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An Application to China's Township-Village Enterprises***

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Abstract

Using its control of regulated inputs, a government agency extracts rents from a manager who undertakes an investment. Such government rent-seeking activity leads to a typical hold-up problem. Government ownership serves as a second-best commitment mechanism, through which the government agency will restrain itself from the rent-seeking activity and may even offer the manager assistance in the form of tax breaks and subsidies. This mechanism works at a cost, however, as government ownership also compromises *ex post* managerial incentives and creates distortion in resource allocation. Nevertheless, government ownership Pareto dominates private ownership under certain conditions. These conditions correspond to a host of stylized empirical observations concerning local government-owned firms, i.e., township-village enterprises, during China's transition to a market economy.

Keywords: Government Rent Seeking, Ownership of Firms, Township and Village Enterprises, China

Journal of Economic Literature Classification Codes: D23, D72, L33.

1. Introduction

For the past two decades, China has experienced remarkable economic growth, despite the absence of an adequate system of checks and balances that hold governments, especially local governments, accountable. Local governments, using their leverage over public resources and regulatory authorities, have been able to levy seemingly arbitrary fees and charges on, and even extort bribes from, local business.² In such an environment, private enterprise played only a minor role in China's economic growth during most of the last two decades. By 1993, the private sector accounted for only about 15 percent of China's industrial output. In the same environment, however, non-state firms, i.e., firms not owned by the state government, spearheaded China's economic growth. The share of these firms in national industrial output increased from 22 percent to 42 percent between 1978 and 1993 (State Statistical Bureau, 1994). One striking example of these non-state firms is local government-controlled enterprises in rural areas, known as township-village enterprises (TVEs). The share of these enterprises in national industrial output increased from 9 percent in 1978 to 27 percent in 1993. More importantly, despite at times being predatory (Byrd and Gelb, 1990 and Whiting, 1995), local governments have been instrumental in the success of these enterprises. Studies have shown that local governments have been responsible for providing critical inputs, such as land, securing loans, and offering political support to these non-state firms.³ To put it differently, the grabbing hand of these local governments has been turned into a helping hand under local government-ownership.

Motivated by these observations, this paper explores ownership of firms in an environment in which governments are not held accountable. We show that, in such an environment, government ownership may serve as a second-best commitment mechanism to restrain local governments from rent-seeking activities. Under government ownership, a government agency subordinates its interest to the performance of the firms under its control and, hence, to the incentives of private agents managing these firms. To encourage efforts from these private agents and ultimately to advance its own interest, the government agency may become less inclined to extract rents from these agents and may even offer assistance in the form of tax breaks or subsidies. In contrast, when firms are privately owned, the government agency will extract as much rents as possible from private agents because it does not have an ongoing stake in these firms. As a result, government-owned firms may suffer less from government rent-seeking activities than private firms and, therefore, they will have more room for development.

Che and Qian (1998b) introduce a similar idea regarding government ownership helping to reduce government rent-seeking activities. In particular, these authors show that local government ownership can limit the predatory behavior of the state. This study expands the idea of that paper and demonstrates that local government ownership can actually limit rent-seeking activities by the local government itself.

During the early stage of China's economic transition, local governments controlled the allocation of various inputs, such as land, electricity, water, licensing, and financial capital. Such government control is the institutional basis for government rent-seeking. In their studies of China's local government ownership, Li (1996), Hsiao *et al* (1998), Chen and Rozelle (1999), and Tian (2000) also emphasize the privilege enjoyed by local governments over private parties, such as entrepreneurs and managers, in resource allocation. However, these analyses assume non-corrupt local governments that are useful in production. Consequently, they focus on how to make the best use of the local governments' efforts. In contrast, this paper recognizes explicitly that the local governments are not accountable, and therefore may be corrupt, and that the local governments are perhaps as counter-productive as they may be technologically useful in production. To separate this analysis from these existing studies, we therefore consider a setting where not only is there no need to offer a local government incentives in production, in fact the role of the local government is counter-productive in production. We show that, even under this condition, ownership may be allocated optimally to the local government. In particular, by acknowledging the possibility that the government-controlled inputs can be acquired in the market through bribery, this paper addresses Coase's classic question in the context of government regulated resources. Should the transaction of such resources take place in the market or within the boundary of the firm, i.e., by granting the local government ownership of the firm?

The rest of the paper is organized as follows. Section 2 introduces the model in which a manager undertakes and manages an investment that requires an input controlled by a government agency. Then the benchmark of private ownership, illustrating that government rent-seeking may completely eliminate the manager's incentives to undertake an investment, is presented. Section 3 analyzes government ownership and shows that the manager will be enticed to undertake the investment because the government agency may restrain itself from rent-seeking under government ownership. In section 4, the analysis is extended to derive several comparative static results. Section 5 concludes by linking this analysis to several stylized empirical observations concerning TVEs.

2. The Model and the Benchmark

There are two risk neutral players, a manager and a government agency. The manager possesses technical expertise necessary for an investment project and is responsible for initiating and managing the project. To initiate an investment, the manager must expend effort, denoted by e , $e \in \mathfrak{R}^+$. By taking effort e , the manager incurs a private cost, also denoted by e . Once effort is undertaken, the investment occurs with probability $\mu(e)$ where $\mu(\cdot)$ is differentiable, strictly increasing and concave and it satisfies the Inada condition.

The investment requires an input after it is initiated. The input can be land, electricity, financial capital, a license, or a quota. For a more general reference, we adopt the term used by Banerjee (1997) and refer to this input as a slot. The government agency is any local regulatory authority, such as a local government, charged by a higher-level government, which is not modeled in this paper, with the responsibility of allocating the slot.

Due to the lack of an adequate system of checks and balances, the government agency cannot be held accountable. While the slot should be allocated to the investment at the regulated price that is normalized to zero, the government agency may use its authority to collect illicitly a fee for the slot.⁴ In particular, once the investment is initiated, the government agency will make a take-it-or-leave-it offer to the manager to pay a fee, B , or the slot will not be allocated to the investment.

The illicitly charged fee is not verifiable in court. Instead, the fee-slot transaction is enforced either in the form of a spot transaction or through some informal enforcement mechanism such as reputation. Thus, the government agency allocates the slot once the manager pays the fee. If the slot is not allocated, the investment will be terminated and generate a low return that is assumed to be zero, although this assumption is relaxed later in section 4. If the slot is allocated, the investment continues and, when completed, it yields a positive return of which the expected value is R .⁵ The actual return is not contractible.

The expected return is determined by two factors. The first factor is managerial effort expended to implement the investment, denoted by a , $a \in \mathfrak{R}^+$. The manager incurs a private cost, also denoted by a , for this effort. The second factor is an unverifiable control decision x , $x \in [0, x^*]$, which affects not only the total amount of the investment return, but also the marginal productivity of managerial effort a . In this model, we interpret x to be the number of excess workers hired. Like their counterparts in other countries (Shleifer and Vishny, 1994), one of the primary objectives of local Chinese governments is to create employment opportunities for their constituents

(Song and Du, 1990; Rozelle and Boisvert, 1994; Putterman, 1997; and Jin and Qian, 1998). Although we interpret x as a decision to hire excess workers, it may be thought of more generally as any control decision that allows the government agency to interfere with the normal operation of the government-owned investment. For example, x could be an activity that diverts funds from the investment to finance local public expenditure.

