

## Breaking the Vicious Circle of the Predatory State

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# Breaking the Vicious Circle of the Predatory State

Theft is contagious. Many poor countries have flexible law enforcement where illegal private activities stimulate public sector bribe-taking and public sector bribe-taking further stimulates illegal private activities. The more state officials try to feed on the private sector, the more private sector activities are driven underground. Underground activities further induce bribery and venal practices. This kind of uncoordinated predatory action contains the seeds of self destruction that eventually may lead to a regime shift. But political changes are not enough to break away from kleptocracy. The incentives to be involved in massive theft and in petty bribery need to be changed as well.

This paper makes a case for remunerating good performance at low levels of the state apparatus in order to root out corruption at all levels. Thus our paper relates to the growing body of both theoretical and empirical research on corruption following the pioneering study of Rose Ackerman from

1978. In particular Klitgaard (1998), Besley and Maclaren (1993), Flatters and McLeod (1995), Mookherjee and Png (1995), Haque and Sahay (1996), van Rijkeghem and Weder (1996) all explore different aspects of the relation between bureaucratic pay and corruption. Our approach is closest to the work of Mookherjee and Png. We first give a brief verbal presentation of the argument before we consider some finer points within a simple model.

## **Reducing venal practices**

A typical response for the predator state is to keep raising tax rates on dwindling tax bases, supplementing the declining revenue sources with a variety of quasi-fiscal measures such as multiple exchange rates and foreign exchange rationing, negative real interest rates and credit rationing, etc. Such interventions, of course, stimulate rent seeking, which may expand to the point where the productive economy collapses.

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Eventually, and possibly after some inflationary interludes, the predator state is forced by the inadequate revenue response to curtail expenditures such as reducing the salaries of captive civil servants and cutting back on essential infrastructure and social outlays. Increasingly inadequate salaries stimulates corruption at higher levels which again is likely to be contagious at lower levels of the administration (Andvig and Moene 1990). All this contribute to a further erosion in the public finances and a vicious circle may develop.

Sooner or later, the predator state exhibits advanced decay and a revolution may be precipitated with the slogan of getting rid of corruption. In extreme cases officials have even been shot to make an example. But untrained revolutionary cadres ordered to collect taxes or to defeat overbilling in public purchases, constitute temporary improvements at best. Clearly, the most corrupt officials must be weeded out and fiscal reforms must be embarked upon. But unless the underlying incentive problems are addressed corruption easily reappears and reform efforts are quickly stymied. The challenge is to improve fiscal performance in situations where public expenditures cannot be raised unless more tax revenues are brought in. A performance bonus may in this situation be particularly appropriate. A simple bonus scheme can be designed to remunerate bureaucrats as a response to acts that improve the fiscal situation either because unnecessary costs are cut or more taxes are brought in.

The point is to remunerate bureaucrats and separate administrative units for decisions under their control that either (i) raise tax revenues with given tax rates, or (ii) bring down the costs of a given level of private provisions to the government or (iii) in other ways contribute to fiscal improvements and productivity enhancements in the

public sector. The bonus can be implemented locally and should be adjusted to the relevant conditions.

Improved bureaucratic efficiency could also be achieved by combining a threat of the sack with supervision and salaries high enough to deter illegal transactions. But since this type of efficiency wages require a wage premium to bureaucrats above their next best alternative, efficiency wages may simply be too expensive for the governments of the type of countries we have in mind. In contrast, the bonus idea does not rely on a permanent wage premium.

It may be instructive to identify the different ways that efficiency wages and the bonus attack corruption. Efficiency wages are based on an effective punishment of the bribee if he is caught. The bonus idea rewards honesty among potential bribee. Efficiency wages make bribe taking more costly to the potential bribee. The bonus makes bribing more costly to the potential briber. To accept a bribe in the presence of the bonus implies namely that the bribee forgoes an additional pay. As a consequence the bribe must be raised in order for the briber to obtain the benefit or the cost reduction he illegally seeks.

Furthermore, higher bribes make illegal activities less lucrative for private agents. On the margin therefore it pays for private sector agents to engage themselves less in illegal and unproductive rent seeking and more in productive activities. This is part of the social benefit of the bonus scheme. In addition comes effects caused by possible changes in the behavior of senior civil servants who are not remunerated directly by the bonus.

In many countries lower level bureaucrats have good reasons to be involved in petty bribery. Their salaries are so low that they have no other choice in order to cover the costs of living. Yet even without making these bureaucrats more honest, a performance

bonus may improve economic efficiency both in the private and public sector.

Corruption among higher level officials, however, can be both more harmful and difficult to control. Yet, as long as higher level officials are not corrupt through and through, the bonus may also prove to be beneficial in order to reduce venal practices among top bureaucrats. When private sector agents are less inclined to be involved in illegal activities, there is a declining willingness to pay for corrupt services as well. As a consequence less can be gained from a corruptible law enforcement among senior civil servants and the incidence of corruption at this level may go down.

