text{City}_i * \beta_1 + \text{Newcity}_i * \beta_2 + Z_{it} * \beta_3 + v_t + \varepsilon_{it}$$

where  $\text{Ratio}_{it}$  is the ratio of EBFs to within-budgetary fiscal revenue for county  $i$  at year  $t$ .  $\text{City}_i$  is a dummy for city status.  $\text{Newcity}_i$  is a dummy for newly upgraded cities, whose definition will be discussed in section 5.  $Z_{it}$  is a vector of control variables that include GDP, population and growth rate;  $v_t$  is the year dummy;  $\varepsilon_{it}$  is the error term. While  $\beta_1$  is the effect of having city status,  $\beta_2$  is the additional effect of being newly upgraded conditional on having city status. The sign of the estimate of  $\beta_1$  tells us which mechanism dominates. Whether  $\beta_2$  has the same sign with  $\beta_1$  will provide a further check. In short, the prediction of the two competing hypotheses is:

Incentive hypothesis:  $\beta_1 < 0, \beta_2 < 0$

Bargaining hypothesis:  $\beta_1 > 0, \beta_2 > 0$

#### 4. Data

Systematic data on Chinese jurisdictions below the provincial level is difficult to collect. While several papers have employed prefecture-level data to study the incentives of local officials (e.g., Li and Bachman, 1989; Landry, 2003), no one has ever used county-level data to do so. The difficulty is two-fold. On the one hand, statistics of counties are distributed in the statistical yearbooks of each province, making it hard to build a relatively complete data set. On the other hand, the traditional measure of rewards to local officials, promotion, is almost impossible to find for county-level officials.

To overcome these difficulties, I use data from the yearly series of *Sub-Provincial Public Finance Statistics*, which is published by the Ministry of Finance. It covers all

county-level jurisdictions during 1993-2004 and includes detailed public finance information, as well as data on basic socio-economic conditions.<sup>10</sup> I use upgrading to capture the political rewards to county leaders, substituting for the usual measure, promotion. The specific benefits associated with city status make upgrading a reliable measure of rewards. In contrast, the existing literature studying promotion often faces the problem of identifying when mobility is a true promotion and when it is not.<sup>11</sup>

To estimate equation (1), I use data from 1993, the beginning year of the published data, to 1997, when upgrading stopped. For county-level cities, I drop observations in their post-upgrading period because there is no chance of downgrading or further upgrading available (see Table 3 for more details). Data of Xizang (Tibet) is dropped because it obviously faces a different policy on jurisdiction administration.

The key independent variable is the growth rate of Gross Value of Industrial and Agricultural Output (GVIAO). Since GDP data is not available before 1998, GVIAO is the best consistent measure of a county's total economic activity. Similar to Li and Zhou (2005), I use its growth rate to measure economic performance. As stated above, I control for industrialization level, urbanization level and fiscal strength since they are official requirements on upgrading. Measures for these requirements include industrial output value, share of industrial output value in GVIAO, urban population, share of urban population in total population and per capita (within-budgetary) fiscal revenue.

Table 4 shows the comparison of mean values for upgrading and non-upgrading cases. A total of 99 upgrading cases are identified through official records from the Ministry of Civil Affairs.<sup>12</sup> All the output and revenue measures have been adjusted to 1993 constant prices using the yearly GDP deflator (growth rate is calculated using adjusted values). While growth rate of GVIAO starts from 1994, growth rate of fiscal revenue starts only from 1995. The reason is that the 1994 tax reform fundamentally changed local tax base and makes the growth rate of fiscal revenue from 1993 to 1994

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<sup>10</sup> Tsui (2005) and Zhang (2006) also use data from selected years of this series.

<sup>11</sup> Part of the reason is that the actual power and political benefits enjoyed by an official may be hard to discern using only his or her job title under the Chinese political system (Mei, 2006). For example, when a provincial governor is assigned to be the director of the provincial People's Congress, this seemingly lateral move usually means loss of power and usually marks the end of his or her political career. While Li and Zhou (2005) attribute this kind of mobility into the same category as demotion, Bo (2002) simply drops such kind of observations from his study.

<sup>12</sup> Available online at <http://www.xzqh.org>.



meaningless. Except for these two growth rates, all other variables are averaged from 1993 to 1997. From the p-values of t-tests of mean differences between upgrading and non-upgrading observations, it is clear to see that there are significant differences between these two groups.

Figure 3 depicts the trend of growth rate for all cities that were upgraded from counties in recent years. The horizontal axis represents the number of years since upgrading. Both the actual growth rate and the growth rate relative to the national average are displayed. They show exactly the same trend. In the year when upgrading happens and the year right before upgrading, the average growth rate of these jurisdictions are at a high level; right after upgrading, it starts to drop; two years after upgrading, it falls below the national average. After that, the average growth rate returns to the national average and stays around there. The timing of high growth rates shown in this figure suggests that incentives may play an important role in generating high growth rates.

In estimating equation (2), the ratio of local EBFs to within-budgetary fiscal revenue captures the divergence between local interests and those of the center. There is no direct report of EBFs at county level in my data set. However, various types of "local government funds" were reported since 1999. As I have shown in section 3, these funds were nominally brought from extra-budget into budget by the central government in 1997, but were still under the control of local governments (Ping, 2006; Wong and Bird, 2005). Thus, these "local government funds" could reflect the conflict between central and local interests. I use the sum of them as a proxy for EBFs, so that the actual dependent variable is the ratio of the sum of local government funds to within-budgetary fiscal revenue.

Table 5 compares the mean values of key variables between counties and county-level cities. The sample is from 1999 to 2004 because local government funds are not available before 1999. Since upgrading has already been stopped in 1997, there is no change in city status in this period, and consequently, I cannot perform a difference-in-difference exercise. This also explains why  $City_i$  and  $Newcity_i$  do not vary across time in equation (2). In this period, GDP data is available, so I use it to substitute GVIAO as the measure of local development level. From the table, it is obvious to see

that cities, with a greater power on revenue collection, raise much more "local government funds" than counties in average. However, the raw mean of the ratio of local government funds to within-budgetary fiscal revenue is not very different between cities and counties. In the following section, I will compare cities with a certain group of counties that have similar properties to cities, as well as controlling for confounding variables in the regressions.

## **5. Empirical results**

This section presents the empirical results. First, I estimate the logit model (equation 1) to show that growth rate has a positive effect on a county's probability of upgrading. The results are robust to alternative definitions of growth rate, as well as various specifications and estimation techniques. Then I use stylized facts and results from a formal test to show that upgrading requirements are not enforced. After that, I estimate equation 2 to test the incentive hypothesis against the bargaining hypothesis.

### **5.1 The positive effect of growth rate on upgrading**

#### **5.1.1 Baseline results**

To estimate the effect of growth rate conditional on industrialization level, urbanization level and fiscal strength, I closely follow those official requirements on upgrading and control for industrial output value, share of industrial output in gross output, urban population, share of urban population in total population, and per capita fiscal revenue in equation (1). All these control variables are lagged by one year. Since counties vary greatly in size, I apply a log transformation to these variables (except the two shares) to reduce the effect of outliers.