The government agency does not have any productive role, from a technological perspective, in the investment. This is not to say that, in reality, Chinese local governments do not play any positive roles in the development of non-state enterprises; often they do. However, we choose to model the government agency's control decision as something unproductive in order to highlight that, even in this extreme circumstance, government ownership may still dominate private ownership.⁶ We assume that $R = f(a, x)$ where $f(\cdot, \cdot)$ is twice differentiable and concave in $\{a, x\}$. In addition, $f(\cdot, \cdot)$ is strictly increasing in a , strictly decreasing in x , and satisfies the Inada condition in $\{a, x\}$. The hiring of excess workers reduces investment return, so that $\partial f/\partial x < 0$; and it reduces the marginal productivity of the managerial effort as well, so that $\partial^2 f/(\partial a \partial x) < 0$.⁷

The control decision depends on the ownership form of the investment. We consider two ownership forms, namely, private ownership and government ownership. Under private ownership, the manager controls the hiring decision; under government ownership, the decision right is allocated to the government agency. The owner receives private benefits from making the control decision. In the context of hiring excess workers, these private benefits may be political benefits pertinent to the government agency only. Thus, without loss of generality, we assume that the manager derives no private benefits from over-staffing, but that the political benefits increase as the number of excess workers increases for the government agency. For simplicity, we assume that the political benefits of over-staffing have no social value.

The tendency for the government agency to pursue a political agenda of encouraging employment depends on factors such as the political climate that the government agency faces and the local economic condition that prevails at the time (Byrd and Gelb, 1990). These factors determine both the pressures and the rewards for the government agency to expand local employment. Instead of modeling these factors explicitly, we introduce a simple parameter θ to represent states of nature that determine the propensity for the government agency to pursue its political agenda. Let $U(x, \theta)$ represent the political benefits for the government agency. $U(x, \theta)$ is differentiable, strictly increasing and concave in x , and satisfies the Inada condition with respect to x . $\theta \in \{\theta_h, \theta_l\}$ such that $\partial U(x, \theta_h)/\partial x < \partial U(x, \theta_l)/\partial x$. In other words, the government agency finds the marginal political benefits of hiring

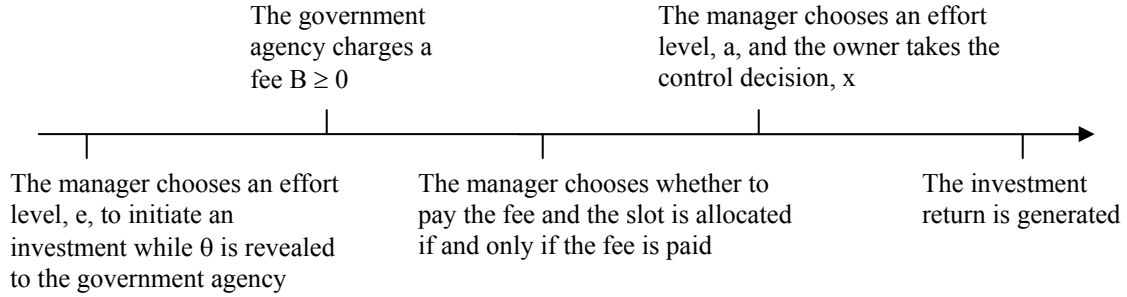
additional workers much higher in state θ_l than in state θ_h . Correspondingly, the government agency in state θ_l could be considered to be pro-politics and the government agency in state θ_h could be considered to be a pro-business government agency.

Naturally, the government agency has better information about the presence of factors that determine its propensity to pursue its own political agenda than does the manager. Thus, without loss of generality, we assume that the actual state of nature is revealed at the time when the investment is initiated only to the government agency. *Ex ante*, the manager has only an *a priori* knowledge that $\theta = \theta_h$ with probability p and $\theta = \theta_l$ with probability $1 - p$. Nevertheless, the manager may form his posterior belief about the government agency's type based upon the behavior of this government agency.⁸ The manager may have either reasonably good knowledge about the government agency's type or have very little knowledge about this. In the first case, p will be close to either 1 or 0; in the second case, p will be around $\frac{1}{2}$. One common perception is that, given the physical proximity between the local government and the local economy, especially in the context of China's TVEs, information asymmetry between the government agency and the manager may not be very significant in reality. Such a phenomenon can be captured by a p that is close to either 1 or 0. Nevertheless, it is indisputable that the manager, or other private agents, may never know for sure the true type of the government agency, even for the case of China's TVEs. As it will be shown, provided that $p \in (0, 1)$, the results of this analysis are strengthened when the information asymmetry becomes insignificant, especially when p is sufficiently close to 1.

In addition to allowing the owner to take the decision x and receive the political benefits from it, if any, the ownership form also determines the distribution of the return on investment. Under private ownership, the return accrues only to the manager. We assume that the return on investment is divided between the government agency and the manager under government ownership. To avoid the unnecessary details of how these shares are determined endogenously, we assume that the government agency receives an exogenously fixed share λ_G of the investment return and the manager receives a share of $(1 - \lambda_G)$ of the investment return.⁹

The government agency's objective is to maximize both its political benefits and the rents extracted from the investment project, either through the fee it collects or through the return on investment that it shares under government ownership. The manager's objective is to maximize the amount of rents he will receive from the investment, net of the costs of his efforts. The following figure summarizes the sequence of events under private ownership and under government ownership.

Figure 1. Sequence of Events



The appropriate solution concept is a sequential equilibrium. However, this approach often leads to multiple equilibria, some of which may be unreasonable. To eliminate unreasonable equilibria, we will apply the intuitive-criterion test (Cho and Kreps, 1987) whenever necessary. In the context of this model, the intuitive-criterion test checks whether the manager has an unreasonable posterior belief after the government agency deviates from its equilibrium behavior. Loosely speaking, suppose a government agency of a particular type, either pro-business or pro-politics, will never choose action A under any posterior belief of the manager, and yet a government agency of the other type might choose action A under some posterior belief of the manager. According to the intuitive-criterion test, a posterior belief $\rho(A)$ that assigns a positive probability to a government agency of the first type given that A is observed is considered to be unreasonable. For the rest of this paper, an equilibrium refers to a sequential equilibrium that satisfies this intuitive-criterion test.

When the government agency can be held accountable, i.e., prevented from collecting arbitrary fees, private ownership is the efficient arrangement. Under private ownership, the manager's efforts, both *ex post* implementing the investment and *ex ante* initiating the investment, achieve the social optimum; no excess workers are hired. However, private ownership may be less efficient than government ownership when the government agency is not held accountable. Below we develop a benchmark result regarding private ownership under government rent-seeking before comparing it with government ownership in the next section. The analysis proceeds by backward induction.

After the fee is paid and the slot is allocated, the manager will not hire excess workers because he derives no political benefit from this action. He supplies an effort level a to maximize $[f(a, 0) - a]$ because he has full claim to the investment return. Let a^p denote the manager's optimal *ex post* effort under private ownership. The manager's payoff at this stage will be $[f(a^p, 0) - a^p]$. Since it possesses all of the bargaining power when charging a

fee for the slot, the government agency will exploit fully its position and set a fee $B^p = [f(a^p, 0) - a^p]$. As a result, once the investment is initiated, the manager will receive zero payoff from the investment. Anticipating zero payoff from his investment, the manager will not take any effort to initiate the investment. The next proposition summarizes this result.

