

**An Alternative to Privatization of Transition Economy State-Owned Enterprises:
The Case of China**

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ABSTRACT

Recent literature has focused on privatization in addressing the issue of making state-owned enterprises (SOEs) more competitive in the global marketplace. As a result, a number of SOEs have been privatized in many transition economies. Unfortunately, there have not been major performance improvements in the aftermath of privatization within these contexts. Therefore, we are interested in exploring whether privatization is an incomplete or maybe even erroneous solution to making transition economy SOEs more competitive. Using China as an illustration, this paper analyzes the possibility of employing contractual incentives as an alternative strategy in conquering SOE inefficiency, and proposes that a well-designed incentive system will work as an effective countermeasure as opposed to straightforward privatization in solving the SOE problems in transition economies.

1. INTRODUCTION

Standing at the core of their economies, transition economy SOEs have had an unsatisfactory performance spanning the differences of country and time (Li et al., 2005). Under economic transition, a series of reforms were introduced to improve SOE efficiency, the responsibility for output decisions was shifted from the state to the firm, and firms were allowed to retain more of their profits (Qian, 1996; Zhu, 1999). Nevertheless, the SOEs have had an extremely poor performance during the past two decades. In China, for example, the SOEs' share of total industrial output declined from 77.6% in 1978 to 28.4% in 1996; the SOEs' rate of return on net fixed assets descended from 22% in 1978 to 1.8% in 1996 (China Statistical Year Book, 1997); and over 40 percent of SOEs are losing money (Lin, Cai and Li, 1998). The question is what the root of these SOEs' poor performance is and why the access to additional government resources has not made the SOEs more competitive.

Recent literature has demonstrated both theoretically and empirically that the ownership structure plays a crucial role in enterprise performance (Grossman and Hart, 1986; Li, Li and Zhang, 2000) and hereby considers ownership reform as a key element in the economic transition (Boisot and Child, 1996; Park, Li and Tse, 2006; Walder, 1995). Given this widespread belief in the superiority of private ownership, a number of SOEs have been privatized during the past two decades in many transition economies (Behrman and Rondinelli, 2000). In China, 86% of a total of approximately 87,000 industrial SOEs had been restructured by 2002, 70% of which had been fully or partially privatized (Leila and Huchet, 2006). Managerial behavior, however, often does not become more efficient or effective after privatization (Richter, 2000; Wang, Xu and Zhu, 2004), which brings into question the efficacy of this mode of reform (Estrin and Wright, 1999).

The failure of privatization has raised the question of whether privatization is an incomplete or maybe even erroneous solution to SOE inefficiency within a transition context. In an attempt to address this issue, the next section begins with a brief discussion on the limitations of privatization under weak institutional environments. Following an in-depth analysis of the root and severity of moral hazard facing China's SOEs, section 3 demonstrates how a well-functioning incentive system can effectively substitute for outright privatization

and immune from the weak institutional environment in transition settings (the theoretical framework is shown in figure 1).

****Insert Figure 1 about here****

2. PRIVATIZATION AND SOE REFORM IN TRANSITION ECONOMIES

We do not deny that privatization offers considerable benefits to worldwide economic reforms (Boubakri and Cosset, 1998; Claessens and Djankov, 1999; Dewenter and Malatesta, 2001; Frydman, Gray, Hessel and Rapaczynski, 1999; Lizal, Singer and Svejnar, 2001; Megginson, Nash and Van Randenborgh, 1994; Megginson and Netter, 2001), however, given the relatively weak institutional frameworks of transition economies (Peng and Heath, 1996; Spicer, McDermott and Kogut, 2000; Uhlenbruck, Meyer and Hitt, 2003), this paper suspects that there might be interim steps that can be taken to enhance SOE performance without privatization while the institutional infrastructure becomes stronger. This belief is based on several reasons.