Thus the introduction of the bonus scheme may in itself lead to a reduction in corruption among higher level managers who are not remunerated by the bonus. When corruption at higher levels of management is contained, lower level bureaucrats become stronger vis a vis private law-breakers. As a consequence the bonus to lower levels bureaucrats becomes even more effective and a virtuous circle may be initiated.

## The Formal Argument

In the model developed below private agents pay bribes to avoid costs or to obtain benefits. We abstract, however, from the specifics of the illegal transactions involved. Private agents are represented in the model by firms that are attempting to increase their net profits through rule bending or illegal activities. Here we think of activities like tax evasion, overbilling, favoritism and other types of rent-seeking that are against the rules. Thus we develop the argument within a rather abstract setting meant to capture various forms of illegal rent seeking. In the end of the model presentation, however, tax-evasion is used as an example.

## Legal and illegal rents

Total profits of the firm are assumed to be separable into two parts  $V + S$  where  $V$  is the profits earned if the rules were followed and  $S$  indicates the level of additional gross rents obtained by breaking the rules. Both  $V$  and  $S$  obviously depend on how the firm utilizes its human and material resources. To simplify, we assume that the availability of some necessary resource equal to  $E^*$  which can be allocated between the two activities. Thus the level of legal profits  $V$  is increasing in  $E$  at a decreasing rate, while the level of illegal rents in  $S$  are increasing in  $(E^* - E)$  at a decreasing rate.

Accordingly,  $E \leq E^*$  may be interpreted as a measure of legally constrained productive efficiency which reaches its optimal level at  $E = E^*$  where resources are utilized efficiently to maximize legal profits. Lower levels of  $E$  are inefficient. The relationship between  $E$  and  $S$  is illustrated in quadrant (i) of Figure 1. The rest of the Figure is explained as we go along.

## Bureaucrats and higher level authorities

Decisions follow a sequence where, first, the firm decides the level of  $E$  and thus the composition of legal and illegal activities. From time to time, however, activities are controlled by the relevant body of the bureaucracy that may find out that illegal rents are obtained. The chance of detecting illegal activities depends on how hard these bureaucrats work which again depends on the economic incentives they face.

With a bonus bureaucrats are rewarded by a share  $\gamma$  of the illegal rents they identify and successfully collect or eliminate. So, if  $S$  is tax evasion, the bureaucrat (the tax collector) is rewarded by  $\gamma S$  if he amount collecting the evaded; or alternatively if  $S$  is the amount of overbilling in a governmental contract with a private supplier, the bureaucrat who identi-

