

Managerial Career Concerns, Privatization and Restructuring in Transition Economies

by Gérard Roland^a and Khalid Sekkat^{b*}

a Ecare, Université Libre de Bruxelles and CEPR, CP. 172, 39 avenue F.D. Roosevelt, 1050 Bruxelles, Belgium ; **b** Dulbea and Ecare, Université Libre de Bruxelles, CP. 140, 50 avenue F.D. Roosevelt, 1050 Bruxelles, Belgium

Abstract

We set up a dynamic adverse selection model to explain how career concerns may induce managers in State Owned Enterprises (SOE's) to restructure their firms. It is shown how government monopsony power over managers led to the ratchet effect under a socialist economy, even under reforms coming short of privatization. The introduction of a managerial labour market, through privatization, introduces competition for managers and eliminates the ratchet effect, thereby inducing managers to restructure. The model is consistent with the empirical evidence of SOE's restructuring in transition economies.

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* Corresponding author : Tel : 32 2 650 41 39, Fax : 32 2 650 41 23,
email : ksekkat@ulb.ac.be.

I. INTRODUCTION

The importance of career concerns for managerial incentives has increasingly been acknowledged since the work of Fama (1980) and Holmström (1984). They have received a renewed interest in the context of transition economies (Mc Millan, 1995). This interest is related to surprising empirical findings regarding managerial behaviour in State Owned Enterprises (SOE's). In the initial phase of transition, most analysts were of the opinion that fast privatization was of utmost importance in order to avoid asset decapitalization by managers facing an end-game situation. The implicit assumption was that managers would lose their job and that depriving them of their control over companies was a top priority. In practice, this assertion has proved wrong. First of all, privatization occurred at a much slower pace than expected at least in Poland and Hungary (see Roland, 1994). More surprisingly, the assumption of decapitalization and squandering of state assets has been rejected by empirical evidence. On the contrary, studies by Pinto *et al.* (1993), Estrin *et al.* (1993) and Carlin *et al.* (1995) show that managers of State Owned Enterprises are actively restructuring. Budget constraints are hardening, labour shedding can be observed and there is little active decapitalization. Econometric evidence on Poland (Pinto and Van Wijnbergen, 1995) points to changes in company behaviour : since 1992, there is a positive correlation between profits and investment as opposed to a negative correlation previously.

The aim of this paper is to analyze career concerns as a motivation for SOE's to restructure in the prospect of privatization. The analysis is based on a dynamic adverse selection model with heterogeneity of managerial quality. It builds on a previous work emphasizing the importance of managerial career concerns in transition economies (Roland and Sekkat (1993)).

We first show that, in a socialist economy, if there is asymmetric information on managerial skills, good managers have little incentives to exert effort because of the famous ratchet effect (on this see Litwack (1993), Laffont and Tirole (1993)). Good performance is indeed a sign of good managerial quality. As a government in a socialist economy has monopsony power over managers, it is inevitably tempted to “ratchet up” performance requirements and revise upward incentive schemes for managers with a good performance so as to leave them less rents. This ratchet effect due to the absence of the government's commitment power was very important at the time of socialism. If by effort we mean effort in restructuring, our model allows to understand why managers did not restructure during socialism even when they were given incentives to do so under reforms that came short of privatization. The conclusion is that the ratchet effect may explain why efficiency-oriented incentive schemes in a State-Owned economy may not work in the absence of privatization¹.

We then show, and this is the main contribution of our paper, how career concerns may lead good managers to restructure their company once transition, and especially privatization policies are initiated. In line with the career concerns literature (Holmström (1984) and Fama (1980)), if private investors observe a preprivatization performance, they will more readily want to acquire a firm and offer managers an incentive contract. The possibility of privatization therefore induce preprivatization restructuring by managers, thereby enhancing the likelihood of being privatized. Even though managers "signal" their performance, the model is not a signaling model as second period contracts are offered by investors and government. In this way, we avoid problems related to signaling games.

¹ In 1977, Soviet planners introduced a sophisticated incentive scheme yielding truth revelation in a static adverse selection model. The properties of this scheme, called the new Soviet incentive scheme in the literature, has been studied by Martin Weitzman (1976) and generated an abundant literature. In practice, as noted by Nove (1985), this incentive scheme never worked. The reason for this is related to dynamic commitment problems. Once the true abilities of a manager are revealed, the principal is tempted to revise the incentive scheme.

Privatization introduces competition for managers between the private and the public sectors. We show that privatization may solve the ratchet problem in the State sector by giving managers an outside option and thereby inducing them to restructure. The possibility of privatization also acts as a commitment device in the public sector since the outside option given to managers would punish the government for revising its incentive schemes. The main result of our paper is that competition for managers eliminates the ratchet effect. This result holds under quite general conditions.