Table 6 shows the results estimated using Maximum Likelihood Estimation (MLE). Column 1 reports the baseline results, listing coefficients and robust standard errors clustered at the prefecture level. The key independent variable, growth rate of GVIAO, has a positive and significant coefficient. This finding is consistent with hypothesis 2: conditional on industrialization level, urbanization level and fiscal strength, a higher growth rate increases the probability of achieving city status.

Among the five control variables that measure the official requirements, only urban population and fiscal revenue per capita have positive and significant coefficients. While industrial output and its share in total output have positive and insignificant coefficients, share of urban population has a negative and insignificant coefficient. To further control for the variation of upgrading policy across years, which is common for all counties, I add year dummies (column 2). The only change to the estimates is that the coefficient on share of urban population becomes positive, but it remains insignificant. In column 3, I substitute year dummies with province dummies. This is equivalent to ask such a question: what makes a county stand out from its peers in the same province in competing for city status? The results are very similar to column 1. Then I control for both year and province fixed effects (column 4). There is little change to the estimates of control variables, except that industrial output becomes significant. In all these models, growth rate remains positive and significant.

Since several provinces do not govern any county that was upgraded during the sample period, adding provincial dummies means dropping counties in these provinces from the estimation. To compare the size of coefficient between the baseline model and the one with year and province fixed effects, I estimate the baseline model again on the sample used in column 4. The results are shown in column 5. Overall, adding province and year dummies generate a larger coefficient on growth rate, which suggests that they may capture the effect of omitted variables. For example, if the upgrading policy is in favor of provinces with low growth potential, such a bias in policy would have a negative correlation with growth and a positive correlation with upgrading. Therefore, including province dummies eliminates the effect of this omitted variable and increases the coefficient on growth rate. In the following alternative specifications, I always report result both with and without fixed effects.

To assess the economic magnitude of the effect of growth rate, I calculate the marginal effect. In column 4, the mean value of  $dPr(upgrading)/dG$  equals 0.01. This implies that when the annual growth rate increases, for example, from 16% (the average growth rate) to 26%, the probability of upgrading will increase by 0.001, which is about

7% of the average upgrading probability (0.015).<sup>13</sup> For the control variables that are significant in column 4, I also calculate their mean marginal effect. The change in probability of upgrading if industrial output moves from the 25<sup>th</sup> percentile to the 75<sup>th</sup> percentile is 0.022, which is about 1.4 times the average upgrading probability. For urban population and fiscal revenue per capita, this value is 0.026 and 0.007, respectively. These values are in the reasonable ranges.

### **5.1.2 Robustness checks**

To check the sensitivity of the baseline results, I adopt alternative definitions of growth rate, as well as using various specifications and techniques to estimate the model.

Since upgrading decisions are made throughout a year, it is likely that the center refers to last year's performance when making decisions, especially early in the year. To check whether the results are sensitive to different timing, I lag growth rate by one year and lag all other independent variables by two years. The results (Table 7, columns 1 and 2) are generally similar to the baseline results shown in Table 6, with an even larger coefficient on growth rate. Thus, the results are robust to different timing of variables.

By including all counties in the estimation, I implicitly assume that every county has a chance of upgrading and thus faces an incentive. However, some counties actually have very little chance of getting city status, so that the upgrading policy does not provide any incentive for them to increase growth rates. One group of these counties is the nationally designated poor counties. The official document explicitly states that these counties generally should not be considered for an upgrading. Thus, I drop these counties and re-estimate the baseline model (columns 3 and 4). The results are little different.

Furthermore, I adopt alternative measures for growth rate. Chen et al. (2005) show that relative performance matters more than absolute performance in evaluating provincial officials. Following their method, I subtract the average growth rate of counties in the same prefecture from each county's growth rate and generate an alternative growth measure – relative growth rate. Without controlling for fixed effects, the relative growth rate is positive but not significant (column 5); once province and year

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<sup>13</sup> This magnitude is comparable to the one estimated in Li and Zhou (2005). They show that if the GDP growth rate of a province increases by same amount (10 percentage points from mean), the probability of provincial leaders getting a promotion increases by an amount that is 24% of the average probability.

dummies are included, relative growth rate has a positive and significant coefficient, and the size is even larger (column 6). This suggests that relative growth rate is also used as a reference in the evaluation of counties' economic performance.

Following Li and Zhou (2005), I use average growth rate as another alternative growth measure, where the averaging is from the beginning of the sample to the current year. This measure corresponds to an evaluation process that is based on both the current and past growth rates. The results (columns 7 and 8) show that, although not statistically significant, the coefficient on average growth rate has a magnitude similar to the baseline results. These exercises show that the baseline results are not driven by a particular definition of growth rate.

On the other hand, some studies have argued that the central government is most interested in seeing continuously growing fiscal revenues (e.g., Bo, 2000). So I put both the growth rate of fiscal revenue and the growth rate of gross output in the regression to see which growth rate is more important (Table 8, columns 1 and 2). To estimate this model, I only use data from 1995 to 1997 because the growth rate of fiscal revenue starts from 1995. The results show that the coefficient on growth rate of fiscal revenue is not significant either statistically or economically; whereas the growth rate of gross output remains to be significant. A plausible explanation is: local governments sometimes lower the actual tax rate to attract investment, so that the high economic growth rates are achieved at the cost of fiscal revenues. Thus, the growth rate of fiscal revenue is not used as an important performance indicator in practice.

Since my sample covers several years, upgrading policy may vary during this period. Additionally, growth rates in different years may not be comparable to each other. For example, a growth rate of 14% is below average in 1994, but is above average in 1997. Controlling for year fixed effects could partly take care of this problem by allowing different intercepts for different years, but the marginal effect of growth rate may also change across time. Ideally, I should estimate the model year-by-year to check the robustness of the effect of the growth rate in different years. Due to the limited sample size and rareness of upgrading cases in some years, I split the sample into two periods: 1994-1995 and 1996-1997. The estimation on these two sub-samples (columns 3-6) is

consistent with the baseline model. In addition, I estimate the model using a cross-section where each county counts as one observation. In this specification, the dependent variable equals one if the county gets upgraded during the sampling years, and the independent variables are the average values across these years. Although the small sample size generates larger standard errors, the results provide evidence on the positive effect of growth rate (columns 7 and 8). These tests demonstrate that, even though the upgrading policy may vary across time, growth rate always plays a crucial role.