Proposition 1:

Under private ownership, there exists a unique equilibrium in which no investment is ever initiated.

Unless omitted, all the proofs are relegated to the Appendix. Proposition 1 highlights a typical hold-up problem faced by the manager. Once the effort to initiate the investment is undertaken and the investment project begins, the government agency will use its control of the slot to extract the entire surplus from the manager. Anticipating this, the manager will never put forth any effort to initiate the investment. Both the government agency and the manager receive a zero payoff because no investment is ever initiated.

3. From the Grabbing Hand to the Helping Hand: Government Ownership

In contrast to private ownership, government ownership may help the government agency restrain itself from excessive rent-seeking. The government agency may become less predatory towards the investment it owns and, as a result, government ownership will encourage the manager to initiate the investment. The analysis proceeds in three stages, namely, the *ex post* stage, the interim stage, and the *ex ante* stage. In the *ex post* stage, the government agency takes the hiring decision and the manager chooses effort to implement the investment. In the interim stage, the government agency collects the fee. In the *ex ante* stage, the manager chooses effort to initiate the investment.

3.1 The *Ex Post* Stage

After the fee is paid and the slot is allocated, the government agency decides on x , the number of excess workers to hire, simultaneously with the manager's choice of effort a to implement the investment.¹⁰ Anticipating managerial effort a^* , the government agency chooses x to maximize its payoff:

$$\lambda_G f(a^*, x) + U(x, \theta),$$

where $\theta \in \{\theta_h, \theta_l\}$. Let $x(a^*, \theta)$ be the reaction function of the government agency.

Lemma 1:

The reaction function of the government agency $x(a^*, \theta)$ is strictly decreasing in anticipated managerial effort a^* and, for any anticipated managerial effort a^* , $x(a^*, \theta_h) < x(a^*, \theta_l)$.

The intuition behind Lemma 1 is as follows. Given that $\partial^2 f(a, x) / (\partial a \partial x) < 0$, the marginal cost of hiring excess workers increases as the managerial effort a increases (notice that $\partial f(a, x) / \partial x < 0$). Therefore, $x(a^*, \theta)$ decreases in anticipated managerial effort a^* . The pro-business government agency hires fewer excess workers than the pro-politics government agency because the marginal benefit of hiring excess workers is lower when the government agency is pro-business, i.e., $\partial U(x, \theta_h) / \partial x < \partial U(x, \theta_l) / \partial x$.

On the other hand, the manager chooses effort anticipating the government agency's hiring decision. Since the government agency's decision depends on its type, the manager anticipates the choice of x to be at one of two levels, x_h and x_l . These two anticipated levels of hiring of excess workers, however, need to be consistent in the sense that they are responding to the same level of managerial effort. Hence, if $a^{-1}(x, \theta)$ is the inverse function of $x(a, \theta)$, we assume that x_h and x_l satisfies the following condition:

$$a^{-1}(x_h, \theta_h) = a^{-1}(x_l, \theta_l).$$

With this assumption, we redefine the manager's anticipation so that, instead of anticipating x_h and x_l , the manager anticipates what the government agency anticipates about his own effort. Let a^{**} denote such anticipation so that $x_h \equiv x(a^{**}, \theta_h)$ and $x_l \equiv x(a^{**}, \theta_l)$. The manager chooses a to maximize his payoff:

$$(1 - \lambda_G)[\rho f(a, x(a^{**}, \theta_h)) + (1 - \rho)f(a, x(a^{**}, \theta_l))] - a.$$

Let $a(a^{**}, \rho)$ be the reaction function of the manager.

When he believes that the government agency is anticipating a greater effort from him, the manager expects fewer excess workers to be hired (Lemma 1). As a result, the manager expects a higher marginal productivity of his effort and, therefore, he is willing to put forth more effort. Similarly, when he believes that the government agency is more likely to be pro-business, i.e., ρ is higher, and therefore will hire fewer excess workers (Lemma 1), the manager will increase his effort. The next lemma summarizes these two observations.

Lemma 2:

The reaction function of the manager $a(a^{**}, \rho)$ is strictly increasing in a^{**} and ρ .

Given the manager's posterior belief ρ , the equilibrium choices of a and $x(\theta)$ are determined when anticipated managerial effort equals actual managerial effort and the anticipated hiring of excess workers equals the actual hiring of excess workers. The equilibrium of the continuation game is defined by $\{a^G(\rho), x^G(\rho, \theta_h), x^G(\rho, \theta_l)\}$ where:

$$x^G(\rho, \theta_h) = x(a^G(\rho), \theta_h), x^G(\rho, \theta_l) = x(a^G(\rho), \theta_l), \text{ and}$$

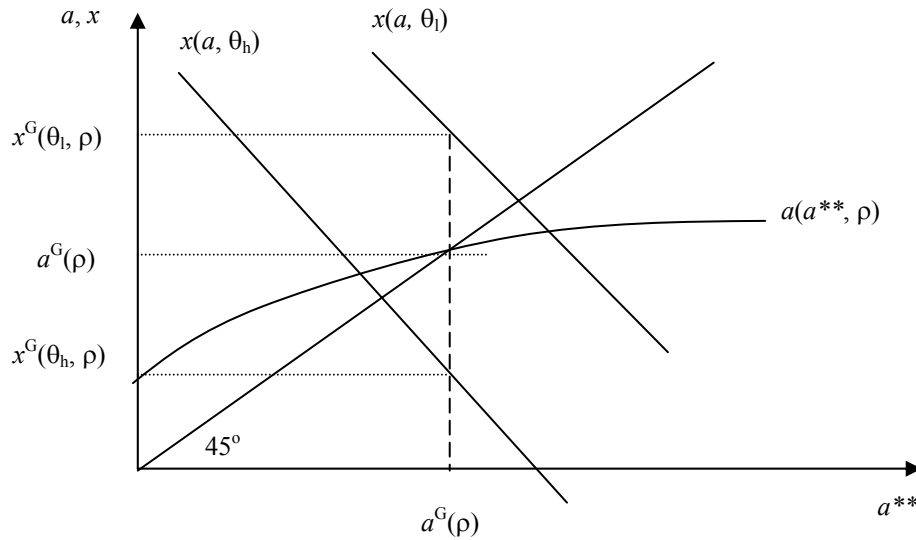
$$a^G(\rho) = a(a^{**}, \rho) \text{ such that } a(a^{**}, \rho) = a^{**}.$$

Determining the equilibrium $\{a^G(\rho), x^G(\rho, \theta_h), x^G(\rho, \theta_l)\}$ requires finding a solution to the fixed point mapping $a(a^{**}, \rho) = a^{**}$. Since $a(a^{**}, \rho)$ is increasing in a^{**} , a condition is needed to ensure that the equilibrium is stable. We assume that, for any ρ ,

$$\partial a(a^{**}, \rho) / \partial a^{**} < 1, \forall \rho. \quad (1)^{11}$$

Since $f(a, x)$ satisfies the Inada condition, $a(0, \rho) > 0$ for any ρ . Accordingly, condition (1) implies the existence of a unique stable solution to the fixed-point mapping $a(a^{**}, \rho) = a^{**}$, as shown in Figure 2. In Figure 2, given managerial effort $a^G(\rho)$, the pro-business government agency chooses $x^G(\theta_h, \rho)$ and the pro-politics government agency chooses $x^G(\theta_l, \rho)$. Anticipating these choices of the government agency, the manager puts forth effort $a^G(\rho)$. For the rest of the analysis, we assume that condition (1) always holds.

