Economic growth, environmental sustainability and China mayors' promotion

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ABSTRACT

In this study, we follow the concept of "promotion tournament" and extend the competition model to describe a Chinese government official's behavior, and examine the impact of economic performance and environmental quality on a Chinese mayor's political career. Empirical results show that both indicators affect the promotion of Chinese mayors, while such impacts vary across regions. We also find that there are heterogeneous results across pollution types. The main results hold for pollution that can be detected easily by the public. In contrast, less eye-catching pollution do not block a mayor from promotion significantly. Public opinions do exert pressures toward mayors' promotion. However, when considering the mayors' personal characteristics, the performance assessment mechanism is no longer remarkable, which demonstrates that the promotion of a Chinese administrative official depends more heavily on his political resume.

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1. Introduction

In last three decades, the continued rapid growth in China, known as "China miracle" astonishes the world. Since promotion impact fueled the local officials' enthusiasts of economic development, it usually has been treated as an important factor for China's economic growth as the opening reform. For most Chinese local officials, they often will stay one term (typically five years) or two terms (usually ten years) for their current position, then be evaluated by a formal evaluation system (kaohe zhidu) to decide whether they will promote or not (Whiting and Susan, 2004). This assessment mechanism transformed from mainly political achievements into primarily economic growth since the 1980s. To explain the behaviors for Chinese local officials under such evaluation system, "promotion tournament mechanism"– which meant in China's political system, when higher human-resource-management officials evaluating, appointing and dismissing subordinate officials, economic

performance was the most important factor taken into account (Li and Zhou, 2005) — had been widely accept as a research format.

Although "promotion tournament" could help regional economic growth, but its negative impact, especially in environmental aspect, cannot be ignored (Jiao et al., 2011; Liu et al., 2014). For example, promotion tournament made officials only care about local economic growth during their tenure while ignoring the accompanying environmental problems (Zhou, 2007). Some research also argued that government officials might seek their interests which could be against residents' will, such as lowering environmental standards to attract high-polluting enterprises' investment (Qian and Roland, 1998). As a result, the rapid economic growth had stimulated an increasing regional pollution (Song et al., 2015; Du et al., 2015; Zhang et al., 2016; Xie et al., 2017).

Facing such pollution challenge, the Chinese central government made a response. In 2005, the State Council issued "On the Concept of Scientific Development and Strengthening Environmental Protection," which proposed to put environmental protection into the evaluation of local governors and regarded it as an assessment basis of governors' selection, appointment, rewards, and punishments. In 2007, the State Council issued "Circular of the State Council on the Issuance of the Comprehensive Work Plan for Energy Saving and

Emission Reduction". This program directly pointed out that the target of energy conservation and emission reduction should be an important part of the comprehensive assessment of the government leading cadres, and planned to implement "one-vote negation system". Recently, the report of the 18th CPC National Congress proposed the overall layout of the "five in one", emphasized the importance of the construction of ecological civilization, and clearly pointed out that "put resource consumption, environmental damage and environmental benefits into the economic and social development evaluation system, establish a target system including assessment methods, rewards and punishments mechanism which embodied ecological civilization requirements".

However, whether the concentration for environmental issues has the impact on policy makers' careers or behaviors is still in a debate. Some researchers argued that the environmental quality had little or no impact on politicians' career (Guber, 2001; Vandeweerdt et al., 2016), while others believed that environmental issues affected politicians' career (Davis and Wurth, 2003) or their decision-making behaviors (Nelson, 2002; Mohai and Kershner, 2002; Ard, 2011). For China, although there were a lot of researchers discussed the relationship between environmental policy and economic growth (e.g., Chen, et al., 2013; Wu et al., 2013), rare research had brought this question for Chinese political promotion system.

Therefore, this paper extends the "promotion tournament" modeled (Zhou, 2004), combined with a panel dataset of "Top 100 economic performed cities" in China from 2003 to 2012, tries to answer the above question that for modern China, whether the environmental protection requirement impacts local officials political career. The rest of this article organized as follows. Section 1 presents the theoretical model and discusses our empirical hypotheses. Section 2 describes the empirical method and data used. Section 3 presents the empirical results and Section 4 concludes.