First, numerous supporting institutions, such as the legal system and financial discipline, need to be restructured to support privatization. However, characterized as rapid political and economic changes, legal and institutional framework uncertainty, and underdeveloped factor markets (Uhlenbruck et al., 2003), the institutional framework in emerging economies is not sufficient to support the necessary restructuring (Peng and Heath, 1996; Spicer et al., 2000; Uhlenbruck et al., 2003). Empirical evidences tend to indicate a positive relationship between privatization efficiency and the institutional development in a country. In particular, privatization appears to have significant positive impact on firm performance in developed countries (Boubakri and Cosset, 1998; Dewenter and Malatesta, 2001; Megginson et al., 1994; Megginson and Netter, 2001); results in positive but weaker effect in Central and Eastern Europe, where the institutional framework is less developed than non-transition economies but more developed than Commonwealth of Independent States (CIS) countries, contingent upon various factors that may influence the success of privatization in these contexts (Claessens and Djankov, 1999; Frydman et al., 1999; Lizal et

al., 2001; Megginson and Netter, 2001); while evidences on the aftermath of privatization in CIS countries is either inconclusive (Djankov and Murrell, 2002; Megginson and Netter, 2001) or considered a disaster especially in the former Soviet Union (Black, Kraakman and Tarassova, 2000; Jefferson, 1998). The correlation between privatization efficiency and institutional development implies that privatization tends to result in less positive outcome in transition economies where the institutional environment is weak.

Second, even if the institutional requirements can be achieved, privatization is not an effective device in solving the agency problem. On the one hand, as Dharwadkar, George and Brandes (2000) indicated, because of the distinct nature and severity of agency problems associated with privatized firms in emerging markets, simply replicating developed economies' privatization processes will result in limited success in transition economies. In China, for example, ownership reforms have not substantially eliminated SOE inefficiency but exacerbated the agency problems, resulting in deteriorating firm performance (Qian, 1996; Zhu, 1999). On the other hand, the less developed governance context of emerging economies also creates a "unique" agency problem in newly privatized firms whereby minority shareholders are often not protected as well as majority owners (Dharwadkar et al., 2000). Although privatization would eliminate plundering of state assets, it cannot prevent the managers from plundering private assets. This has been shown to be the case by the disaster of Russia's voucherization program: the insiders stripped assets knowing that newly generated minority shareholders had no transparency or enforcement capabilities to prevent such opportunistic behavior (Jefferson, 1998).

Finally, rapid privatization, especially with regard to large SOEs might result in a huge fiscal deficit¹ and mass layoff of workers from the industrial sector by new private owners, and in turn social turmoil. Given the dynamic nature of their political and economic environments, the aftereffects of huge fiscal deficit and mass unemployment in transition economies will be more severe. Improving SOE's competitiveness is important, but should not be at the expense of social and macroeconomic stability (Mi and Wang, 2000).

Therefore, the following proposition is derived:

¹ As Mi and Wang (2000) discussed in their paper, with 28% of total industrial output, China's SOEs bear more than 70% of government revenue contributions. Therefore privatization will first result in a huge fiscal deficit.

Proposition 1: The transfer of SOE ownership from public to private shareholders (i.e. privatization) is not likely to work until the institutional environment is mature enough to handle it. As such, it should not be the first reform taken in a transition economy.

3. MORAL HAZARD, CONTRACTUAL INCENTIVES AND SOE REFORM IN TRANSITION ECONOMIES

Moral Hazard — the Root of SOE Inefficiency

In a world filled with agency relationships where one party (the agent) is authorized to act on behalf of another (the principal), moral hazard presents itself when interests divergence is coupled with private information, resulting in severe agency costs, i.e. the costs resulting from agents' pursuit of private interests at the expense of the principal.

When concerning the specific features of moral hazard in transition economy SOEs, it is important to understand the differences in managerial behaviors between those SOEs and other modern organizations. To get an in-depth understanding, consider the following dynamic utility-maximizing situation facing SOE managers, where China is regarded as an exemplar transition economy. Note that in the context of SOEs, the principal is the state (the public), while the workers, managers and government officials all serve as the agent.

Under central planning, Chinese SOEs were assigned certain quantities of capital and labor, K and L respectively, to meet a given output target. Suppose the utility function of the manager is $U = u(y, 1-e)$, where y is the output target, e is the management effort for production, and $1-e$ measures the manager's leisure time, and suppose the production function is given by $y = f(K, L, x, e)$ where x denotes the quantity of material inputs. A rational manager would maximize U subject to the constraint of the production function. Obviously, profit is not included in the manager's objective function so that there is no reason for the manager to operate the SOE as a profit maximizing organization. Instead, they will bargain with the planning authorities for more inputs (materials, capital and labors) in order to achieve higher production target, and meanwhile put in the minimal level of effort so as to maximize their own leisure time.