Aghion *et al.* (1994) have also pointed to career concerns as a potential explanation for restructuring in SOEs. However, they do not analyze a dynamic adverse selection problem as in our paper but model the costs and benefits of delaying restructuring for managers who face a positive exogenous probability of losing their job when their firm is privatized. In their model, this yields a negative correlation between restructuring and prospects for privatization, which can however be mitigated by exogenous career concern effects. In contrast, our model predicts a positive correlation between restructuring and prospects for privatization, in line with the findings of Estrin *et al.* (1993). In our model, parameters such as the probability of being privatized and rewards for good managers are not exogenously given, but are derived endogenously. The Aghion *et al.* (1994) model also begs the question of why firms have not restructured earlier during socialism when privatization was not an option. Our model proposes to explain why restructuring did not occur then.

Our model illustrates an interesting and important by-product of privatization, its positive incentive effects on preprivatization restructuring, in a context of career concerns. There are clearly other benefits to privatization in terms of efficiency improvements or government revenues (see e.g. Bolton and Roland (1992); Boycko *et al.* (1992); Megginson *et al.* (1994); Galal *et al.* (1992); Frydman and Rapaczynski (1994), Errunza and Mazumdar (1995)).

In our model, restructuring is viewed as resulting only from managerial effort. The analysis focuses on what Grosfeld and Roland (1995) call defensive restructuring but does not cover strategic restructuring, i.e. those (parts of) restructuring activities which involve new investments and require financial intermediation.

The rest of the paper is organized as follows. Section 2 presents the model. The problem of the ratchet effect under socialism is discussed in section 3. In section 4 the impact of privatization prospects on managerial incentives to restructure is analyzed. Section 5 concludes.

2. THE MODEL.

We start the analysis with a socialist economy where there is no private sector. The basic set-up is an extended version of the model by Ickes and Samuelson (1987)². There are N managers and N is normalized to 1. Each manager may be either a high productivity type ("good manager") characterized by the parameter $\bar{\theta}$ or a low productivity type ("bad manager") characterized by the parameter $\underline{\theta}$, with $\underline{\theta} < \bar{\theta}$. Good managers are present in proportion p and bad managers in proportion $(1-p)$. These proportions are known to the government but individual type is private information. Managers can choose between two unobservable effort levels in restructuring their company : high effort, yielding disutility \bar{a} , and low effort (or no restructuring) \underline{a} , with $\underline{a} < \bar{a}$. It seems *a priori* unreasonable to model an economy with only 2 types of managers, and one can easily argue that a continuum of types would be more realistic. However, dynamic principal-agent problems quickly become difficult with a continuum

² Their model addresses the question of how job transfers can mitigate the ratchet effect when productivity is related to the job and not to the manager's type.

(see Laffont and Tirole (1988)), and the model presented here has the advantage of simplicity and clear-cut results.

The government can only observe net output y of a public sector firm which is a function of type and effort: $y = y(\theta, a)$. Net output is defined here as value added after wage payments, depreciation, etc. It is equal to profits plus managerial salaries. The following assumptions are made on output:

$$y(\bar{\theta}, \bar{a}) > y(\bar{\theta}, \underline{a}) = y(\underline{\theta}, \bar{a}) > \bar{a} > \underline{a} > y(\underline{\theta}, \underline{a}) \quad (1)$$

There are thus three possible output levels. The highest, which we will call y_1 , can only be achieved by the good manager making a great effort. The intermediate level, y_2 , can be achieved by both types but under different conditions of effort, and the lowest level, y_3 , is observed when the bad manager exerts a low effort. As shown by the right hand inequalities, it is assumed that the great effort from the bad manager is socially profitable while the low effort is not.

When y_1 or y_3 is observed, the government can immediately infer the agent's type whereas when y_2 is observed, the government may not be able to tell whether the manager is good or bad. Hence, even though y_3 is unprofitable, this output level may yield intertemporal benefits since it provides a way to separate the good from the bad managers.

In a one-period framework under asymmetric information, an incentive scheme, or wage schedule, devised by the government will be a triplet :

$$w = \{w_1 = w(y_1), w_2 = w(y_2), w_3 = w(y_3)\}.$$

The individual agents' choice of effort will depend on payments minus effort :

$$\text{Max}_a w(y) - a.$$

Total output in the economy will therefore be :

$$y = [py(\bar{\theta}, w) + (1-p)y(\underline{\theta}, w)],$$

where $y(\underline{\theta}, w)$ and $y(\bar{\theta}, w)$ are the output levels chosen by each type depending on the incentive scheme w set up by the government.