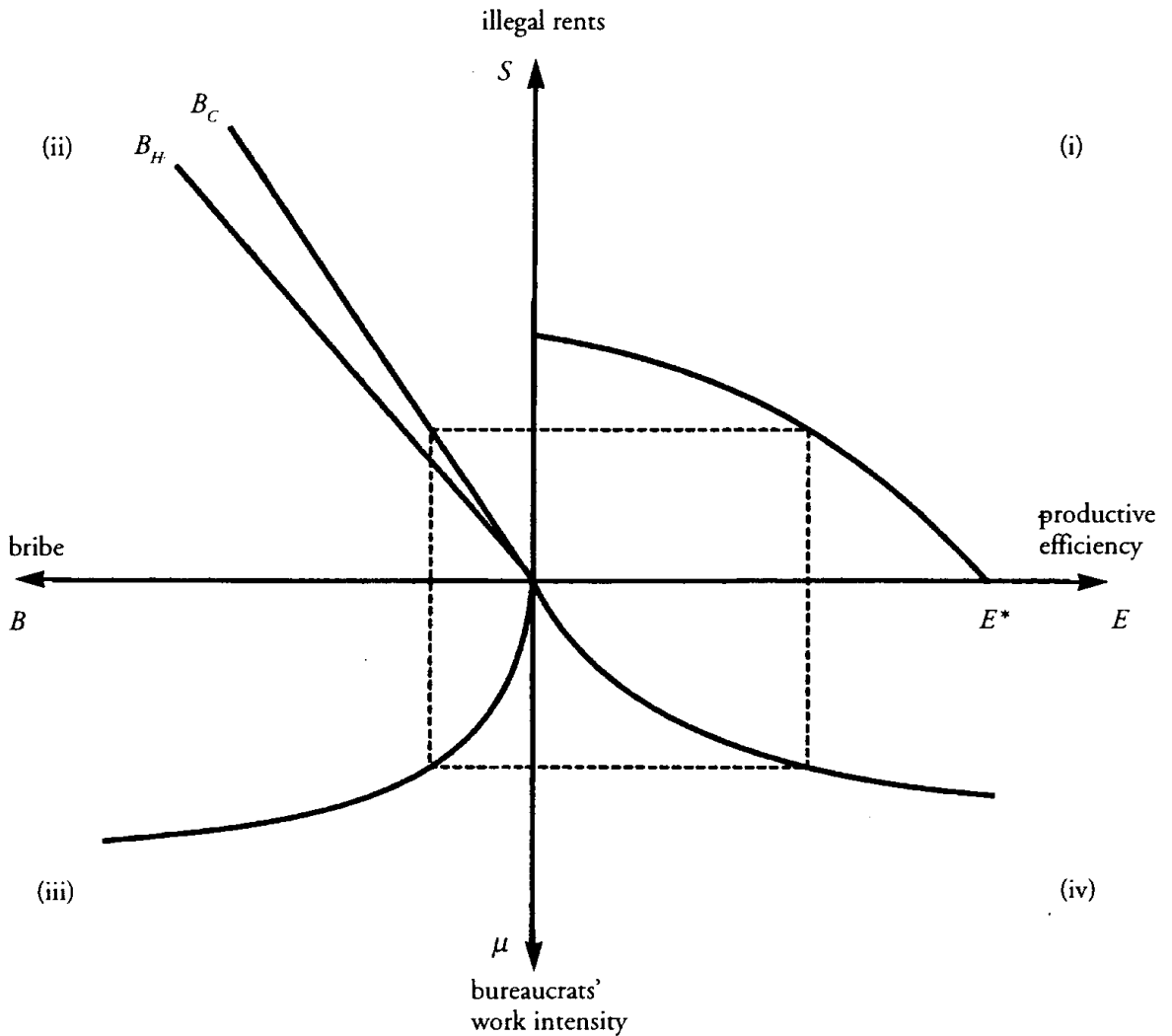


Figure 1

fies the cheating is rewarded by  $\gamma S$  if he can reduce governmental payment by  $S$ . (In practice the bonus parameter can of course vary depending on the bureaucratic tasks considered.)

A bureaucrat who has identified an illegal rent may be willing to take a bribe for not reporting the case. To err on the safe side we assume that all lower level bureaucrats are corrupt. If the firm and the bureaucrat disagree the case may be brought in for consideration of higher level state authorities who have the final word on the case. Also at this level it may be possible for the firm to bribe the official. At each stage those involved perceive the expected outcomes at later stages.

Let us start with a bureaucrat who has identified illegal rents  $S$ . Faced with a firm that in this way tries to circumvent the rules, the bureaucrat may take a bribe for not reporting the firm. The level of the bribe is determined by bargaining between the firm and the bureaucrat. The agreement is constrained, however, by the possibilities of both the firm and the bureaucrat to appeal the case.

Thus to determine the bribe that both the firm and the bureaucrat can accept we have to derive what happens if they disagree. The case is then appealed to higher-level authorities who by inspecting the case in the light of the evidence provided by the bureaucrat always

can find out what  $S$  is. But not all officials employed at this level are honest. A fraction  $\theta$  of the higher level officials are corrupt and willing to take a bribe for declaring the firm free of suspicion. Honest officials, however, cannot be bribed. The presence of corrupt officials implies that when a case is appealed, it is handled by a corrupt official with probability  $\theta$  and by a non-corrupt official with a probability  $(1-\theta)$ .

With respect to the behavior of higher-level officials it is simply assumed that honest officials collect (or eliminate) the illegal rent, which means that they collect the amount of tax evasion, reduce overbilling, undo favoritism and so on depending on the content of the case. In addition there may be other types of pecuniary and non-pecuniary punishments that we abstract from. To include extra punishment of this sort would just strengthen our arguments.

If the case is handled by a non-corrupt higher-level official, he collects the illegal rents he has identified. If the case is handled by a corrupt official, he declares the firm free of suspicion and receives a bribe  $B_H$  determined by bargaining with the firm. The illegal rents  $S$  identified, constitute the surplus to be shared between the firm and the corrupt higher-level officials. By bargaining the corrupt official obtains a fraction equal to his bargaining power  $\alpha$  of the surplus implying that

$$B_H = \alpha S \quad (1)$$

where  $0 < \alpha < 1$ . Equation (1) is illustrated in quadrant (ii) of Figure 1.

### The bargain between the firm and the bureaucrat

Let us then return to the bargain between the firm and the bureaucrat. Since both can use an appeal to higher-level authorities as a

threat against the other, it is impossible to force either side to accept a deal that gives them less than the expected outcome of an appeal. By appealing the firm obtains its legal profit plus the illegal rents net of bribes if considered by a corrupt official and just its legal profit if considered by a honest official.