Figure 2. The Choice of a and x in the Continuation Game under Government Ownership



Proposition 2:

Given the manager's posterior belief ρ , there exists a unique equilibrium for the continuation game in which:

- (1) the pro-business government agency hires fewer excess workers than the pro-politics government agency so that

$$x^G(\rho, \theta_h) < x^G(\rho, \theta_l);$$

- (2) managerial effort $a^G(\rho)$ increases in the manager's posterior belief ρ ; and
- (3) the government agency, regardless of its type, hires fewer excess workers as the manager's posterior belief ρ increases.

The first part of Proposition 2 follows directly from Lemma 1. This observation, together with Lemma 2 demonstrates the second part of Proposition 2. Because the government agency hires fewer excess workers when it is pro-business, managerial effort increases if the manager believes that the government agency is more likely to be pro-business. The third part of Proposition 2 follows from Lemma 1 and the second part of this proposition.

Proposition 2 has two important implications. First, to solicit more effort from the manager, the government agency may try to influence the manager's posterior belief and convince him that it will not hire many excess workers. Second, because the pro-business government agency hires fewer excess workers, the marginal productivity of managerial effort is higher when the government agency is pro-business. The next lemma formalizes this last observation.

Lemma 3:

The marginal value of *ex post* managerial effort is larger for the pro-business government agency than it is for the pro-politics government agency.

Because the marginal value of managerial effort is greater for the pro-business government agency, the pro-business government agency may be able to charge a smaller fee than the pro-politics government agency is willing to charge. Therefore, the pro-business government agency can convince the manager that it is pro-business. We now turn to an analysis of the stage in which the government agency charges the fee for the slot.

3.2 The Interim Stage

At this stage, the manager forms a posterior belief regarding the government agency's type, based on how it sets the fee. Without loss of generality, we focus on the pure strategy adopted by the government agency, which is defined as the fee charged given the state of nature θ , only. A pure-strategy sequential equilibrium can be either

separating or pooling. In a separating equilibrium, the pro-business government agency and the pro-politics government agency charge a different amount for the fee. Let B_h denote the fee charged by the pro-business government agency and B_l that charged by the pro-politics government agency with $B_h \neq B_l$. In such an equilibrium, the manager has posterior belief such that $\rho(B = B_h) = 1$ and $\rho(B = B_l) = 0$. In a pooling equilibrium, the pro-business government agency and the pro-politics government agency charge the same fee, denoted by B_{hl} . Then, the manager's posterior belief will be $\rho(B = B_{hl}) = p$. We show that there exists a unique equilibrium, which is separating.

Define $v^G(\rho = 0)$ and $v^G(\rho = 1)$ as the payoffs received by the manager in a separating equilibrium after he pays the fee charged by the pro-politics and pro-business government agencies, respectively. These payoffs determine the maximum fees that these government agencies can extract in a separating equilibrium. Fewer excessive workers are hired and greater managerial effort is exerted if the government agency is pro-business. Therefore, in a separating equilibrium, the maximal fee extractable by the government agency is higher when the government agency is pro-business. Hence, we have Lemma 4.

Lemma 4:

Under government ownership, the maximum fee that the government agency can extract in a separating equilibrium is higher when the government agency is pro-business, i.e., $v^G(\rho = 1) > v^G(\rho = 0)$.

Proposition 3:

Under government ownership, there exists a unique equilibrium, which has the following properties:

- (1) the fee charged by the pro-business government agency is strictly less than that charged by the pro-politics government agency, i.e., $B_h < B_l$; and
- (2) the pro-politics government agency extracts all the rents from the manager, i.e., $B_l = v^G(\rho = 0)$; whereas the pro-business government agency does not, i.e., $B_h < v^G(\rho = 1)$.

The intuition for these results is as follows. In order to separate itself from the pro-politics government agency, the pro-business government agency must charge a smaller fee. Otherwise, the pro-politics government agency could charge the same fee and, at the same time, receive more managerial effort from the deceived manager.

Since the pro-business government agency charges a smaller fee, the pro-politics government agency faces a trade-off. It can either receive more managerial effort by charging the same fee or it can receive less managerial effort by charging a larger fee in equilibrium. Since the marginal value of the managerial effort is lower for the pro-politics government agency, the pro-politics government agency will opt for the second choice if the fee charged by the pro-business government agency is sufficiently small.

As it trades off managerial effort for a larger amount of fee, the pro-politics government agency exploits fully its bargaining power and extracts all the rents from the manager. Thus, $B_l = v^G(\rho = 0)$. Furthermore, since $v^G(\rho = 1) > v^G(\rho = 0)$ from Lemma 4, it follows that $B_h < v^G(\rho = 1)$. In other words, the manager is able to retain some of the rents from the investment when the government agency is pro-business.

3.3 The *Ex Ante* Stage

Proposition 3 presents the central result that government ownership can serve as a credible commitment mechanism through which the government agency may restrain itself from exercising fully its bargaining power. Therefore, government ownership may help alleviate the hold-up problem. Indeed, the *ex ante* payoff for the manager, denoted by V^G , will be $V^G = p(v^G(\rho = 1) - B_h) > 0$. *Ex ante*, the manager chooses e to maximize $[\mu(e)V^G - e]$.

Corollary 1:

- (1) The manager has a positive incentive to initiate the investment under government ownership; and
- (2) government ownership Pareto dominates private ownership.

The analysis presented above offers a new insight into why local government-owned firms, instead of private firms, have become the driving force behind China's rapid economic growth. During the early period of China's transition to market, input markets were not liberalized. Inputs, especially those crucial to business activities, were under stringent government control. Such an environment, plus the lack of institutional mechanisms to hold governments accountable, provided fertile ground for government rent-seeking and private incentives suffered. Local government ownership, represented by China's TVEs, helped these governments restrain

themselves from taking full advantage of their bargaining power and thus protected private incentives that were pivotal to economic performance. When other conditions were suitable, i.e., the presence of low cost labor and market opportunities, local government ownership allowed the non-state sector to grow rapidly in China.

The analysis also unravels a paradox regarding local government-owned enterprises in China. Although these enterprises have contributed significantly to China's remarkable economic growth, empirical studies find that local governments use their enterprises to pursue their own political agenda, making these enterprises arguably less productive than their private counterparts. This analysis recognizes the possible inefficiency of government ownership compared with private ownership, conditional on investments being initiated under both ownership forms. However, exactly such supposed inefficiency, i.e., government intervention in investment and agency cost in soliciting managerial incentives, that has made the initiation of investments more likely under government ownership.

Furthermore, the analysis indicates that a rent-seeking government agency may turn its grabbing hand toward private firms into a helping hand toward government-owned firms. To see this point, notice that B_h is set so that the incentive compatibility constraint for the pro-politics government agency is binding. That is:

$$\begin{aligned} \lambda_G f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) + U(x^G(\rho = 0, \theta_i), \theta_i) + B_l = \\ \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_i)) + U(x^G(\rho = 1, \theta_i), \theta_i) + B_h. \end{aligned}$$

Since $B_l = (1 - \lambda_G)f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) - a(\rho = 0)$, we have:

$$\begin{aligned} B_h = f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) + U(x^G(\rho = 0, \theta_i), \theta_i) - a(\rho = 0) \\ - [\lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_i)) + U(x^G(\rho = 1, \theta_i), \theta_i)]. \end{aligned}$$

In other words, $B_h \geq 0$ if and only if:

$$\begin{aligned} f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) + U(x^G(\rho = 0, \theta_i), \theta_i) - a(\rho = 0) \\ \geq \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_i)) + U(x^G(\rho = 1, \theta_i), \theta_i). \end{aligned} \tag{2}$$

Corollary 2:

Under government ownership, the pro-business government agency will charge a fee to the firm if (2) holds, but will offer a subsidy otherwise.