The selection of an incentive scheme will be determined by the maximization of expected output, net of payments to managers, taking into account managers' choice of effort level :

$$\text{Max}_w \pi = p[y(\bar{\theta}, w) - w(y(\bar{\theta}, w))] + (1-p)[y(\underline{\theta}, w) - w(y(\underline{\theta}, w))].$$

Contrary to many models in the regulation literature, we treat the government here only as a principal and not as a welfare maximizer. This assumption is not crucial for the results but seems to better reflect the nature of the government under central planning conditions. We also assume that the government is subject to a full employment constraint and is not willing, for political reasons, to close down loss-making firms or to encourage bad managers to quit.³ This assumption seems natural in a socialist economy.

In order to define the full information allocative efficiency the following assumption is made :

$$y_i - y_{i+1} > \Delta a = \bar{a} - \underline{a} \quad (2)$$

Given (1) and (2), the full information optimal incentive scheme would consist in having $\bar{\theta}$ and $\underline{\theta}$ both make a great effort and get exactly compensated for their effort. Under this full information incentive scheme, the government's payoff, Π_F , would then be :

$$\Pi_F = py + (\quad)y - \bar{a}$$

$$\Pi_F$$

On the role of political constraints in deciding redundancies, see Dewatripont and Roland (1992a,b).

3. THE RATCHET EFFECT DURING SOCIALISM.

In this section, we show how in a socialist economy the absence of government commitment could, lead to the absence of restructuring. Interestingly, in this model the government would have preferred firms to restructure but could not induce managers to make a great effort given its inability to commit to long term incentive schemes.

As usual, in the absence of discounting, the one-period framework allows us to understand the commitment solution. Given the assumptions made, there is three incentive schemes: scheme A, inducing $\bar{\theta}$ to choose \bar{a} and $\underline{\theta}$ to choose \underline{a} , scheme B inducing both agents to choose \bar{a} , and scheme C inducing $\bar{\theta}$ to choose \underline{a}

$$w(A) = \{w(y_1) = \bar{a}, w(y_2) = \underline{a}, w(y_3) = \underline{a}\}$$

$$w(B) = \{w(y_1) = 2\bar{a} - \underline{a}, w(y_2) = \bar{a}, w(y_3) = \underline{a}\}$$

$$w(C) = \{w(y_1) = \bar{a}, w(y_2) = \bar{a}, w(y_3) = \underline{a}\}$$

The government's payoffs under the various incentive schemes are :

$$\Pi_A = p(y_1 - \bar{a}) + (1-p)(y_3 - \underline{a})$$

$$\Pi_B = p(y_1 - (2\bar{a} - \underline{a})) + (1-p)(y_2 - \bar{a})$$

$$\Pi_C = p(y_2 - \bar{a}) + (1-p)(y_2 - \bar{a})$$

Scheme B gives the same output level as the full information optimum but is more costly in terms of incentive payments since the good managers are paid more in order to separate them from the bad managers. Scheme C is always dominated by scheme B because of (2). It is easily seen that the government prefers scheme B to scheme A if and only if :

$$p < p^* = 1 - \frac{\Delta a}{(y_2 - y_3)} \quad (3)$$

The choice of one of these two schemes reflects the usual adverse selection trade-off between allocative efficiency and rent extraction. If the proportion of good managers is too high in the economy, it is advisable to abandon the idea of obtaining a greater effort from the bad managers thereby preventing the good managers receiving the ensuing rents.

Let us assume that (3) is satisfied. The government's payoff is then given by Π_B .

The loss, compared to the full information solution, is due to the fact that $\bar{\theta}$ now enjoys a rent of $\Delta a = \bar{a} - \underline{a}$. If the government could commit to scheme B, then, in a two-period framework, $\bar{\theta}$ would enjoy a rent of $2\Delta a$.

We now turn to a discussion of the two-period framework without commitment. As before, the first period incentive scheme will be a triplet : $w_{t1} = \{w(y_1), w(y_2), w(y_3)\}$. The second period incentive scheme will not only depend on output levels y_i but also on the information acquired in the first period, y_{it1} :

$$w_{t2} = \{w(y_1, y_{it1}), w(y_2, y_{it1}), w(y_3, y_{it1})\}.$$

In the absence of government commitment, scheme B repeated twice is not time consistent. Indeed, if applied in the first period, the government would have full information over the managers' types in the beginning of period 2. It would therefore reoptimize and apply the optimal full information incentive scheme in the second period. Knowing this, the good managers would prefer to pool with the bad managers in the first period by choosing \underline{a} , thereby enjoying a rent of $(\bar{a} - \underline{a})$. With a pooling outcome in the first period, both types producing y_2 , no information would be revealed, and scheme B, the one-period static optimum, would then be applied in the second period. The manager $\bar{\theta}$ would then get a two-period rent of $2\Delta a$. The government's payoff under a pooling outcome is thus:

$$\Pi_p = \Pi_C + \Pi_B.$$

The government can however do better than Π_p by giving the $\bar{\theta}$ an incentive to produce y_1 in period 1. Indeed, condition (2) implies that $y_1 - y_2 > \Delta a$. It is therefore