One caveat to my empirical model is sample attrition. Once a county gets city status, it loses the chance of receiving any further reward through upgrading, and its probability of having  $Y_{it} = 1$  is zero since then. Thus, in the discrete choice framework, post-upgrading observations are ruled out of the estimation (explained in Table 3). In this unbalanced panel, the attrition could be non-random if error terms have serial correlation across time. For example, if a county suffers a positive shock to the idiosyncratic error term in a specific year and gets upgraded, it is dropped out of the sample in subsequent years, during which the error term could continue to get positive shocks if there is a positive serial correlation. In this case, sample selection is correlated with the error term and could induce inconsistency of estimates. To correct for this problem, I adopt a probit model with sample selection (Van de Ven and Van Pragg, 1981). It is similar to the Heckman selection model (Heckman, 1979), except that the dependent variable in the outcome equation is also binary. Following Wooldridge (2002, Chapter 17.7), I treat the probit of the previous year as the selection equation, where non-upgrading means being selected into current year's outcome estimation. Specifically, a probit model of upgrading on growth rate and control variables using data of 1994-1996 serves as the selection equation, and the outcome equation is another probit using data of 1995-1997. By assuming a bivariate normal distribution of the error terms of these two equations, this model is estimated using MLE.<sup>14</sup>

The results are shown in Table 9. Column 1 shows the results of a usual probit

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<sup>14</sup> The probit model is very similar to equation 1, except that the error term  $\varepsilon$  is assumed to follow a normal distribution instead of a logistic distribution. In the selection equation, the dependent variable equals one in case of non-upgrading; in the outcome equation, the dependent variable equals one if upgrading happens. The reason I estimate a probit model with sample selection rather than a logit model with sample selection is computational convenience. The actual estimation is performed by Stata's command "heckprob".

estimation. The coefficient on growth rate is almost significant (p-value is 0.12). The corresponding mean marginal effect (0.0044) is about the same as in a logit model (0.0042), which shows that the probit model is little different from the logit model. Column 2 shows the results of probit with sample selection. The estimates are very similar to column 1. Moreover, the correlation coefficient between error terms of the selection equation and outcome equation is not statistically significant, suggesting that sample selection is not a severe problem and it does not bias my estimates.

In sum, various robustness tests provide strong and consistent evidence for hypothesis 2, which states that growth rate plays a crucial role in upgrading.

## **5.2 Testing the non-enforcement of upgrading requirements**

### **5.2.1 Stylized facts**

To test the non-enforcement of formal minimum requirements for upgrading, I first use the data to check whether counties being upgraded during my sample period meet these requirements. Table 1 has listed the three main requirements, which are concerned with industrialization level, urbanization level and fiscal strength, respectively. Each requirement has an absolute criterion and a relative (or per capita) one. For counties with different population densities, these upgrading requirements are also different. Based on the 1993 data, I summarize the number and percentage of counties that meet each criterion, as well as those that meet both criteria of a specific requirement (Table 10).<sup>15</sup> This table shows that the requirement on urbanization level is quite stringent, while the requirement on fiscal strength is less binding.

Based on the three requirements, I construct three dummy variables: industrialization dummy, urbanization dummy and fiscal dummy. Each dummy equals one if both criteria of the corresponding requirement are met. For example, for a county with a population density above 400 per square km, if its fiscal revenue exceeds 60 million RMB *yuan* and the per capita revenue exceeds 100 RMB *yuan* in a particular year, then its fiscal dummy

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<sup>15</sup> In the official requirements shown in Table 1, "urban population" refers to those who are engaged in non-agricultural production. There is no direct report of this variable in my data set. Instead, I have data on population with urban registration status. For each population density group, I also know the average ratio of population engaged in non-agricultural production to those with urban registration status. Therefore, I am able to get an estimate of population engaged in non-agricultural production for each county. I use this estimated urban population to tell whether a county meets the requirement on urbanization level.

equals one in this year; otherwise this dummy equals zero. I assign all county-year observations in 1994-1997 into different cells according to the value of these three dummies and whether there is an upgrading. The number of observations in each cell is listed in Table 11. To make it easy to read, I further combine cells with equal number of requirements been satisfied and summarize them in Table 12. Among the 99 cases of upgrading, only 6 meet all three requirements; 39 meet two, 30 meet only one, and 24 meet none. On the other hand, there are 36 cases where all three requirements are met but the counties did not get upgraded. This table clearly demonstrates that the official requirements are not enforced in practice.

### **5.2.2 Tests based on the logit model**

To formally test hypothesis 1, I extend equation (1) to allow for flexible functional form in the logit model. Basically, I add the three dummies (industrialization dummy, urbanization dummy and fiscal dummy) and their interaction terms with corresponding variables into the model to check whether meeting one or several requirements increase the average probability of upgrading and the marginal effect of independent variables. Once these results are shown, it will be straightforward to draw the conclusion that the official requirements are not enforced.

I first allow the marginal effect of three control variables (industrial output, urban population and fiscal revenue) to change once the corresponding requirement is met. To do this, the three dummies and their respective interactions with the three control variables are included in the model. While the coefficients on these dummies tell us whether the average probability of upgrading has a jump once a requirement is satisfied, the coefficients on the interaction terms would indicate whether meeting a requirement changes the marginal effect of the corresponding control variable. The results (Table 13, column 1) show that the only important requirement is fiscal strength. The coefficient on the fiscal dummy is 5.2, meaning that the average probability of upgrading will jump up by about four times of the average value once the fiscal requirement is satisfied. The coefficient on the interaction term is negative and its size is about the same as the coefficient on fiscal revenue per capita, suggesting that the marginal effect of fiscal revenue per capita entirely fades out once the fiscal strength requirement is satisfied.



I then allow observations that meet some requirement and those that fail to meet to have different intercepts and different marginal effects on growth rate. To do this, I create a dummy "Meet  $\geq 2$  requirements", which equals one if at least two requirements listed in Table 1 are satisfied. I put this dummy and the interaction term with growth rate in the model (column 2). Another dummy "Meet  $\geq 1$  requirement" is defined in a similar way, and the results are shown in column 3. In both columns, growth rate and the dummy are both positive and significant, while the interaction term is not statistically significant. This implies that satisfying some requirements increases average probability of upgrading, but does not change the marginal effect of growth rate.

Finally, both growth rate and control variables are allowed to have flexible functional form (columns 4 and 5). The results are consistent with those displayed in columns 1-3. The only exception is that growth rate, "Meet  $\geq 2$  requirements" dummy and "Meet  $\geq 1$  requirement" dummy become less significant. However, the size of their coefficients remains similar.

These results are summarized in Figure 4. The upper-left diagram shows that meeting some requirements put the county in an advantageous situation to compete for city status (i.e., with a higher average probability); but it does not change the marginal effect of growth rate. The lower-right diagram shows that before meeting the fiscal requirement, an increase in fiscal revenue per capita would increase the probability of upgrading. Once meeting this requirement, the average probability of upgrading will jump up to a higher level, but additional increase in fiscal revenue would not matter any more. The other two diagrams show that industrialization requirement and urbanization requirement are not important. Overall, the fiscal requirement seems to be enforced more strictly than other two requirements, which seems to be consistent with the fact that there are more counties meet the fiscal requirement than those that meet the other two requirements.