Since the government agency is delegated by a higher-level government to regulate the allocation of the slot, the subsidy may also be interpreted as the government agency hiding fiscal revenues from the higher-level government. This interpretation sheds light on a phenomenon, which has sometimes been observed in China, that local governments offer tax rebates and concessions to the local government-owned enterprises without approval from the central government (Berkowitz and Li, 2000). The central government opposed such a practice, known as hiding fortune at your constituents or *cang fu yu min*, because it could lead to a loss of the central government's fiscal revenues. This practice is in sharp contrast to local governments collecting arbitrary fees and taxes from private enterprises. Nevertheless, by neglecting the responsibility of collecting revenues on behalf of the central government, the local governments can actually motivate managers to take more effort and, thus, increase revenues that accrue to the local governments directly.

The next proposition, which follows directly from the discussion above, summarizes the results in this section.

Proposition 4:

Suppose that $B \in (-\infty, \infty)$. Under government ownership, there exists a unique equilibrium in which:

- (1) the pro-business government agency collects a smaller fee than the pro-politics government agency if condition (2) holds;
- (2) the pro-business government agency offers a subsidy while the pro-politics government agency collects a fee if condition (2) does not hold;
- (3) the manager has a positive incentive to initiate the investment; and
- (4) government ownership Pareto dominates private ownership.

4. From Government Ownership to Private Ownership: the Comparative Statics

The analysis in the previous section characterizes a situation in which government ownership Pareto dominates private ownership. However, two rather restrictive assumptions are applied. First, investment cannot take place, and therefore will yield no return, if the manager is denied the slot. Second, the government agency can offer an unbounded subsidy if necessary. In this section, we relax these two assumptions. First, if the manager is denied the slot, we assume that investment can still take place but that it will yield a smaller return, which, for simplicity, is assumed to be a fixed amount and is denoted by r . Second, the government agency faces a fiscal budget constraint \underline{B} such that $B \in [-\underline{B}, \infty)$. These two alternative assumptions afford a more balanced comparison between private ownership and government ownership.

The qualitative analysis concerning private ownership remains the same, except that the *ex ante* payoff that the manager receives, denoted by V^P , is:

$$V^P = r,$$

because the government agency is able to charge a fee of $B^P = [f(a^P, 0) - a^P - r]$ only. Provided that $B_h \geq -\underline{B}$, the qualitative analysis concerning government ownership remains unchanged.

Suppose that $B_h \geq -\underline{B}$; under government ownership, the pro-politics government agency will charge B_l such that $B_l = [v^G(\rho = 0) - (1 - \lambda_G)r]$, where $v^G(\rho = 0)$ is the payoff that the manager receives after he pays B_l . The pro-business government agency will choose a fee or subsidy B_h such that:

$$B_h = f(a^G(\rho = 0), x^G(\rho = 0, \theta_l)) + U(x^G(\rho = 0, \theta_l), \theta_l) - a(\rho = 0) - (1 - \lambda_G)r \\ - [\lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_l)) + U(x^G(\rho = 1, \theta_l), \theta_l)].$$

The separating equilibrium exists if $B_h \geq -\underline{B}$, or if:

$$f(a^G(\rho = 0), x^G(\rho = 0, \theta_l)) + U(x^G(\rho = 0, \theta_l), \theta_l) - a(\rho = 0) \\ - [\lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_l)) + U(x^G(\rho = 1, \theta_l), \theta_l)] \geq -\underline{B} + (1 - \lambda_G)r. \quad (2)'$$

In such an equilibrium, the *ex ante* payoff to the manager is:

$$V^G = p\{(1 - \lambda_G)f(a(\rho = 1), x(\rho = 1, \theta_h)) - a(\rho = 1) - B_h\} + (1 - p)(1 - \lambda_G)r.$$

Lemma 5:

$$\partial V^P / \partial r > \partial V^G / \partial r > 0.$$

The amount of return generated by the investment without the slot reflects the critical nature of the slot to the investment project. According to Lemma 5, the less critical is the slot, i.e., the larger is r , the larger is the *ex ante* payoff that the manager receives from the investment. Furthermore, the manager's *ex ante* payoff increases faster in r under private ownership than under government ownership. Under private ownership, the manager is the only one to have a claim over r ; whereas, under government ownership, r is shared between the government agency and the manager. Since the manager's *ex ante* payoff is larger under government ownership than under private ownership when $r = 0$, Lemma 5 implies that there exists a threshold of r beyond which private ownership, instead of government ownership, promotes better *ex ante* managerial incentives.

Suppose $B_h < -\underline{B}$ instead. In this case, a separating equilibrium under government ownership will no longer exist. Rather, a continuum of pooling equilibria will emerge. In all these equilibria, the government agency's type is not revealed. Accordingly, the government agency will have no incentive to restrain itself from rent-seeking activities, regardless of whether it is pro-business or pro-politics. Hence, we will focus on the pooling equilibrium in which both types of the government agency set the fee to extract as much rent as possible from the manager. Therefore, we have:

$$B_{hi} = (1 - \lambda_G)[pf(a^G(\rho = p), x^G(\rho = p, \theta_h)) + (1 - p)f(a^G(\rho = p), x^G(\rho = p, \theta_l))] - a^G(\rho = p) - (1 - \lambda_G)r.$$

The *ex ante* payoff to the manager in such an equilibrium is:

$$V^G = (1 - \lambda_G)r.$$

Obviously, $V^G < V^P$; in other words, private ownership rather than government ownership promotes better *ex ante* managerial incentives.

Whether government ownership or private ownership should be adopted depends on the trade-off between *ex ante* managerial incentives and *ex post* efficiency. Given the assumption that the political benefits received by the government agency from hiring excess workers do not have any social value, the social surplus under private ownership is:

$$SS^P = \mu(e^P)[f(a^P, x^P = 0) - a^P] - e^P;$$

and the social surplus under government ownership is:

$$SS^G = \mu(e^G)\{p[f(a^G(\rho = 1), x^G(\rho = 1, \theta_h) - a^G(\rho = 1))] + (1 - p)[f(a^G(\rho = 0), x^G(\rho = 0, \theta_l) - a^G(\rho = 0))] - e^G.$$

Since private ownership is always *ex post* efficient, government ownership may be more efficient than private ownership only if it improves *ex ante* managerial incentives. Therefore, we conclude with Proposition 5.

Proposition 5:

Government ownership is more efficient than private ownership only if:

- (1) the slot is critical to the investment, i.e., r is sufficiently small;
- (2) the government agency has a sufficiently large fiscal budget when condition (2) does not hold; and
- (3) the government agency is likely to be pro-business, i.e., p is sufficiently close and yet not equal to 1.

We add a final note to highlight the importance of the information asymmetry between the manager and the government agency in determining the possible dominance of government ownership.

Corollary 3:

Private ownership weakly dominates government ownership if $p = 1$ or $p = 0$.