advantageous for the government to give the $\bar{\theta}$ an additional Δa in the first period to have them produce y_1 instead of y_2 . The optimum in the absence of commitment is thus to pay $2\Delta a + \bar{a}$ for y_1 , giving to $\bar{\theta}$ a first period rent of $2\Delta a$ to have them separate, and then to apply the full information scheme in the second period. The government's payoff for this separating intertemporal scheme is:

$$\Pi_S = \Pi_B - p\Delta a + \Pi_F$$

Here also, one has the usual ratchet result: in the absence of government precommitment, a higher first period cost, compared to the commitment solution, is necessary to obtain separation. In this model, separation is always preferable to pooling if there are no extra costs associated to the higher first period incentive payments.

In our model, managerial incentive bonuses must be paid out of the net product. If we assume no external borrowing, then it may happen that separation is impossible if the first period surplus under separation is negative, i.e. if $\Pi_B - p\Delta a$. In that case, the outcome will be the pooling equilibrium, unless there is a “cheaper” separation scheme where the bad managers are induced to provide a low effort in the first period. There was little external borrowing in the years of classical socialism. It is therefore not unreasonable to think that a pooling equilibrium may be the result of financial constraints. What happens, however, if we allow for external borrowing at a cost r ? After all, the governments of Poland, Hungary and even the USSR were able to incur substantial external debts in the years preceding transition. To be consistent, we must compare the payoff under a separating equilibrium with the possibility of borrowing to the payoff under a pooling equilibrium where the first period surplus can be invested with the same return r . It turns out that, with or without the possibility of external borrowing, we get similar conditions for a pooling equilibrium to dominate a separating equilibrium, as shown in proposition 1:

PROPOSITION 1:

Pooling, followed by scheme B, is the optimal government policy and the unique perfect bayesian equilibrium given conditions (1) and (2) and under the full employment constraint if :

$$\begin{aligned}
 & - p \in [\underline{p}, \bar{p}] \text{ where } \underline{p} = \frac{y_2 - \bar{a}}{2\Delta a - (y_1 - y_2)}, \bar{p} = \frac{y_2 - y_3 - \Delta a}{y_1 - y_3} > 0 \text{ without external borrowing} \\
 & - p < \bar{p}(r) = \frac{y_2 - y_3 - \Delta a}{y_1 - y_3 - \frac{r}{1+r}\Delta a} \text{ and } r > \underline{r} = \frac{y_1 - y_2 - \Delta a}{y_1 - y_2 - 2\Delta a} \text{ when the government can}
 \end{aligned}$$

borrow (or invest) externally at rate r .

Proof of proposition 1: See the Appendix

It is worthwhile dwelling a bit on the intuition for the optimality of pooling. With or without external borrowing, if p is large enough, then it is optimal to apply the “cheap” separation scheme in the first period. Indeed, the first period costs of the losses from the $\underline{\theta}$ producing y_3 tend towards 0 when p tends towards 1 and the full information incentive scheme can be applied in the second period. On the other hand, if p is small enough, then the more expensive separation scheme will tend to yield a positive surplus in the first period since the total first period rents given to the $\bar{\theta}$ for producing y_1 become smaller when p becomes smaller. This scheme will then become possible when there is a borrowing constraint. Without any borrowing constraint for the government, a higher interest rate tends to give a higher weight to the first period payoff as compared to the second period. Since the former is higher in the pooling equilibrium than in the separating equilibrium, a higher interest rate works in favour of the pooling equilibrium.

Proposition 1 has focused on the conditions for a pooling equilibrium in a socialist economy before transition. This seems reasonable as pooling can be seen as a plausible characterization of managers in an economy where the ratchet effect was a pervasive phenomenon, leading to managerial slackening (see Berliner (1952), Weitzman (1980), Bain *et al.* (1987), Litwack (1991,1993)). However, the message of proposition 1 goes

further than that. It highlights the low efficiency of the activity of a profit-oriented government under market socialism. In the early years of central planning, efficiency was usually sacrificed in favour of ambitious quantitative goals of the plan. In subsequent periods, the trend towards efficiency motivated proposals for an economic reform. The most radical idea of reform was that of market socialism, in which public ownership of production means would be maintained but the market would allocate resources (see Bardhan and Roemer (1993)). The results of proposition 1 show that when the state is the managers' sole employer and it cannot credibly precommit to fixed incentive schemes, then there are conditions which will not allow to eliminate managerial slackening, even when the objective is profit-maximization. Managerial careers being limited to one choice (i.e. the public sector) allows the state to exercise a "hold-up power" on them. This is crucial for the result.