After the managerial reform of the state industry, the manager is now asked to

maximize profits rather than achieve output target, so that the objective function of the manager can be written as $V = v(py - qx, 1 - e)$, where p and q are the prices for products and inputs respectively. The production function is still characterized as $y = f(K, L, x, e)$. Suppose that the manager's objective function can be written as $V = (py - xq)(1 - e)^\theta$, where θ is the elasticity of the manager's utility with respect to leisure, and the production function takes the form of $y = b(K, L)e^\alpha x^\beta$, where b is a function of capital and labor. Then by substitution, the manager's objective function can be written as $V = (pbe^\alpha x^\beta - xq)(1 - e)^\theta$, which yields the optimal solution $e^* = \frac{\alpha}{\alpha + \theta(1 - \beta)}$.

According to our mathematical derivation, the larger the θ (elasticity of the manager's utility with respect to leisure) compared with the normalized elasticity 1 with respect to profit, the smaller will be the managerial effort e . In other words, the smaller the weight given to profit as compared with the disutility of effort, the smaller will be the managerial effort (Chow, 2002).

Since profits have now entered the objective function, managers may have an incentive to maximize profits and economize the use of inputs. Note, however, that the incentive is weak if the relative elasticity parameter θ is large, reflecting an insignificant weight assigned to marginal profits. This is the very case facing China's SOEs (Chow, 2002). China's SOEs suffer from serious contracting problems (Shirley and Xu, 1998) and efficiency wage payments are universally underused from a profit-maximization perspective (Coady and Wang, 2000; Dong and Putterman, 2000; Fleisher, 2001), resulting in large losses associated with poorly designed performance contracts with little or no incentive effect at all (Shirley and Xu, 2001).

Therefore, it is concluded that:

Proposition 2: Due to highly constrained compensation systems in transitional SOEs, the marginal profits usually yield only small benefits to managers, resulting in more serious moral hazard problems.

What is more, in accordance with the idea of Groves, Hong, McMillan and Naughton, (1994), information inevitably becomes distorted as it moves up through an organization.

With the hierarchy in SOEs, information becomes distorted when it is transmitted from the production floor to managers; and under the centralized controlling system, the information may be further distorted in communications among enterprises, local governments and the central government. The highly asymmetric information automatically results in agents being given incomplete performance incentives and hence abnormally high moral hazard in SOEs.

In addition, transition economies often lack effective internal and external governance mechanisms that can be utilized to reduce agency costs (Carlin and Aghion, 1996; Khanna and Palepu, 1997). In a transition economy such as China, it seems to be impossible to have an effective monitoring system without independent accounting, auditing, and property evaluation institutions. Furthermore, the monitoring task is usually performed by government officials who themselves are agents in the principal-agent chain, with neither incentive nor information to monitor SOE managers effectually.

This leads to the following propositions:

Proposition 3a: The long information-transmission chains worsen the moral hazard problem in transition economy SOEs.

Proposition 3b: Ineffective monitoring systems worsen the moral hazard problem in transition economy SOEs.

Given the highly constrained compensation system coupled with the long information-transmission chain and limited internal and external controlling mechanisms, where both effective information collection and monitoring are either technically impossible or prohibitively costly, moral hazard in Chinese SOEs tends to be more severe than any other modern organizations.

First of all, shirking by workers is a common phenomenon in almost all organizations in the world filled with asymmetric information, and China's SOEs are no exception: "workers idling away the day after fulfilling some minimal quota" (Groves et al., 1994). Another typical agency symptom is the abnormal managerial perquisite consumption, i.e. excessive non-pecuniary benefits enjoyed by managers, (Gedajlovic and Shapiro, 1998). According to Qian (1996), the main benefits received by top managers in China's SOEs are not from salaries and bonuses but from perks, such as larger apartments, private cars, and availability of "corporate accounts" for business dinners, entertainment, touring, and so forth.