5. Conclusion: Interpreting China's Township-Village Enterprises

We began this paper with the observation that private enterprises in China have often suffered from the encroachment of local governments whereas firms with local government ownership have flourished under the support of local governments. Then we show how certain ownership arrangements, especially government ownership, can serve as a commitment mechanism through which government agencies will restrain themselves from rent-seeking activities. Such commitment is shown to have the potential of promoting private incentives and ultimately benefiting government agencies themselves. In this conclusion, we use the analysis to shed light on the relative success of local government-owned enterprises in China and discuss their future.

Our analysis is consistent with several stylized observations of China's TVEs. Conventional wisdom considers the rise of local government-owned enterprises in China to be related closely to the underdevelopment of input markets and that local governments have contributed critical inputs to the growth of these enterprises (Chang and Wang, 1994; Naughton, 1994 and 1996; Putterman, 1997; Chen and Rozelle, 1999; and Tian, 2000). For example, Naughton (1994) suggests that the control of critical inputs, e.g., land, by local governments is an important factor explaining the emergence of China's TVEs. Our analysis formalizes this argument by showing that government ownership dominates private ownership only when the inputs that the government agency controls are critical.

More importantly, our analysis explains why the critical inputs must be acquired within the boundary of the firm instead of through market transactions. The critical-input argument itself cannot rationalize an ownership arrangement. According to the property rights literature, ownership rights enhance the bargaining power of the party to whom the rights are allocated (Grossman and Hart, 1986 and Hart and Moore, 1990). For an environment in which incentives of private parties are important and local governments are often counter-productive, ownership rights should be allocated to private parties, e.g., managers or entrepreneurs, and the acquisition of critical inputs should take place through market transactions as Corollary 3 demonstrates. This analysis adds a twist to the existing property rights literature by capturing two salient features in the government-management relation for China's TVEs.¹² First, by having control of the firm, the local government is likely to interfere with the management and such interference can be counterproductive instead of productive. Second, the manager of a TVE can never be

absolutely certain whether and how the local government will interfere with the management. As this analysis shows, these two features help account for the nature of government ownership of TVEs. In particular, when allocating inputs to a firm, the local government may become lenient if it owns the firm, but will behave aggressively otherwise. When the inputs are critical, government ownership emerges as a dominant ownership form because leniency is especially valuable in this situation. Without leniency, the local government is able to appropriate large rents from the firm.

The government-controlled input in our analysis should be interpreted more broadly than merely a physical input and might represent the political favor and support provided by local governments. In the early stage of China's economic transition, the political environment was hostile not only towards private enterprises, but also towards TVEs. As they penetrated the traditional turf of state-owned enterprises, TVEs were considered a threat to the state sector. Despite this, TVEs were able to thrive thanks to the political favor and support granted by the local governments (Nee, 1992 and Li, 1996). Some of these enterprises were created by entrepreneurs as private firms and later registered as TVEs. Other TVEs were first established by local governments, but later employed private entrepreneurs in management. In either case, both private entrepreneurs and local governments found it in their interests to team up together.

The rapid development of China's TVEs did not take place until the early 1980's when fiscal decentralization was introduced. Fiscal decentralization devolved fiscal authorities from the central government to local governments and allowed the latter to maintain a large share of the fiscal revenues generated from the local economy. Hence, it created incentives for local governments to promote local economies (Oi, 1992 and 1999; Wong, 1992; Qian and Weingast, 1996; and Berkowitz and Li, 2000). As our analysis suggests, the dominance of local government ownership requires the local government to be able to retain the fiscal revenues generated from the firm and not hand them over to higher-level governments. However, why did TVEs instead of private enterprises benefit particularly from fiscal decentralization? By alluding to corruption, our analysis suggests that fiscal incentives will not stop local governments from behaving in a predatory manner toward private firms. Indeed, the government agency will try to extract as much rent as possible from a private firm even when the firm generates tax revenues. In contrast, fiscal incentives will induce the government agency to restrain itself from rent-seeking activities when it owns the firm.

An important implication of our analysis is that the ownership form of China's TVEs will evolve in response to the dynamics of the institutional environment. At least two institutional changes will have significant impacts on the ownership arrangement. The first is the liberalization in ideology and the emergence of a political climate under which the development of the non-state sector, and private firms in particular, will be regarded as legitimate and an integral part of China's economic transition. Such a change in ideology and government policies towards private firms may induce a transformation of TVEs from government ownership to private ownership. The second is the development of input markets. As input markets are liberalized, an increasing number of inputs will be allocated through market mechanisms, free of bureaucratic discretion. The development of the input markets will decrease the local government's bargaining power *vis-à-vis* private enterprises as government-regulated inputs become increasingly less relevant. It will also give rise to increased mobility for local enterprises and induce competition among local governments, which will reduce their bargaining power even further. In a recent empirical study, Jin and Qian (1998) show that the role of local government owned-enterprises has become less prominent in areas with better-developed product markets (see also, Chen and Rozelle, 1999 and Tian, 2000).

The development of China's TVEs was not uniform across regions even during the early stage of economic reform. Our analysis suggests that TVEs are likely to emerge when the local government is more likely to be pro-business and has a well-endowed fiscal budget. For example, in their study of China's local government-owned enterprises, Byrd and Gelb (1990) find that, in relatively prosperous areas, the relationship between community governments and their enterprises tends to be mutually beneficial but, in poorer areas, governments are forced to exploit their enterprises, to the long-term detriment of both firms and community.

In contrast to local government-owned enterprises, which have been the driving force of China's recent economic development, many state-owned enterprises have had deteriorating financial performances in recent years despite on-going enterprise reforms. In 1994, more than 40 percent of the state-owned enterprises incurred losses, which amounted to 6.1 percent of total industrial value added and one percent of China's GDP. There are many factors attributable to the lack-luster performance of state-owned enterprises. It is not the purpose of this paper to examine these factors. However, we draw an important implication from our analysis. Like local government-owned enterprises, state-owned enterprises from time to time rely on government agencies at the local level to provide inputs under regulation. However, unlike local government-owned enterprises, state-owned enterprises hand over a large share of their returns to the central government, which either controls directly these enterprises or

delegates the control to local governments. Because government agencies at the local level do not receive a significant share of revenues from state-owned enterprises, they have less incentive to help these enterprises overcome bureaucratic barriers in acquiring government-controlled inputs. For the same reason, when these local government agencies exercise control over state-owned enterprises on behalf of the usually pro-politics central government, they will be pro-politics as well, which adds to the troubles of the embattled state-owned enterprises.

The current study is a partial equilibrium analysis. By considering the interaction between institutional dynamics, e.g., the liberalized input markets, and the evolution of ownership forms, the relationship between the development of local government ownership and the dual track reform in China, where resources are allocated both through plans and on the emerging markets, could be analyzed. Another interesting extension would be to study how the organization of government institution affects the ownership of a firm. The organization of government institution can be characterized as the allocation of many different slots among various government agencies. Such a study would help us to understand why the relative success of local government ownership remains a phenomenon peculiar to China, but is not observed in Russia and other transition countries.