Compared to other ratchet models in the literature (e.g. Laffont and Tirole (1993)), this model has the advantage of simplicity because of the discrete effort levels. Moreover, the pooling equilibrium results from simple general equilibrium considerations which cannot be found in the ratchet literature. Such general equilibrium considerations are however important when analyzing incentive problems in socialist and transition economies.

4. MANAGERIAL INCENTIVES IN THE TRANSITION PERIOD.

The main difference between socialist and transition economies is the existence of a private sector in the latter. This can affect managers' incentives in two different ways. On the one hand, managers now have the option of leaving the state sector and work for a private firm. On the other hand, they may leave the state sector without leaving their company if the latter is privatized. The main idea we will put forward is that the prospect

of being hired by a private firm or of remaining manager of their firm, that is being privatized, give managers incentives to restructure in the first period.

Assume now that, after period 1, managers have the opportunity of working in the private sector. Private sector variables are indicated by a star (*).

The following assumptions are made. The technology is non substitutable. One and only one manager is needed per new firm. All firms are identical and production is a function $f(\theta, a)$ of talent and effort. The production function satisfies the following conditions :

$$f(\bar{\theta}, \bar{a}) = y_1^* > f(\bar{\theta}, \underline{a}) = y_2^* \geq f(\underline{\theta}, \bar{a}) = y_3^* > \bar{a} > \underline{a} > f(\underline{\theta}, \underline{a}) = y_4^* \quad (4)$$

$$y_1^* - y_2^* \geq y_1 - y_2$$

The first set of conditions (4), more particularly $y_2^* \geq y_3^*$, implies that, compared to the public sector, private sector technology is relatively more sensitive to talent than to effort. The second set of condition implies that for good managers, a greater effort yields a higher increment in output in the private sector than in the public sector.

As managerial type is private information, private investors have to decide on a wage offer. Investors decide on whether or not to make an offer to a manager, on the basis of expected profits when hiring him. Wage contracts are made contingent on output performance. Hiring a manager, however, involves a cost K that must be sunk at the time of the hiring, that is before output performance can be observed. Second period government incentive schemes are announced at the same time as wage offers in the private sector. Technology in both sectors is common knowledge. On the basis of wage offers by private and public sectors, managers decide whether or not to leave for the private sector.

Private sector wage offers are denoted by $w^*(y_j^*, y_{it1})$ and public sector offers by $w(y_j, y_{it1})$.

As our analysis focuses on the conditions under which good managers ($\bar{\theta}$) are induced to restructure, and thus to choose y_1 in the first period, we will look at the intertemporal incentive compatibility constraints for $\bar{\theta}$ and $\underline{\theta}$:

$$\begin{aligned} & w(y_1) - \bar{a} + \text{Max} \{w^*(y_1^*, y_{1t1}), w(y_1, y_{1t1})\} - \bar{a} \\ & \geq w(y_2) - \underline{a} + \text{Max} \{w^*(y_1^*, y_{2t1}), w(y_1, y_{2t1})\} - \bar{a} \end{aligned} \quad (5)$$

$$\begin{aligned} & w(y_2) - \bar{a} + \text{Max} \{w^*(y_3^*, y_{2t1}), w(y_2, y_{2t1})\} - \bar{a} \\ & \geq w(y_3) - \underline{a} + \text{Max} \{w^*(y_3^*, y_{3t1}), w(y_2, y_{3t1})\} - \bar{a} \end{aligned}$$

These intertemporal incentive compatibility constraints represent conditions under which managers are induced to choose \bar{a} in period 1, given that they will be induced to choose \bar{a} in the second period, whether in the public or in the private sector. The first constraint is the incentive compatibility constraint for $\bar{\theta}$ to produce y_1 in period 1 instead of y_2 and the second one is the incentive compatibility constraint for $\underline{\theta}$ to produce y_2 in period 1 instead of y_3 . Given conditions (2) and (4), if the private (or public) sector is able to attract (or to keep) a manager (either $\bar{\theta}$ or $\underline{\theta}$) it will prefer him to provide a great effort.

When the government was a monopsonist, in a socialist economy, it could take advantage of the information acquired in the first period to bring managerial rents to zero in the second period, thereby increasing the incentive compatible $w(y_1)$. Competition for managers in the second period will however tend to give them rents that reduce the incentive compatible $w(y_1)$.

As appears, from (5), wage offers depend on past output performance. It is important to distinguish here between two cases, one where private firms are prepared to hire both good and bad managers and the other where they are prepared to hire only good managers. Let us look at the first possibility.

The private sector is ready to offer up to $y_1^* - K$ to get a good manager produce y_1^* . Similarly, the public sector is ready to raise the wage up to y_1 . These wage offers are independent of past performance as only good managers can produce y_1^* and y_1^4 . It is then easy to see from (5) that :

$$w(y_1) = 2\bar{a} - \underline{a}$$

$$w(y_2) = \bar{a}.$$

Given (2), it can be verified that the first period wages will be optimal from the government's point of view.