Since these requirements are supposed to be the "minimum" level for a county to be eligible for upgrading, it is reasonable to conclude that the official requirements on upgrading are not enforced in practice. Thus, upgrading is not just an instrument for urbanization. Whether it is a tool of rewarding or a result of center-local bargaining is the task of the next sub-section.

### 5.3 The incentive hypothesis versus the bargaining hypothesis

To empirically distinguish the incentive hypothesis from the bargaining hypothesis, I examine the effect of city status on the divergence of local interests from those of the center, as measured by the ratio of the sum of local government funds to the within-budgetary fiscal revenue.

As mentioned before, the central government stopped approving county-to-city upgrading in 1997. In fact, this change of policy was not publicly announced until 2000 (*Xin Changzheng*, 2000), and counties still had an incentive to compete for city status in years immediately following 1997. This actually allows me to construct propensity scores for hypothetical upgrading probability in 1998 and 1999, which could help to control for differences between cities and counties. Specifically, I first estimate the baseline logit model using 1994-1997 data. Then I apply the estimated parameters to the 1998-1999 data to construct propensity scores. Had the upgrading policy continued, propensity scores should represent the probability of getting city status predicted by their observed characteristics, and counties with high scores should have a fairly large chance to win city status. Thus, except for not having the city title, these counties are otherwise similar to cities, especially newly upgraded ones. I choose 85 counties with scores higher than 0.1 in any of these two years to construct a restricted county sample.<sup>16</sup> Based on observed characteristics, these counties are similar to cities, and the comparison between cities and this restricted county sample is more meaningful. Henceforth, I call these 85 counties as the "comparison group counties."

Figure 5 draws the average ratio of the sum of local government funds to the within-budgetary fiscal revenue for these "comparison group counties," newly upgraded cities (upgraded during 1994-1997) and all cities, respectively. Obviously, these "comparison group counties" have a much higher ratio than cities, and the difference increases overtime.

To estimate equation (2), I run OLS regressions using pooled data from 1999-2004. The control variables for county size and development level include log population, log

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<sup>16</sup> The reason to set the cutoff value at 0.1 is to make the number of these counties roughly equal to the number of newly upgraded cities. The results are robust to other cutoffs, such as 0.05 and 0.15.

GDP and growth rate of GDP. Since local government funds have a strong time trend, I also include year dummies. I first show the results without including the *Newcity* dummy. Column 1 of Table 14 reports the result on the full sample, which contains all counties and all county-level cities. In column 2, I restrict the sample to those "comparison group counties" plus all cities, and call this "restricted sample". I then add the *Newcity* dummy and run regressions on the full sample (column 3) and the restricted sample (column 4). I further restrict the sample to only cities and run a regression without the *City* dummy (column 5). This specification directly compares newly upgraded cities with old cities. I adopt three different alternative definitions for the *Newcity* dummy. In columns 3-5, newly upgraded cities are those that received city status between 1994 and 1997 (no upgrading happens after 1997). According to this definition, 99 cities are classified as newly upgraded; the remaining 231 cities are classified as "old" cities, which were upgraded between 1975 and 1993. The cutoff year for newly upgraded cities is moved to 1992 in columns 6-8, and 1990 in columns 9-11.

In columns 1 and 2, the *City* dummy has a negative and significant coefficient, which is consistent with the incentive hypothesis. In other columns, the coefficients on *City* and *Newcity* are all negative, and the F-tests show that they are jointly significant in most cases. Since newly upgraded cities are a subset of cities, it is no wonder that the inclusion of *Newcity* dummy reduces the significance of *City* dummy. The important thing about this specification is that, as stated in section 3, having a negative coefficient on both dummies provides additional evidence on the incentive hypothesis. The coefficient on *City* dummy is of bigger size in the restricted sample than in the full sample, and the significance level is also higher. Thus, results from the restricted sample give strong support to the incentive hypothesis. In sum, these results are consistent with the hypothesis that city status helps the center to align local interests with the center; conditional on being cities, a recent upgrading aligns local interests even closer.<sup>17</sup>

As shown before, cities generally have greater access to revenue collection than counties. For example, the huge amount of revenues associated with land conversion provides city governments with additional flexibility in generating EBFs. My results,

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<sup>17</sup> Huang (2002) discusses other tools that align local interests with the center.

however, show that city governments nonetheless gave up such power and maintain a low level of EBFs relative to within-budgetary revenues. This kind of behavior could only be explained by the incentive hypothesis, which tells that the center maintains control over localities, and city status further facilitates the center's supervision.

My results provide evidence that the Chinese central government still maintain a tight control over local officials. This raises a puzzle: if the center has enough authority, why does it fail to enforce those pre-announced upgrading requirements? The answer may lie in the experimental and flexible nature of China's policies. During the whole reform era, many policies were first tried in one or several provinces and, after proving their effectiveness, were implemented to nationwide (Qian, 2000). Also, the actual implementation is often very flexible. As long as the underlying issue is not urgent (such as family planning and public safety), policies are not implemented with strong central pressure (Lin et al., 2005). In the example of county-to-city upgrading, the central government announces formal rules to regulate the intense competition at the beginning. Upon receiving a specific application, it mainly considers economic performance. Since upgrading serves as a rewarding tool, the center also faces the choice between upgrading the county and promoting its officials. The decision is likely to be affected by the number of vacant positions that could be used in promotion. Thus, the actual decision may well be inconsistent with those pre-announced requirements.

## **6. Conclusion**

Although based on a very specific example, the creation of "cities" in China, this paper studies a question with very general economic interests: how to provide incentives to local governments? I find that economic growth plays an important role in determining whether a county was upgraded to a county-level city. I further provide evidence on an incentive mechanism, under which city status was used to reward local officials for high growth, and helps to align local interests with those of the center as well. The central themes of this paper reflect Fogel's (2007, p. 10) observation: "the successful unfolding of autonomy requires a center strong enough to integrate national and local goals ... and to provide rewards to those who advance it [the progress of reform]." However, one should be noted that upgrading only provides one-time incentive to localities and the

rewards are for their past economic performance. The fact that the average growth rate of new cities quickly returns to normal after upgrading reflects the lack of long-term effect. In fact, some scholars consider county-to-city upgrading as a policy failure (Liu and Wang, 2000; Chung and Lam, 2004).

According to Au and Henderson (2006), a large fraction of cities in China are smaller than the optimal size. The non-enforcement of upgrading requirements has certainly contributed to this problem. My study suggests that cities are not a natural outcome of urban agglomeration in China. Instead, city status has been used as an incentive instrument to serve political purposes. Now it has been ten years since the stopping of county-to-city upgrading. There is a growing voice on reforming the current administrative system. A recent article on the *China Youth Daily* (2007) describes how eager the county-level jurisdictions are to obtain more administrative independence. This paper will facilitate an understanding of the current administrative system from a political economic perspective.