Second, an idiosyncratic agency problem facing transition economy SOEs is state assets stripping, which is defined as “any transfer at below fair market prices, of state assets to non-state entities, like individuals, collectives and joint-ventures” (Qian, 1996). Although there is no precise figure on the magnitude of state asset stripping, it is estimated that about 30-100 billion RMB worth of state assets flow out of the state coffers every year relative to approximately 3 trillion RMB of total state assets (Guangming Daily, October 5, 1993). Besides, another channel of state assets stripping is “from control rights transfers under the contract responsibility system”. More specifically, in order to achieve the contract obligation of current profit remittance to the state and the maintenance of high welfare, SOE managers often “sacrifice the middle” (SOEs’ long-run development and assets value) to “preserve benefits at both ends” (profit remittance to the state and the welfare of workers) (Qian, 1996).

Facing these opportunistic behaviors of workers and managers, effective monitoring is required to reduce agency cost, whereas government official themselves, who are expected to carry out such monitoring task, are also agents in the principal-agent chain. In fact, bribery of public officials appears to be another widespread phenomenon concerning Chinese SOEs. It is shown that a total of 100,000 corruption cases involving government officials were filed in 1998 (Mi & Wang, 2000). What is more, a very strange phenomenon in China is the collusion among agents in the long chain of principal-agent relationship. It is often the case that local governments collude with SOEs’ managers against the central government. Worrying about the future reallocation of assets, for example, the local government may encourage the enterprise to pursue short-run goals of profit maximization; and considering the ratchet effort on the profit enhance, the local government may also have an incentive to help the enterprise hide profits and let the revenues go untaxed (Qian, 1996).

Therefore, it is proposed that:

Proposition 4: Given the overly constrained compensation system coupled with information distortion and imperfect monitoring, it is rational for the workers, managers and government officials to pursue private interests at the state’s expense in transition economies.

Optimal Incentive Contract under Moral Hazard

In the context of moral hazard, a convenient and immediate countermeasure is using performance-based compensation to strengthen the agent’s incentives, but the problem is that

in practice the realized outcome is just a noisy signal of the agent's action and this gives rise to risk sharing and benefit-cost trade off of incentive compensation (Laffont and Martimort, 2002). To better indicate how incentive contract could be utilized as an effective countermeasure in conquering SOE inefficiency within a transition context, a mathematical model with a consideration of Chinese SOEs' particular situation is derived in this subsection².

Suppose that a risk-averse agent must exert an effort e at personal cost $C(e)$ to serve the interests of the principal. Effort is assumed to determine the expected profit $P(e)$, which is unobservable. The compensation is thus based on the verifiable performance level q where $q = e + \varepsilon$. Suppose the principal (the state) can observe another variable θ , which is related to ε . Both ε and θ have zero mean. We study a compensation rule that is linear: $w = \alpha + \beta(e + \varepsilon + \gamma\theta)$, where α is a base amount, β is the intensity of incentives, and γ represents the relative weight of θ . Before digging into the question, it is important to clarify that our analysis uses the value maximization principle, i.e. an arrangement is efficient if and only if it maximizes the total certainty equivalent wealth of all the parties involved (Milgrom and Roberts, 1992).

Based on the formula $CE = \bar{I} - \frac{1}{2}rVar(\bar{I})$ where \bar{I} and $Var(\bar{I})$ are the mean and the variance of the random income I , we obtain the agent's certainty equivalent $CE^A = \alpha + \beta(e + \bar{\varepsilon} + \gamma\bar{\theta}) - C(e) - \frac{1}{2}rVar(\alpha + \beta(e + \varepsilon + \gamma\theta)) = \alpha + \beta e - C(e) - \frac{1}{2}r\beta^2Var(\varepsilon + \gamma\theta)$ and the principal's certainty equivalent $CE^P = P(e) - (\alpha + \beta e)$. Therefore, the total certainty equivalent can be characterized as $TCE = P(e) - C(e) - \frac{1}{2}r\beta^2Var(\varepsilon + \gamma\theta)$.

Suppose $C(e)$ is increasing and convex, then the level of effort that maximizes the agent's certainty equivalent is given by $\beta - C'(e) = 0$, which is the so-called incentive constraint. An incentive compatible contract is optimal towards solving moral hazard caused inefficiency if the choice of $(e, \alpha, \beta, \gamma)$ maximizes $TCE = P(e) - C(e) - \frac{1}{2}r\beta^2Var(\varepsilon + \gamma\theta)$.