As can be seen, first period wages are exactly those that would be in use if the government could commit to long term incentive schemes. The commitment solution is thus obtained through competition on the managerial labour market. The reason is that competition gives managers rents in the second period. If $y_1 < y_1^* - K$, good managers will leave for the private sector. Otherwise, they will stay in the public sector. In both cases, however, restructuring takes place in the first period.

What happens when the private sector is willing to hire only good managers ? A necessary condition for this to be the case is that expected profits be negative when the identity of the manager is unknown :

⁴ As we will see below, things are somewhat different if the private sector wishes to screen away bad managers.

$$p(y_1^* - w^*(y_1^*, y_{2t1})) + (1-p)(y_3^* - w^*(y_3^*, y_{2t1})) < K \quad (6)$$

As $w^*(y_1^*, y_{2t1})$ and $w^*(y_3^*, y_{2t1})$ must be higher than \bar{a} , inequality (6) is always fulfilled if :

$$K > p(y_1^* - y_3^*) + y_3^* - \bar{a}$$

Let us go back to (5) and examine what changes this brings about. As the private sector is not ready to make a wage offer to managers who produced y_{2t1} , the best salary a good manager (having produced y_{2t1}) can expect to get in the second period is a public sector wage $w(y_1, y_{2t1}) = \bar{a} + \Delta a$ for producing y_1 . However, if y_1 was already produced in period 1, the manager can expect an offer of $\min\{y_1, y_1^* - K\}$. One can then deduce $w(y_1)$:

$$w(y_1) = 2(\bar{a} + \Delta a) - y_1$$

when the manager goes to the private sector and

$$w(y_1) = 2(\bar{a} + \Delta a) - (y_1^* - K)$$

when he stays in the public sector.

We must now ask whether $w(y_1)$ can be paid out of the surplus. Otherwise, a pooling equilibrium will be observed as in proposition 1. It must therefore be verified that :

$$p(y_1 - 2(\bar{a} + \Delta a) + (y_1^* - K)) + (1-p)(y_2 - \bar{a}) > 0.$$

Rearranging, we get :

$$p(y_1 - y_2 - \Delta a + y_1^* - K - \bar{a} - \Delta a) + (y_2 - \bar{a}) > 0.$$

This inequality is always fulfilled if $y_1^* - K > \bar{a} + \Delta a$, i.e. when the private sector can make profits by compensating a good manager for his effort and granting him a rent Δa . The discussion so far can be summarized in the following proposition.

Proposition 2 :

If $y_1^* - K > \bar{a} + \Delta a$, good managers will always be induced to restructure in period 1.

The result of proposition 2 does not depend on specific parameter values. Note that in the case where the private sector only wants to hire good managers, $w(y_1)$ is different from the commitment solution. Moreover, when the private sector can outbid the public sector, $w(y_1)$ is even unambiguously lower than in the commitment solution. Indeed, using (1) and (2), we have :

$$\begin{aligned} y_1 - \bar{a} &> y_1 - y_2 > \Delta a \\ \Rightarrow \Delta a - y_1 &< -\bar{a} \\ \Rightarrow 2(\bar{a} + \Delta a) - y_1 &< \bar{a} + \Delta a \end{aligned}$$

The reason for this is that the incentive compatibility constraint (5) for producing y_1 in period 1 is relaxed because, when producing y_2 , a good manager loses a wage offer from the private sector.

Note that in a situation where the private sector wants to hire only good managers, even though only bad managers stay in the public sector, the latter will still be given incentives for a great effort and an output of y_2 will be achieved. Given condition (1), $y_2 > \bar{a}$ and government will have a positive profit in period 2.

Proposition 2 also implies that the prospects of a company's privatization may encourage restructuring. If privatization results in a better wage for the manager, he will be encouraged to restructure earlier on, especially when private investors are interested in hiring only good managers. This result is consistent with the empirical observation of

Estrin *et al.* (1993) of a positive correlation between restructuring and prospects for privatization. It differs from the Aghion *et al.* (1994) model where, everything else equal, privatization reduces the incentives for restructuring. Our model is consistent with the empirical literature which has highlighted the positive role played by incumbent managers in SOE restructuring (Pinto *et al.*, 1993).

The results of proposition 2 can be reinterpreted to apply to situations other than transition. One interpretation is that of competition for managers between firms having different technologies. Following proposition 2 the ratchet effect is absent once there is a managerial labour market. Imperfect information on managerial types may even lead to lower first period wages than under the commitment solution. This result is reminiscent of Holmström (1984) though the logic is different here.