I conclude this paper by providing one more insight. Comparing China with Russia, Zhuravskaya (2007) points out that "the necessary condition for administrative centralization without local democracy to discipline local governments ... seems to be efficient growth objectives of central officials." This paper shows that the Chinese central government does have a strong growth objective, which has even been embedded in the policy of setting up cities. However, the emphasis on growth also makes local governments obsessed with growth rates and produces some unintended consequences, such as severe pollution (*The Economist*, 2007a).

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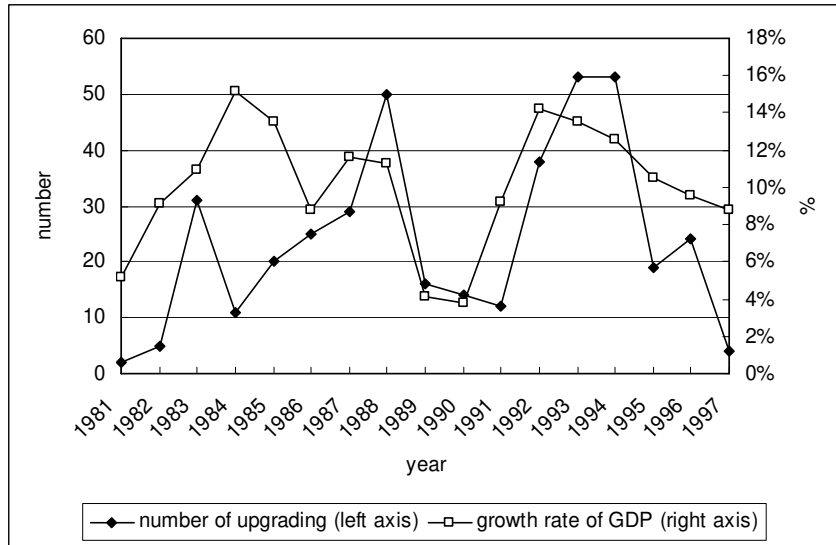
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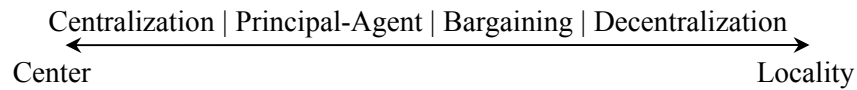


**Figure 1. Number of county-to-city upgrading cases and yearly GDP growth rate**

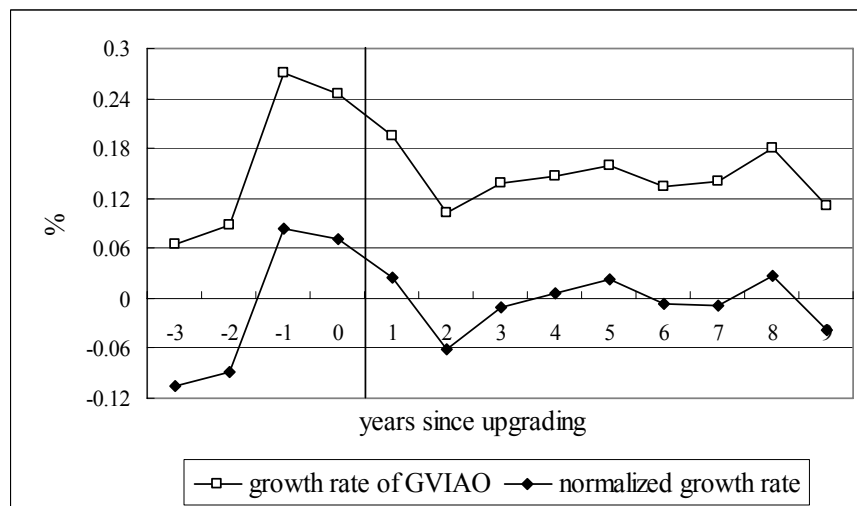


Source: GDP - China Statistical Yearbook (2006); number of upgrading - Liu and Wang (2000).