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Appendix

Proof of Lemma 3:

Denote the payoff of the government agency at this stage as:

$$w(\theta; a(\rho)) = \lambda_G f(a^G(\rho), x^G(\rho, \theta)) + U(x^G(\rho, \theta), \theta),$$

where $\theta \in \{\theta_h, \theta_l\}$. Differentiate $w(\theta; a(\rho))$ with respect to ρ . Using the envelope theorem, we obtain:

$$\partial w(\theta; a(\rho))/\partial \rho = \lambda_G [\partial f(a^G(\rho), x^G(\rho, \theta))/\partial a] (\partial a/\partial \rho).$$

Since $x^G(\rho, \theta_h) < x^G(\rho, \theta_l)$ according to Proposition 2, and since $\partial^2 f/(\partial a \partial x) < 0$,

$$\partial f(a^G(\rho), x^G(\rho, \theta_h))/\partial a > \partial f(a^G(\rho), x^G(\rho, \theta_l))/\partial a.$$

In other words,

$$\partial w(\theta_h; a(\rho))/\partial \rho > \partial w(\theta_l; a(\rho))/\partial \rho. \quad \text{Q.E.D.}$$

Proof of Lemma 4:

By definition,

$$v^G(\rho = 0) = (1 - \lambda_G) f(a^G(\rho = 0), x^G(\rho = 0, \theta_l)) - a(\rho = 0), \text{ and}$$

$$v^G(\rho = 1) = (1 - \lambda_G) f(a^G(\rho = 1), x^G(\rho = 1, \theta_h)) - a(\rho = 1).$$

Since $x^G(\rho = 1, \theta_h) < x^G(\rho = 0, \theta_h)$, according to the third part of Proposition 2, and $x^G(\rho = 0, \theta_h) < x^G(\rho = 0, \theta_l)$, according to the first part of Proposition 2, the result is obtained using the envelope theorem. Q.E.D.

Proof of Proposition 3:

Let $W(B, a; \theta)$ denote the government agency's payoff at this stage:

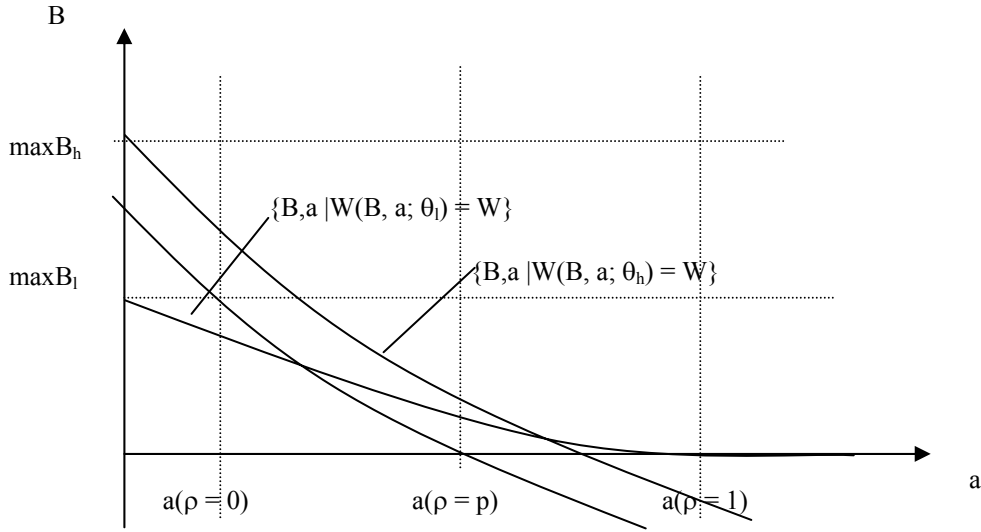
$$W(B, a; \theta) = \lambda_G f(a, x) + U(x, \theta) + B,$$

where $\theta \in \{\theta_h, \theta_l\}$. According to Lemma 3, $W(B, a; \theta)$ has a single crossing property. Hence, for any (B, a) ,

$$W_a/W_B(\theta = \theta_h) > W_a/W_B(\theta = \theta_l),$$

where $W_a = \partial W/\partial a$ and $W_B = \partial W/\partial B$. Therefore, we can draw indifference curves for the high-type agency, i.e., the pro-business agency, and the low-type agency, i.e., the pro-politics agency, in the $\{B, a\}$ space as shown in Figure 3.

Figure 2. The Choice of a and x in the Continuation Game under Government Ownership



In Figure 3, notice that the indifference curves for the pro-business government agency are everywhere steeper than the indifference curves for the pro-politics government agency because of the single-crossing property. With this in mind, we proceed to prove the proposition.

First, there exists no pooling equilibrium that survives the intuitive-criterion test because, given the single-crossing property, there exists a B for any pooling equilibrium B_{hl} such that $B \neq B_{hl}$ and:

$$\begin{aligned} \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_h)) + U(x^G(\rho = 1, \theta_h); \theta_h) + B > \\ \lambda_G f(a^G(\rho = p), x^G(\rho = p, \theta_h)) + U(x^G(\rho = p, \theta_h); \theta_h) + B_{hl}, \end{aligned}$$

while at the same time:

$$\begin{aligned} \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_l)) + U(x^G(\rho = 1, \theta_l); \theta_h) + B < \\ \lambda_G f(a^G(\rho = p), x^G(\rho = p, \theta_l)) + U(x^G(\rho = p, \theta_l); \theta_l) + B_{hl}. \end{aligned}$$

In other words, for any pooling equilibrium B_{hl} , there exists a different fee that the pro-business agency only will find profitable and thus charge under certain posterior beliefs of the manger.

Second, the government agency, regardless of its type, can do no worse than charge a fee leading the manager to form the worst belief of its type. In particular, the pro-business government agency's payoff is bounded below by:

$$\begin{aligned} W(B = v^G(\rho = 0), a^G(\rho = 0); \theta_h) = \lambda_G f(a^G(\rho = 0), x^G(\rho = 0, \theta_h)) + U(x^G(\rho = 0, \theta_h); \theta_h) \\ + (1 - \lambda_G) f(a^G(\rho = 0), x^G(\rho = 0, \theta_l)) - a^G(\rho = 0), \end{aligned}$$

and the pro-politics government agency's payoff is bounded below by:

$$W(B = v^G(\rho = 0), a^G(\rho = 0); \theta_i) = f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) + U(x^G(\rho = 0, \theta_i); \theta_i) - a^G(\rho = 0).$$

In a separating equilibrium that survives the intuitive-criterion test, the pro-politics agency must charge the fee:

$$B_l = (1 - \lambda_G)f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) - a^G(\rho = 0);$$

and B_h must be such that the pro-politics government agency does no worse than $W(B = v^G(\rho = 0), a^G(\rho = 0); \theta_h)$.

Hence, we obtain:

$$\begin{aligned} \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_h)) + U(x^G(\rho = 1, \theta_h); \theta_h) + B_h &\geq \\ \lambda_G f(a^G(\rho = 0), x^G(\rho = 0, \theta_h)) + U(x^G(\rho = 0, \theta_h); \theta_h) & \\ + (1 - \lambda_G)f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) - a^G(\rho = 0). & \quad (*) \end{aligned}$$

Such a separating equilibrium exists if B_l and B_h also satisfy the incentive compatibility conditions, that is, the pro-business government agency will not find B_l preferable, which is condition (*) and the pro-politics government agency will not find B_h preferable, which requires:

$$\begin{aligned} \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_i)) + U(x^G(\rho = 1, \theta_i); \theta_i) + B_h &\leq \\ f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) + U(x^G(\rho = 0, \theta_i); \theta_i) - a^G(\rho = 0). & \quad (**) \end{aligned}$$

Obviously, for a sequential equilibrium that survives the intuitive-criterion test, one of these two conditions must be binding. When condition (**) is binding, condition (*) is reduced to:

$$\begin{aligned} \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_h)) + U(x^G(\rho = 1, \theta_h); \theta_h) - \lambda_G f(a^G(\rho = 0), x^G(\rho = 0, \theta_h)) - U(x^G(\rho = 0, \theta_h); \theta_h) &\geq \\ \lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_i)) + U(x^G(\rho = 1, \theta_i); \theta_i) - \lambda_G f(a^G(\rho = 0), x^G(\rho = 0, \theta_i)) - U(x^G(\rho = 0, \theta_i); \theta_i), & \end{aligned}$$

which holds according to Lemma 3.