Proposition 2 also shows that efficiency can be enhanced in the public sector when managers have the possibility to switch to the private sector. The literature on industrial organization has generally put forward the disadvantages of such "revolving door" arrangements which exist in the US and Japan (or *pantouflage* in France) because a regulator may collude with the private sector in order to get a job later in his career. The advantages of such arrangements, on efficiency, giving outside options to state managers, and thus breaking the quasi-monopsony of government have however not been much emphasized so far.

Two assumptions are crucial for proposition 2. First, public and private sectors are in a bidding process for managers in the second period. In this context, the managers have complete bargaining power. In the real world, however, employers (i.e. capital owners) enjoy larger shares of the company's rent than managers. Second, when privatization takes place there is no information asymmetry and separation is therefore possible. We can imagine a weaker assumption, where managers still have the possibility to extract

some informational rent in the second period. They may therefore not be willing to signal their true type in the first period. These are two stylized assumptions aimed at emphasizing the model's results. In Roland and Sekkat (1996), it is shown that relaxing some of the stylized assumptions does not impact the main message of the paper.

V. CONCLUDING REMARKS

We have set up a dynamic adverse selection model to explain how career concerns may induce managers in SOE's to restructure their firms. It is shown how government monopsony power over managers led to the ratchet effect in a socialist economy, even under reforms coming short of privatization. The emergence of a managerial labour market through privatization eliminates the ratchet effect, introduces competition for managers and induces them to restructure. The model is consistent with the empirical evidence of SOE restructuring in transition economies.

Appendix : Proof of proposition 1

To show that pooling followed by scheme B is optimal, we must show two things: first, that period one separation, at a high effort level, is either impossible or dominated; second, that cheaper first period separation schemes do not perform better.

We start with the case of no borrowing. If $p > \frac{y_2 - \bar{a}}{2\Delta a - (y_1 - y_2)}$, we obtain after some

rearrangements $\Pi_B - p\Delta a < 0$. This implies that given the assumption of liquidity constraint, the high effort separating scheme is not possible.

Having both types exert a great effort is however not the only way of obtaining separation. Applying scheme A in the first period provides information over types and allows to apply the full information incentive scheme in the second period. Scheme A is therefore potentially more attractive in an intertemporal framework than in a one-period framework, and will be optimal on an interval greater than $[p^*, 1]$. It may be advantageous for the government to have the bad managers making losses in the first period, because in the second period, the full information incentive scheme can be applied. However, pooling followed by scheme B can still be preferable to scheme A followed by the full information given the particular full employment constraint. To check that this is true, note that the payoffs of the two solutions are respectively :

$$p(y_1 - \bar{a}) + (1-p)(y_3 - \underline{a}) + p(y_1 - \bar{a}) + (1-p)(y_2 - \bar{a})$$

under separation and

$$p(y_2 - \bar{a}) + (1-p)(y_2 - \bar{a}) + p(y_1 - (2\bar{a} - \underline{a})) + (1-p)(y_2 - \bar{a})$$

under pooling.

After some manipulations, pooling followed by scheme B appears to be preferable if $p < \bar{p} = \frac{y_2 - y_3 - \Delta a}{y_1 - y_3}$. Pooling followed by scheme B is thus optimal on the interval

$[\underline{p}, \bar{p}]$. Given condition 3 it is also the unique perfect Bayesian equilibrium on this interval.

We now look at the case with external borrowing. In this case, the first period surplus can be borrowed by the government at interest rate r if it is negative or it can be invested (also at interest rate r) if it is positive. To show that pooling followed by scheme B is optimal, we must show again that the two possible separating schemes (high effort of $\bar{\theta}$ or low effort of $\underline{\theta}$) are both less profitable for the government than pooling.

Under separation with high effort, the payoff is $(1+r)(\Pi_B - p\Delta a) + \Pi_F$. With pooling the payoff is $(1+r)\Pi_C + \Pi_B$. Subtracting the latter from the former and rearranging, we find that pooling will be preferred to the high effort separating scheme if $r > \underline{r} = \frac{y_1 - y_2 - \Delta a}{2\Delta a - (y_1 - y_2)}$.

Let us now compare the “cheap separation scheme” with pooling. The payoff under the former is $(1+r)\Pi_A + \Pi_F$ and $(1+r)\Pi_C + \Pi_B$ under the latter. After some manipulations, pooling followed by scheme B appears to be preferable if $p < \bar{p}(r) = \frac{y_2 - y_3 - \Delta a}{y_1 - y_3 - \frac{r}{1+r}\Delta a}$.

Pooling followed by scheme B is thus optimal on the interval $[0, \bar{p}(r)]$ where $\bar{p}(r)$ increases with r . On this interval it is also the unique perfect Bayesian equilibrium given condition 3.

REFERENCES

Aghion, Ph., Blanchard, O. and Burgess, R., 1994. The Behaviour of state firms in Eastern Europe pre-privatization, *European Economic Review*, 38.