**Figure 2. The spectrum of political models on China's central-local relationship**

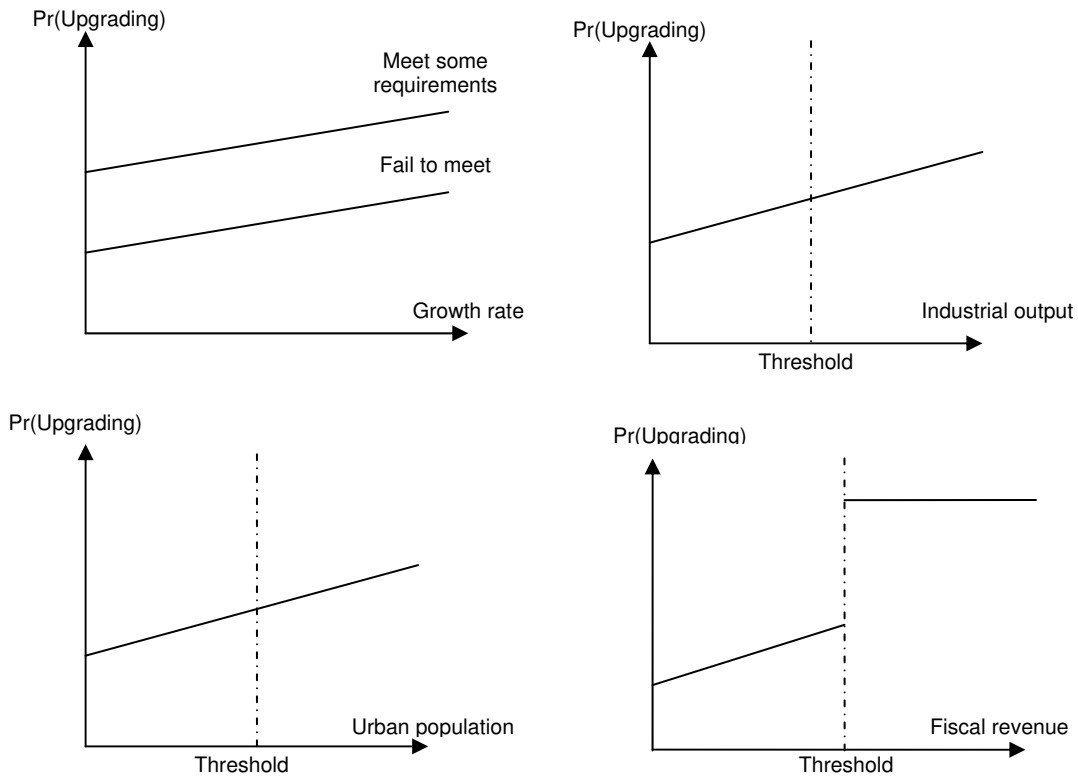


**Figure 3. Trend of growth rates before and after upgrading**



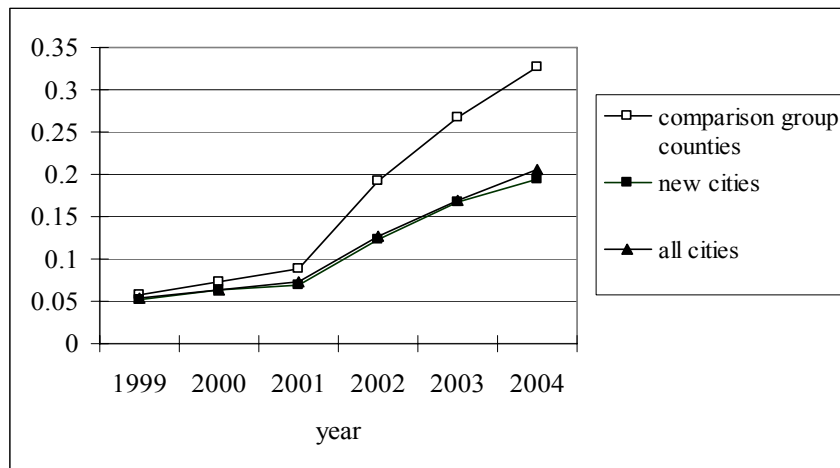
Note: This graph shows the average growth rate for cities that were upgraded from counties during 1985-1997. The horizontal axis represents the time difference between current year and the year of upgrading. Year "0" means the year of upgrading, year "-1" means one year before upgrading, year "1" means one year after upgrading, etc. The normalized growth rate is the actual growth rate minus the national average value in the corresponding year.

**Figure 4. Graphical interpretation of results drawn from Table 13**



Note: The upper-left diagram shows the relation between upgrading and growth rate. The other three diagrams show the relation between upgrading and industrial output, urban population and fiscal revenue, respectively. "Threshold" means the cutoff value in the official minimum requirements.

**Figure 5. Comparison of interest divergence: counties and cities**



Note: The vertical axis is labeled by the ratio of the sum of local government funds to within-budgetary fiscal revenue, which measures the divergence of local interests from the center. The three lines represent the average value of this ratio for the three groups, respectively. The "comparison group counties" refer to counties that have a predicted probability of upgrading higher than 0.1 in 1998 or 1999.

**Table 1. Minimum requirements for county-to-city upgrading**

Population density (person/km <sup>2</sup> )		>400	100 - 400	<100
Percentage of counties in this category		25%	45%	30%
Industrialization level	Industrial output value ( <i>yuan</i> )	1.5 billion	1.2 billion	8 billion
	Share of industrial output value in gross value of industrial and agricultural output	80%	70%	60%
Urbanization level	Size of urban population (engaged in non-agricultural production)	150k	120k	100k
	Share of urban population in total population	30%	25%	20%
Fiscal strength	Fiscal revenue ( <i>yuan</i> )	60 million	50 million	40 million
	Per capita fiscal revenue ( <i>yuan</i> )	100	80	60

Source: "The Report on Adjusting the Criteria for the Designation of New Cities." Ministry of Civil Affairs, 1993. Available in English in Zhang and Zhao (1998).

**Table 2. Benefits of being a city: an incomplete list**

Category	Benefits	Source
Tax and fee	Cities enjoy a higher urban construction tax (7% compared to 5% for counties); could collect the surcharges levied on the issuing of motorcycle registration. In Liaoning province, cities could get 1 to 2 million additional subsidies each year after upgrading.	Chung and Lam (2004) Zhang and Zhao (1998)
Land-related	Cities generally convert more land to non-farm use and retain larger share of revenue from land sale.	Zhang (2006) Ping (2006)
Favorable policy	After achieving the status of "line item under province" ( <i>Shengji Jihua Danlie</i> ), cities could report directly to the provincial administration to ask for investment project	Su (2000) Zhang and Zhao (1998)
Administrative power	Cities have more authority on foreign trade and exchange management; gains authority over police recruitment and vehicle administration; could establish the branch of custom and large State-Owned banks; could approve projects with higher cap of investment.	Chung and Lam (2004) Du (1993)
Government size	Cities could establish more branches of government and have a larger size of government employees	Ren and Wang (1999)
Rank and salary	Sometimes the bureaucratic rank and salary of officials are raised after upgrading.	Liu (2005)
Reputation	Cities generally carry greater prestige and are more attractive to investors from outside.	Gu (1997) Chung and Lam (2004) Wang et al. (1998)

Note: Given the volatility of Chinese policies, the benefits are continuously changing overtime, and benefits listed are not necessarily effective during the same period.

**Table 3. Construction of the sample for the logit model**

Type of jurisdiction	Number	Observation year (shaded observations are dropped)				
		1993	1994	1995	1996	1997
Always a county, never upgraded	1,579	county	county	county	county	county
Upgraded to a city in 1997	4	county	county	county	county	city
Upgraded to a city in 1996	23	county	county	county	city	city
Upgraded to a city in 1995	19	county	county	city	city	city
Upgraded to a city in 1994	53	county	city	city	city	city
Already a city in 1993	231	city	city	city	city	city

Note: To estimate equation (1), the sample is from 1993 to 1997 because upgrading was stopped after 1997. Once a county gets city status, it loses the chance of receiving any further reward through upgrading. Therefore, in the discrete choice model, post-upgrading observations (in shaded cells) are excluded from the estimation.

**Table 4. Comparison of mean values: upgrading and non-upgrading cases (1993-1997)**

Variable	Non-upgrading		Upgrading		mean difference test: p-value
	Obs	Mean	Obs	Mean	
Gross value of industrial and agricultural output (GVIAO ,10,000 <i>yuan</i> )	8,048	145,563	99	651,154	0.000
Per capita GVIAO ( <i>yuan</i> )	8,048	3,220	99	8,896	0.000
Growth rate of GVIAO (1994-1997)	6,349	0.164	99	0.246	0.028
Industrial output value	8,048	97,858	99	558,708	0.000
Share of industrial output value in GVIAO	8,046	0.527	99	0.732	0.000
Population (10,000)	8,053	41.7	99	65.2	0.000
Urban population (10,000)	8,046	4.93	99	11.04	0.000
Share of urban population in total population	8,046	0.138	99	0.198	0.000
Within-budgetary fiscal revenue (10,000 <i>yuan</i> )	8,053	4255	99	6,980	0.000
Growth rate of fiscal revenue (1995-1997)	4,753	0.185	46	0.168	0.22
Fiscal revenue per capita ( <i>yuan</i> )	8,051	92.0	99	122	0.000
Number of public employees per 100 people	8,053	3.07	99	2.43	0.000

Note: All the output and revenue measures have been adjusted to 1993 constant prices using the yearly GDP deflator. Growth rate is calculated using adjusted values.