2. Theoretical model

2.1. 1Research objects

For theoretical model, we focused on city level officials' behaviors in China. In a town, the core government team composed of the city Chinese Communist Party (CCP) committee group led by the party secretary and the municipal government group led by the mayor. Among this team, a high-level city officer is usually appointed by the local CCP secretary, but the local government group executes issues such as urban development planning, capital use scheduling and other government decision-making. In spite of the fact that the relevant managerial powers dispersed among the vice-mayors, a Chinese city mayor has the final decision-making authority over all matters within the city limits. In other words, the mayors of China's cities, have the largest "free decision power." Since such power constrained by urban areas, the mayors of Chinese cities defined as the research objects in this study.

2.2. Model setup

In this research, we construct a game model to investigate the promotion competition of a Chinese mayor.[1] We follow Zhou (2004)'s framework of "promotion tournament" for Chinese officials, extends the competition model originally from Lazear and Rosen (1981) with extra consideration about environment protection and public environmental concern.

We assume that individual efforts cannot be observed, and the performance evaluation of the promotion of the region will be represented by a comprehensive evaluation indicator y_i. Thus, under the new promotion evaluation with the dual goal of economic growth and environment protection in China, we assume a_i as one mayor's economic performance effort, and b_i as environment protection effort. From previous study, Yu et al. (2014) used the GDP growth rate to measure the promotion expectation of local governors, and he discovered that there was a significantly negative relationship between local environmental pollution incidents and economic losses. Follow this idea, we assume there is a functional relationship between environmental protection and economic performance, as. $b_i = G(a_i)$, and $G' < 0$

Thus, in the two mayors' promotion competition model, performance could be observed by:

$$y_i = a_i + ma_j + \sigma G(a_i) + e_i \tag{1}$$

$$y_j = a_j + ma_i + \sigma G(a_j) + e_j \tag{2}$$

In the above equations, σ is the environmental pollution reaction factor, which captures the attention of public caused by environmental pollution.[2] Pollution that can be easily detected is more likely to be discussed by the public. Thus, $\sigma > 0$ a_i is the economic performance of mayor i, m is the spillover effect factor from mayor i's economic performance to mayor j. e_I is the random disturbance term. e_i and e_j are independent from each other, and we assume $(e_j - e_i)$ follows an independent and identical symmetric distribution, with an expectation equals 0.

Under such performance, mayor i's promotion possibility function can be written as:

$$\begin{aligned} \Pr\left(y_i - y_j > 0\right) &= \Pr\left[(1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j)) \right. \\ &\quad \left. + (e_i - e_j) > 0\right] \\ &= \Pr\left[(e_j - e_i) < (1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j))\right] \\ &= F\left[(1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j))\right] \end{aligned} \tag{3}$$

At this moment, mayor i's utility function is:

$$\begin{aligned} U(a_i) &= V * F\left[(1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j))\right] + \\ &\quad v * \left\{1 - F\left[(1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j))\right]\right\} - C(a_i) \end{aligned} \tag{4}$$

where V is the utility that mayor i been promoted, v is the utility for mayor i that mayor j had not been promoted. Both V and v are not correlated to a_i. $C(a_i)$ is the cost for mayor i's effort. And the first order condition to maximize mayor i's utility will be:

$$\begin{aligned} \frac{\partial U}{\partial a_i} &= V * f\left[(1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j))\right] * \left((1-m) + \sigma G'(a_i)\right) \\ &\quad + v * \left\{-f\left[(1-m)(a_i - a_j) + \sigma(G(a_i) - G(a_j))\right]\right\} * \left((1-m) \right. \\ &\quad \left. + \sigma G'(a_i)\right) - C'(a_i) = 0 \end{aligned} \tag{5}$$

As:

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[1] Like Lazear and Rosen (1981) and Zhou (2004), our model also could be used to describe the competition between two government departments or competition between two branches of one company.

[2] The concern about apparent pollution will be higher than inapparent one. For example, both are air pollution, the increase of industry soot is easier to be sensed by public than the increase of O_3. Thus, people will have stronger reaction to industry soot pollution than O_3 pollution.