Bain, J.A., Miller, J.B., Thornton, J.R. and Keren, M., 1987. The Ratchet, Tautness and Managerial Behaviour in Soviet-Type Economies, *European Economic Review*, 31, 1173-1202.

Bardhan, P. and Roemer, J. (ed.), 1993. *Market Socialism*, Oxford University Press, Oxford.

Berliner, J., 1952. The Informal Organization of the Soviet Firm, *Quarterly Journal of Economics*, 66, 342-365.

Bolton, P. and Roland, G., 1992. Privatization in Central and Eastern Europe, *Economic Policy*, 15, 276-309.

Boycko, M., Shleifer, A. and Vishny, R., 1992. Property Rights, Soft Budget Constraints and Privatization, mimeo, Harvard University.

Carlin, W., Van Reenen, J. and Wolfe, T., 1995. Enterprise restructuring in early transition : the case study evidence from Central and Eastern Europe, *Economics of Transition*, 3, 427-458.

Dewatripont, M. and Roland, G., 1992a. Economic Reform and Dynamic Political Constraints, *Review of Economic Studies*, 59, 703-730.

Dewatripont, M. and Roland, G., 1992b. The Virtues of Gradualism and Legitimacy in the Transition to a Market Economy, *Economic Journal*, 102, 291-300.

Errunza, V. and Mazumdar, S., 1995. Privatization : A Theoretical Framework, Working paper, Faculty of Management, Mc Gill University, Montréal, Canada.

Estrin, S., Gelb, A. and Singh, I.J., 1993. Restructuring, viability and production : A comparative study of enterprise adjustment in transition, Discussion paper, n° 1, London Business School, CIS Middle Europe Centre, London.

Fama, E., 1980. Agency problems and the theory of the firm, *Journal of Political Economy*, 88, 288-307.

Frydman, R. and Rapaczynski, A., 1994. Privatization in Eastern Europe : is the State withering away ?, Central European University Press, London.

Galal A., Jones, L., Tandon, P. and Vogelsang, I., 1992. The Welfare Consequences of Selling Public Enterprises, The World Bank, Washington D.C., USA.

Grosfeld, I. and Roland, G., 1995. Defensive and Strategic Restructuring in Central European Enterprises, CEPR Discussion Paper, n° 1135.

Holmström, B., 1984. Managerial Incentive Problems : A Dynamic Perspective, in : *Essays in Economics and Management in Honor of Lars Wahlbeck*. Helsinki : Swedish School of Economics.

Ickes, B.W. and Samuelson, L., 1987. Job Transfers and Incentives in Complex Organizations : Thwarting the Ratchet Effect, *Rand Journal of Economics*, 18, 275-286.

Laffont, J.J. and Tirole, J., 1988. The Dynamics of Incentive Contracts, *Econometrica*, 51, 1153-1175.

Laffont, J.J. and Tirole, J., 1993. *A Theory of Incentives in Regulation and Procurement*, MIT Press, Cambridge MA.

Litwack, J., 1991. Legality and Market Reform in Soviet-Type Economies, *Journal of Economic Perspectives*, 5, 77-89.

Litwack, J., 1993. Coordination, Incentives and the Ratchet Effect, *Rand Journal of Economics*, 24, 271-285.

Mc Millan, J., 1995. *Markets in Transition*, symposium paper presented at the 7th World Congress of the Econometric Society, Tokyo, Japon.

Meggison, W.L., Nash, R.C. and Van Randenborgh, M., 1994. The Financial and Operating Performance of Newly Privatized Firms : An International Empirical Analysis, *Journal of Finance*, 49, 403-452.

Nove, A., 1985. A Note on Errors and their Causes, *Soviet Studies*, 37, 276-280.

Pinto, B., Belka, M. and Krajewski, S., 1993. Transforming State Enterprises in Poland, *Brookings Papers on Economic Activity*, 213-270.

Pinto, B. and van Wijnbergen, S., 1995. Ownership and Corporate Control in Poland : Why State Firms Defied the Odds, CEPR Discussion Paper n° 1273.

Roland, G., 1994. On the Speed and Sequencing of Privatization and Restructuring, *Economic Journal*, 104, 1158-1168.

Roland, G. and Sekkat, Kh., 1996. Managerial Career Concerns, Privatization and Restructuring in Transition Economies, CEPR, Discussion Paper, N° 1363.

Roland, G. and Sekkat, Kh., 1993. Market Socialism and the Managerial Labour Market, in : Bardhan, P. and Roemer, J. (eds.) *Market Socialism*, Oxford University Press, Oxford, 204-215.

Weitzman, M. , 1976. The New Soviet Incentive Model, *Bell Journal of Economics*, 7, 251-257.

Weitzman, M., 1980. The Ratchet Principle and Performance Incentives, *Bell Journal of Economics*, 11, 302-308.