**Table 5. Comparison of mean values: counties and county-level cities (1999-2004)**

Variable	County		County-level city	
	Obs	Mean	Obs	Mean
Local government funds (10, 000 <i>yuan</i> )	8,683	613	1,857	2,614
Per capita local government funds ( <i>yuan</i> )	8,683	15.1	1,855	35.6
Within-budgetary fiscal revenue (10, 000 <i>yuan</i> )	8,683	5,422	1,857	18,377
Ratio of local government funds to within-budgetary fiscal revenue	8,683	0.105	1,857	0.116
Population (10,000)	8,683	43.6	1,855	72.9
GDP (10, 000 <i>yuan</i> )	8,661	150,811	1,854	544,184

Note: All output and revenue variables are measured in 1993 constant prices.

**Table 6. Positive effect of growth rate on upgrading - baseline results**

	Dependent variable: 1 = upgrade; 0 = no upgrade				
	(1)	(2)	(3)	(4)	(5)
Growth rate of GVIAO	0.473** (0.211)	0.519** (0.261)	0.546** (0.224)	0.749*** (0.275)	0.426* (0.219)
Log(industrial output)	0.033 (0.257)	0.367 (0.301)	0.456 (0.282)	1.130*** (0.323)	0.103 (0.267)
Share of industrial output	1.934 (1.267)	1.322 (1.375)	2.028 (1.345)	0.950 (1.454)	1.903 (1.788)
Log(urban population)	1.949*** (0.369)	1.584*** (0.396)	2.189*** (0.404)	1.600*** (0.395)	1.978*** (0.367)
Share of urban population	-1.304 (1.864)	0.976 (2.002)	-1.374 (2.334)	2.251 (2.313)	-1.341 (1.317)
Log(fiscal revenue per capita)	1.097*** (0.272)	0.650* (0.352)	1.390*** (0.276)	0.684** (0.332)	1.360*** (0.244)
Year Dummies		Yes		Yes	
Province Dummies			Yes	Yes	
Sample size	6,436	6,436	5,649	5,649	5,649

Note: Coefficients and robust standard errors clustered at the prefecture level are listed. Significance levels of 10%, 5% and 1% are represented by \*, \*\* and \*\*\*. Except for growth rate and year dummies, all other independent variables are lagged by one year.

**Table 7. Positive effect of growth rate on upgrading – robustness checks**

	Dependent variable: 1 = upgrade; 0 = no upgrade							
	Lagged timing		Exclude poor counties		Relative growth rate		Average growth rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Growth rate of GVIAO	0.790** (0.362)	1.107** (0.470)	0.448** (0.207)	0.739*** (0.282)	0.326 (0.379)	0.814** (0.392)	0.609 (0.405)	0.663 (0.438)
Log(industrial output)	0.313 (0.388)	1.191** (0.482)	-0.060 (0.262)	1.011*** (0.337)	-0.019 (0.255)	1.06*** (0.315)	-0.043 (0.251)	0.98*** (0.317)
Share of industrial output	0.099 (1.736)	1.514 (2.158)	2.027* (1.212)	1.169 (1.488)	-1.620 (1.831)	1.903 (2.259)	2.145* (1.217)	1.617 (1.421)
Log(urban population)	1.572*** (0.495)	1.679** (0.664)	1.965*** (0.370)	1.618*** (0.400)	2.01*** (0.369)	1.66*** (0.395)	2.04*** (0.369)	1.73*** (0.400)
Share of urban population	0.700 (2.117)	-0.468 (2.741)	-1.889 (1.975)	1.579 (2.390)	2.103* (1.256)	1.121 (1.429)	-1.689 (1.858)	1.332 (2.314)
Log(fiscal revenue per capita)	1.076*** (0.299)	1.574*** (0.444)	1.041*** (0.269)	0.625* (0.335)	1.12*** (0.272)	0.732** (0.331)	1.13*** (0.271)	0.752** (0.335)
Year dummies		Yes		Yes		Yes		Yes
Province dummies		Yes		Yes		Yes		Yes
Sample size	4,754	3,904	4288	3885	6,436	5,649	6,441	5,654

Note: Coefficients and robust standard errors clustered at the prefecture level are listed. Significance levels of 10%, 5% and 1% are represented by \*, \*\* and \*\*\*. In columns 1 and 2, growth rate is lagged by one year, all independent variables, except for year dummies, are lagged by two years.

**Table 8. Positive effect of growth rate on upgrading – robustness checks (continued)**

	Dependent variable: 1 = upgrade; 0 = no upgrade							
	With growth rate of fiscal revenue		Split sample: 1994-1995		Split sample: 1996-1997		Average value for all variables	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Growth rate of GVIAO	0.642** (0.348)	0.718* (0.441)	0.343 (0.297)	0.592* (0.345)	0.659* (0.390)	0.686* (0.401)	1.27* (0.696)	0.967 (0.884)
Growth rate of fiscal revenue	0.023 (0.802)	0.206 (0.851)						
Log(industrial output)	0.602* (0.354)	1.32*** (0.469)	0.177 (0.312)	1.128*** (0.382)	0.176 (0.528)	1.272** (0.591)	-0.541 (0.396)	-0.276 (0.474)
Share of industrial output	1.52 (1.87)	0.777 (1.99)	1.844 (1.731)	1.451 (1.770)	1.531 (2.521)	-0.704 (2.524)	3.00* (1.78)	2.50 (2.03)
Log(urban population)	1.60*** (0.563)	1.60** (0.628)	1.978*** (0.459)	1.648*** (0.481)	1.376** (0.554)	1.739** (0.722)	2.92*** (0.546)	3.58*** (0.598)
Share of urban population	0.952 (2.39)	1.07* (0.561)	-1.527 (2.811)	1.518 (3.209)	1.985 (2.865)	6.517* (3.470)	-6.76*** (3.02)	-8.01*** (3.57)
Log(fiscal revenue per capita)	0.861* (0.524)	1.15** (0.513)	0.919*** (0.264)	0.340 (0.444)	0.767 (0.488)	1.348** (0.575)	2.55*** (0.512)	3.65*** (0.487)
Year dummies		Yes		Yes		Yes		
Province dummies		Yes		Yes		Yes		Yes
Sample size	4785	3931	3266	2699	3170	2511	1685	1486

Note: Coefficients and robust standard errors clustered at the prefecture level are listed. Significance levels of 10%, 5% and 1% are represented by \*, \*\* and \*\*\*. In columns 7 and 8, the independent variables are the average values during 1994-1997 (or from 1994 to the upgrading year if upgrading happens).