In order to determine the optimal β , we first fix the information weighting parameter γ

² The model is developed on the basis of Milgrom and Robert (1992).

and let $V = Var(\varepsilon + \gamma\theta)$. Recall the total certainty equivalent $TCE = P(e) - C(e) - \frac{1}{2}r\beta^2V$, and from the incentive constraint $\beta = C'(e)$, we obtain that $TCE = P(e) - C(e) - \frac{1}{2}rC'(e)^2V$.

FOC with respect to e : $P'(e) - C'(e) - rVC'(e)C''(e) = 0$.

Solving for β , we obtain the optimal incentive intensity $\beta^* = \frac{P'(e)}{1 + rVC''(e)}$.

As far as China's SOEs are concerned, the main problem is that β does not appear to be high enough. An extreme case involves the flat wages paid by some Chinese state enterprises with β equal to zero. Managers are paid specified salaries according to their bureaucratic ranks rather than their real managerial efforts (Mi and Wang, 2000). Although many Chinese enterprises are moving from a predominantly egalitarian compensation system to a more individualized one (Lewis, 2003), efficiency wage payments are still far from utilized (Coady and Wang, 2000; Fleisher, 2001; Mi and Wang, 2000). Therefore, an efficacious and explicit prescription in response to China's SOEs inefficiency is to enhance contractual incentives, i.e. to raise the intensity of incentives, β , to meet its optimal level $\beta^* = \frac{P'(e)}{1 + rVC''(e)}$.

Because the biggest problem with respect to China's SOEs is its high agency costs, resulting from the obsolete management systems (Chow, 1997; Groves et al., 1994; Mi and Wang, 2000), and because the incentive contract is an effective instrument on the subject of inducing desired action under moral hazard (Laffont and Martimort, 2002; Sappington 1991), providing incentives for the management of publicly owned assets seems to be the key to China's success (Chow, 1997).

Therefore, it is concluded that:

Proposition 5: Addressing contractual incentives within SOEs is more likely to lead to enhanced performance of SOEs because it more directly addresses the agency problem. As such, it could be the first reform taken in a transition economy.

Principles in Designing Optimal Incentive Contract

For the construction of a well-functioning incentive system to be immune from the

weak institutional environment that causes the failure of privatization in transition economies, a series of principles have to be enforced together with the optimal incentive contract.

First, in an optimal contract, all information must be utilized to reduce the aggregate error in measuring performance; this is the so-called *Informativeness Principle*. The intuition of informativeness principle is that when choosing γ to minimize $Var(\varepsilon + \gamma\theta)$ in an optimal contract, θ might be introduced into the compensation scheme if there is some γ for which $Var(\varepsilon + \gamma\theta) < Var(\varepsilon)$. One typical example of this is the comparative performance evaluation. The basic idea here is that because the measured outcome is always affected by some random factors beyond the agent's control, and such income risk exposure is costly, it is beneficial to use some instrument to filter out a part of uncertainty from the agent's compensation. Because the random factors which affects one worker's performance may also affect the observed performances of others in the same division, organization, or industry, it is often possible for the principal to improve the contract by making compensation contingent on a second variable, z , in addition to output q given that z contains incremental information in measuring the agent's unobservable effort (Holmström, 1979). In this respect, competitive performance pay provides incentives as well as partially filtering out the common uncertainty from the agent's compensation (Gibbons and Murphy, 1990).

Taking into account transition economies' particular situation, owing to the legacies of pre-reform policies and the distortions in macroeconomic environment, SOEs encounter a number of idiosyncratic burdens, and these burdens clearly put the SOEs in an inferior position in competing with non-state enterprises. In addition, because each SOE was established at a different time, has a different number of retired workers and a different number of redundant workers, the burden impact of each SOE is idiosyncratic. Therefore, for the informativeness principle to be valid, and for comparative performance evaluation between a SOE and a non-state enterprise or between two SOEs to serve as an effective device in extracting information, it is crucial to remove the policy burdens of state enterprises and to "provide them with a level playing field first" (Lin, et al., 1998), and we believe that this can be done without the fundamental change of ownership structure.