Therefore, there exists a unique equilibrium, which is separating; in this equilibrium, the pro-politics government agency will charge $B_l = (1 - \lambda_G)f(a^G(\rho = 0)) - a^G(\rho = 0)$ and the pro-business government agency will charge $B_h \geq 0$ so that condition (**) holds with equality. Q.E.D.

Proof of Lemma 5:

Under private ownership, $\partial V^P / \partial r = 1$. Under government ownership, $\partial V^G / \partial r = -p \partial B_h / \partial r + (1 - p)(1 - \lambda_G)$.

To evaluate $\partial B_h / \partial r$, notice that, in a separating equilibrium that survives the intuitive-criterion test, the pro-politics government agency collects a fee $B_l = [v^G(\rho = 0) - r]$ and the pro-business government agency chooses a fee B_h that the pro-politics government agency does not find preferable.

Hence, the pro-politics government agency has payoff:

$$\lambda_G f(a(\rho = 0), x(\rho = 0, \theta_l)) + U(x(\rho = 0, \theta_l), \theta_l) + v^G(\rho = 0) - (1 - \lambda_G)r.$$

For $B_h \geq -\underline{B}$, the pro-business government agency must choose B_h to satisfy:

$$\begin{aligned} \lambda_G f(a(\rho = 0), x(\rho = 0, \theta_l)) + U(x(\rho = 0, \theta_l), \theta_l) + v^G(\rho = 0) - (1 - \lambda_G)r = \\ \lambda_G f(a(\rho = 1), x(\rho = 1, \theta_l)) + U(x(\rho = 1, \theta_l), \theta_l) + B_h, \end{aligned}$$

in which case $\partial B_h / \partial r = - (1 - \lambda_G)$. This holds when B_h satisfies the condition $B_h \geq -\underline{B}$, which now is

$$\begin{aligned} f(a^G(\rho = 0), x^G(\rho = 0, \theta_l)) + U(x^G(\rho = 0, \theta_l), \theta_l) - a(\rho = 0) \\ - [\lambda_G f(a^G(\rho = 1), x^G(\rho = 1, \theta_l)) + U(x^G(\rho = 1, \theta_l), \theta_l)] \geq -\underline{B} + (1 - \lambda_G)r \end{aligned} \quad (2)'$$

When condition (2)' does not hold, the pro-business government agency will pay a subsidy $B_h < 0$ such that the pro-politics government agency does not want to follow its behavior. Hence, we obtain:

$$\begin{aligned} \lambda_G f(a(\rho = 0), x(\rho = 0, \theta_l)) + U(x(\rho = 0, \theta_l), \theta_l) + v^G(\rho = 0) - (1 - \lambda_G)r = \\ \lambda_G f(a(\rho = 1), x(\rho = 1, \theta_l)) + U(x(\rho = 1, \theta_l), \theta_l) + (1 - \lambda_G)B_h, \end{aligned}$$

in which case, $\partial B_h / \partial r = -1$.

In either case, $\partial V^G / \partial r \in (0, 1)$. Hence, $\partial V^P / \partial r > \partial V^G / \partial r > 0$.

Q.E.D.

End Notes

¹ This paper is based upon an earlier paper entitled “From the Grabbing Hand to the Helping Hand” (Che, 1997). I thank Michael Alexeev, Daniel Berkowitz, Hongbin Cai, Uday Rajan, Thomas Rawski, Li-An Zhou, two anonymous referees, seminar participants at 1997 annual international conference on transition economics, Carnegie Mellon University, Harvard Business School, INSEAD, UCLA, UC Riverside, UC Santa Barbara, University of Pittsburgh, and especially Laixiang Sun and John Bonin for helpful comments. I am also grateful to the Euro-Asia Center, INSEAD for offering me a wonderful facility to complete the revision of this paper. All errors remain mine.

² Indeed, local government agencies collecting illicit fees, charges, and tolls has been one of the major concerns during the recent efforts in reforming government organizations and the tax system in China.

³ For example, Byrd (1990) suggests that the presence of local governments in the ownership of TVEs has been pivotal in securing loans from government-controlled banks (see also, Zhang and Ronnas, 1996). Nee (1992) maintains that TVEs have benefited from the political connections of local governments in expanding their market reach. Others like Chang and Wang (1994), Naughton (1994, 1996), and Putterman (1997) argue that local governments had contributed critical inputs, such as land, initial collective assets, and human capital to the development of these enterprises. Local governments are also said to provide political protection for TVEs (Che and Qian, 1998b and Li, 1996).

⁴ The fee may be collected by a government agency to cover its local fiscal expenditures. Indeed, many local government agencies in China have an extra budget that is not monitored closely by higher-level governments (Qian and Weingast, 1996) and is disposable for local fiscal expenditures. The fee may also be collected by a government official to put into his own pocket; in which case, this fee is better described as a bribe.

⁵ The expectation is conditional on the investment having taken place.

⁶ Alternatively, we can model the control decision as some productive activity, but this will only strengthen the paper’s argument that government ownership may dominate private ownership.

⁷ This assumption can be justified easily. For example, imagine a scenario where over-staffing requires more managerial effort for monitoring to prevent theft or embezzlement and, thus, leads to lower marginal productivity under diminishing marginal productivity.

⁸ The manager's posterior belief becomes irrelevant if the agency does not allocate the slot; in which case, the project will be terminated.

⁹ The manager shares the investment return perhaps because he is the only one who has the technological expertise necessary for the investment. One may endogenize these shares, using the framework of Grossman and Hart (1986) and Hart and Moore (1990).

¹⁰ The qualitative results of this paper hold as long as the government agency chooses x no earlier than the manager decides on a . Such sequence rules out the possibility that the government agency uses the choice of x to signal its type. Even if the government agency does choose x prior to the manager exerting his effort, the qualitative results of this analysis may still hold if the manager can observe x only with some noise.

¹¹ This condition holds if $\lambda_G f_{xa}^2 > \lambda_G f_{xx} f_{aa} + U_{xx} f_{aa}$ holds for both θ_h and θ_l , where f_{aa} is the second derivative of $f(.,.)$ with respect to a , f_{xx} is the second derivative of $f(.,.)$ with respect to x , f_{xa} is the cross derivative of $f(.,.)$ with respect to x and a , and U_{xx} is the second derivative of $U(.,.)$ with respect to x .

¹² Similar to this paper, Chiu (1998) also shows that a party's investment incentive may increase when ownership of an asset is allocated away from him. The mechanism, however, is completely different from the one in this paper. In Chiu (1998), parties' outside options place constraints on the *ex post* bargaining outcome.

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