**Table 9. Correction for attrition – probit model with sample selection**

	Dependent variable: 1 = upgrade; 0 = no upgrade	
	Probit	Probit with sample selection
	(1)	(2)
Growth rate of GVIAO	0.23 (0.15)	0.23 (0.15)
Log(industrial output)	0.097 (0.16)	0.096 (0.16)
Share of industrial output	0.33 (0.74)	0.31 (0.73)
Log(urban population)	0.68*** (0.21)	0.65*** (0.19)
Share of urban population	0.12 (0.99)	0.17 (0.97)
Log(fiscal revenue per capita)	0.51*** (0.18)	0.48*** (0.16)
Year dummies	Yes	Yes
Correlation coefficient between error terms in selection equation and outcome equation		0.23 (0.46)
Sample size	4910	4910

Note: Coefficients and robust standard errors clustered at the prefecture level are listed. Significance levels of 10%, 5% and 1% are represented by \*, \*\* and \*\*\*. Column 1 is estimated using data of 1995-1997. In column 2, selection equation is estimated using data of 1994-1996; outcome equation is estimated using data of 1995-1997.



**Table 10. Number of counties that satisfied each upgrading requirement in 1993**

Requirement	Criterion for this requirement	Number of counties (total is 1,678)	
		Meet one criterion	Meet both
Industrialization level	Industrial output	329 (19.6%)	158 (9.4%)
	Share of industrial output	290 (17.3%)	
Urbanization level	Urban population	212 (12.6%)	67 (4.0%)
	Share of urban population	212 (12.6%)	
Fiscal strength	Fiscal revenue	444 (26.5%)	352 (21.0%)
	Per capita revenue	976 (58.2%)	

Note: See Table 1 for the threshold value of each criterion.

**Table 11. Number of county-year observations by upgrading status and requirements satisfied (1994-1997)**

		Urbanization dummy=0		Urbanization dummy=1	
		Industry dummy=0	Industry dummy=1	Industry dummy=0	Industry dummy=1
Non-upgrading cases	Fiscal dummy=0	4583	212	96	5
	Fiscal dummy=1	1005	375	83	36
Upgrading cases	Fiscal dummy=0	24	14	2	0
	Fiscal dummy=1	14	31	8	6

**Table 12. Number of county-year observations by upgrading status and number of requirements satisfied (1994-1997)**

Number of requirements satisfied	total	0	1	2	3
Non-upgrading cases	6,395	4,583	1,313	463	36
Upgrading cases	99	24	30	39	6

**Table 13. Non-enforcement of upgrading requirements – allowing for flexible intercept and marginal effect**

	Dependent variable: 1 = upgrade; 0 = no upgrade				
	(1)	(2)	(3)	(4)	(5)
Growth rate of GVIAO	0.731** (0.289)	0.668* (0.376)	0.799** (0.358)	0.643 (0.392)	0.740* (0.378)
Meet $\geq$ 2 requirements		0.722** (0.365)		0.577 (0.377)	
Meet $\geq$ 1 requirement			0.789** (0.370)		0.636 (0.416)
Interaction term		0.025 (0.591)	-0.181 (0.490)	0.093 (0.580)	-0.101 (0.511)
Log(industrial output)	0.917** (0.386)	1.052*** (0.327)	1.033*** (0.322)	0.882** (0.383)	0.831** (0.381)
industrialization dummy	-0.566 (4.824)			-0.784 (4.862)	-1.766 (4.799)
Interaction term	0.114 (0.390)			0.116 (0.392)	0.201 (0.387)
Log(urban population)	1.715*** (0.457)	1.541*** (0.407)	1.569*** (0.396)	1.705*** (0.463)	1.726*** (0.452)
Urbanization dummy	0.131 (2.117)			0.374 (2.053)	0.043 (2.136)
Interaction term	-0.334 (0.790)			-0.467 (0.769)	-0.333 (0.794)
Log(fiscal revenue per capita)	1.088** (0.449)	0.465 (0.380)	0.469 (0.346)	1.003** (0.470)	1.003** (0.461)
Fiscal dummy	5.223** (2.056)			5.484*** (2.119)	5.090** (2.109)
Interaction term	-1.039** (0.432)			-1.113** (0.448)	-1.040** (0.444)
Share of industrial output	0.190 (1.404)	0.761 (1.446)	0.753 (1.501)	0.232 (1.385)	0.179 (1.440)
Share of urban population	3.608 (2.545)	2.087 (2.351)	2.173 (2.351)	3.589 (2.536)	3.528 (2.576)
Sample size	5649	5649	5649	5649	5649

Note: All columns include year and province dummies. Coefficients and robust standard errors clustered at the prefecture level are listed. Significance levels of 10%, 5% and 1% are represented by \*, \*\* and \*\*\*. Except for growth rate, requirement dummy and their interaction term, all other independent variables are lagged by one year.

**Table 14. Incentive versus bargaining- results**

	Dependent variable: ratio of the sum of local government funds to within-budgetary fiscal revenue										
	"Newcity" = 1 if upgrade after 1994			"Newcity" = 1 if upgrade after 1992			"Newcity" = 1 if upgrade after 1990				
	(1) full sample	(2) restricted sample	(3) full sample	(4) restricted sample	(5) city sample	(6) full sample	(7) restricted sample	(8) city sample	(9) full sample	(10) restricted sample	(11) city sample
City	-0.013* (0.007)	-0.047** (0.022)	-0.012 (0.007)	-0.047** (0.022)		-0.006 (0.008)	-0.040* (0.023)		-0.002 (0.009)	-0.036 (0.023)	
Newcity			-0.004 (0.011)	-0.0002 (0.011)	-0.002 (0.011)	-0.018 (0.011)	-0.015 (0.011)	-0.017 (0.011)	-0.020* (0.011)	-0.019 (0.011)	-0.020* (0.011)
Log(GDP)	0.021*** (0.006)	0.023** (0.012)	0.021*** (0.006)	0.023** (0.011)	0.025** (0.010)	0.021*** (0.006)	0.022* (0.012)	0.024** (0.011)	0.021*** (0.006)	0.023* (0.012)	0.025** (0.011)
Log(population)	-0.011 (0.011)	-0.005 (0.017)	-0.011 (0.011)	-0.005 (0.017)	-0.008 (0.014)	-0.011 (0.011)	-0.004 (0.017)	-0.008 (0.014)	-0.011 (0.011)	-0.003 (0.018)	-0.007 (0.014)
Growth rate of GDP	-0.013 (0.009)	-0.012 (0.016)	-0.013 (0.009)	-0.012 (0.016)	-0.016 (0.017)	-0.013 (0.009)	-0.012 (0.016)	-0.016 (0.017)	-0.013 (0.009)	-0.012 (0.016)	-0.015 (0.017)
Joint F-test on "City" and "Newcity": p-value			0.14	0.11		0.04	0.03		0.03	0.02	
R-squared	0.08	0.19	0.08	0.19	0.17	0.08	0.19	0.18	0.08	0.19	0.18
Sample size	10,269	2,098	10,269	2,098	1,823	10,269	2,098	1,823	10,269	2,098	1,823

Note: All columns include a full set of year dummies. Coefficients and robust standard errors clustered at the prefecture level are listed. Significance levels of 10%, 5% and 1% are represented by \*, \*\* and \*\*\*. Full sample include all counties and county-level cities; restricted sample include all cities and "comparison group counties"; city sample only include cities.