Second, it is often possible for the principal to improve the assessment of performance at some cost. Let $M(V)$ be the minimum cost to achieve variance V , where $M(\cdot)$ is decreasing and convex, we can then rewrite the total certainty equivalent as $TCE = P(e) - C(e) - \frac{1}{2}r\beta^2V - M(V)$. Maximize the above expression by choosing V , the FOC is written as $-\frac{1}{2}r\beta^2 - M'(V) = 0$. The conclusion drawn from the mathematical derivation is that V should be set lower and more resources ought to be spent on measurement when β is higher. This is the so-called *Monitoring Intensity Principle*, which basically implies that it is economically optimal to reinforce monitoring in order to reduce the variance V if β increases. As transition economies have more uncertainty and fewer monitoring instruments than developed economies, it is more important for the government to enhance the transparency and observability of SOEs management, specifically, to shorten the hierarchy of SOEs' controlling system to reduce the information distortions, to spend more recourse in establishing new monitoring instruments, such as independent accounting, auditing, and property evaluation institutions, to reduce replenishment and harden the budget constraint, and to allow bureaucrats to share a part of the SOE's profits in order to motivate their monitoring incentive.

Third, the agent usually does not perform just one activity to serve the principal's interests. The *Equal Compensation Principle* claims that if the manager of a state enterprise is expected to perform some activity for which performance cannot be easily measured (i.e. the profit level), then incentive pay cannot be effectively used for any other activities that the manager controls (the employment level for instance). This principle is important for transition economy SOEs, since it is often the case that SOE managers have to take into account not only profit maximization task but also political missions such as social welfare and employment level (Qian, 1996).

4. CONCLUSIONS AND IMPLICATIONS

The major purpose of this paper is to challenge the prevailing faith in privatization as the first step in making transition economy SOEs more competitive in the global marketplace

and encourage further research on alternative strategies to privatization when concerning SOE reform. Because privatization is not likely to work until the institutional environment is mature enough to handle it, it should not be the first reform taken in transition economies. On the contrary, as this paper has indicated, moral hazard seems to be the root of transition economy SOEs' poor performance, and therefore reforms of the managerial incentive system could be a more effective and immediate countermeasure in addressing SOE problems in these contexts. Moreover, given a series of principles, the construction of a well-functioning incentive system could be immune from the weak institutional environment that causes the failure of privatization.

The present paper contributes to the literature in at least three ways. First, it challenges the prevailing faith in privatization as the first step in addressing transition economy SOE problems. Second, it advances the agency perspective and economic modeling to analyze the moral hazard and contractual problem in transition economy SOEs, taking into account the unique institutional conditions in these contexts. Finally, we offer some practical ideas for managers and governors in transition economies to consider as they seek to join and remain competitive in the global marketplace. In particular, an efficacious and explicit prescription in response to SOE inefficiency in transition economies is to enhance contractual incentives. For this to work, it is crucial to remove the policy burdens of SOEs, to simplify the hierarchy of the controlling system, to harden the budget constraint, and to allow bureaucrats to share in profits. All these can be done without ownership changes.

Although we have demonstrated theoretically how well-designed contractual incentives could work as an efficacious remedy to SOE inefficiency, we have not yet subjected our results to empirical testing. Existing literature is inconclusive in testing the relationship between well-functioning incentive contract and SOE performance, and most empirical studies suffer from different kinds of research design bias. For example, Shirley & Xu (2001) finds no positive relationship between the implementation of performance contracts and productivity improvements in Chinese SOEs, however, defining a firm as being under a performance contract if there is an "existence of a contract that the manager had signed with the government" introduces remarkable disturbances such as non-incentive contracts and poorly-designed performance contracts into the sample, and hereby cannot be

considered as a conclusive evidence against well-designed contractual incentives. Therefore, a desirable empirical test remains to be done. For example, further research can be conducted comparing performance of newly privatized former SOEs and the SOEs undergo potent reform of the incentive system but without ownership change. The challenges in conducting empirical research in transition economies are the absence of accurate and updated archival data, problematic measurement of firm performance owing to the lack of a standard financial reporting system, and the complexity in accounting for the dynamic nature of the economic and institutional environment of transition economies.

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Figure 1 Privatization, Moral Hazard and SOE Reform in Transition Economies