Thus in expected terms the firm obtains

$$\pi = V + \theta(S - B_H) \quad (2)$$

and similarly the lower-level bureaucrat obtains

$$u = (1 - \theta)\gamma S \quad (3)$$

In both (2) and (3), the probability of being treated by a corrupt official is  $\theta$ . Thus, a bribe  $B_C$  gives an expected surplus to the bureaucrat equal to  $B_C - u$  and a surplus to the firm equal to  $V + S - B_C - \pi$ . The essence of bargaining theory (for instance the asymmetric Nash solution) is that the surplus obtained by each side should be proportional to the relative bargaining powers, or formally, by using (1), (2) and (3),

$$\frac{B_C - (1 - \theta)\gamma S}{(1 - \theta)S + \theta\alpha S - B_C} = \frac{\lambda}{1 - \lambda} \quad (4)$$

where  $0 < \lambda < 1$  is the bargaining power of the bureaucrat. Solving for  $B_C$  we find the equilibrium level of the bribe equal to

$$B_C = \phi S \quad \text{where} \quad \phi \equiv \phi(\theta, \lambda) = \frac{\lambda}{[(1 - \lambda)\gamma + \lambda](1 - \theta) + [\alpha\lambda]\theta} < 1 \quad (5)$$

The  $B_C$  curve is also illustrated in the second quadrant of Figure 1.

### The behavior of the bureaucrat

Prior to the bargain the bureaucrat of course decides how carefully he checks the firm. A work intensity equal to  $\mu$  implies that illegal

rents are discovered with a probability  $\mu$ . In that case he obtains an extra income equal to the bribe  $B_C$ . The bureaucrat determines  $\mu$  by the choice of how much work effort he puts in. The cost of effort is denoted  $c$  and  $\mu$  is increasing in  $c$  at a decreasing rate. By optimizing his work effort, the bureaucrat is willing to increase his effort as long as the marginal cost (equal to unity) is lower than his marginal gain  $\mu'(c)B_C$ . Thus in the optimum we have

$$\mu'(c)B_C = 1 \quad (6)$$

The relationship between the bribe and the level of  $\mu$  that this optimizing behavior entails, is illustrated in Figure 1, quadrant (iii).

#### Incentives to seek illegal rents

The behavior of bureaucrats also affects the firm's incentives to seek illegal rents by its choice of  $E$ . The firm's expected profits is the sum of its legal and illegal rents minus the expected costs of bribing. A bribe is paid, however, only if the illegal rent is detected, the probability of which is  $\mu$ . Thus the expected net profits that the firm maximizes with respect to  $E$  is given by  $V(E) + S(E^* - E) - \mu B_C$ . Inserting for  $B_C$ , the first order condition is

$$(1 - \mu\phi) S'(E^* - E) = V'(E) \quad (7)$$

Condition (7) says that in the optimum the expected marginal gain of illegal activities (the LHS) equals the marginal opportunity costs  $V'(E)$  of foregone legal profits. To be caught for illegal activities is costly to the firm and the marginal benefits of a lower  $E$  decline when bureaucrats work harder. This is reflected in (7) in the sense that the term  $(1 - \mu\phi)$  is reduced when  $\mu$  goes up. As a consequence the firm places less weight on

the marginal benefits of illegal activities and the chosen level of  $E$  is higher the higher is  $\mu$ . Accordingly productive efficiency  $E$  is higher the harder the bureaucrat is supposed to work. This relationship is illustrated in Figure 1, quadrant (iv).

#### Equilibrium with a given incidence of higher-level corruption

An equilibrium situation within our set-up describes levels of illegal rents, bribes, work intensities, and productive efficiency that is self-sustaining and consistent. Thus, the amount of illegal rents  $S$  induces a level of bribes. The level of the bribe to the bureaucrat  $B_C$  determines their chosen work intensity. The work intensity of bureaucrats affects the profit-maximizing level of productive efficiency  $E$ . When all these levels are consistent, like the levels that are connected by the dotted lines in Figure 1, we have achieved an equilibrium situation that will be maintained as long as none of the parameters of the model change. This is the vicious circle of public and private sector theft.

#### The impact of a bonus increase

The possibility of obtaining bribes provides work incentives for the bureaucrat. Thus the bonus (an increase in  $\gamma$ ) affects the bureaucrats work incentives via the impact on the bribe. An increase in the bonus parameter increases the equilibrium bribe for each level of  $S$  since from (5) we see that  $\phi$  and therefore the bribe  $B_C$  is increasing in the bonus parameter  $\gamma$ . The intuition is straightforward. The higher the bonus the more income the bureaucrat forgoes by not reporting the case, thus the higher the bribe has to be. A higher bribe  $B_C$  implies a higher work intensity  $\mu$ . How a higher bonus affects the bribe is illustrated in Figure 2, by the shift of the  $B_C$ -curve to the dotted curve in quadrant (ii).

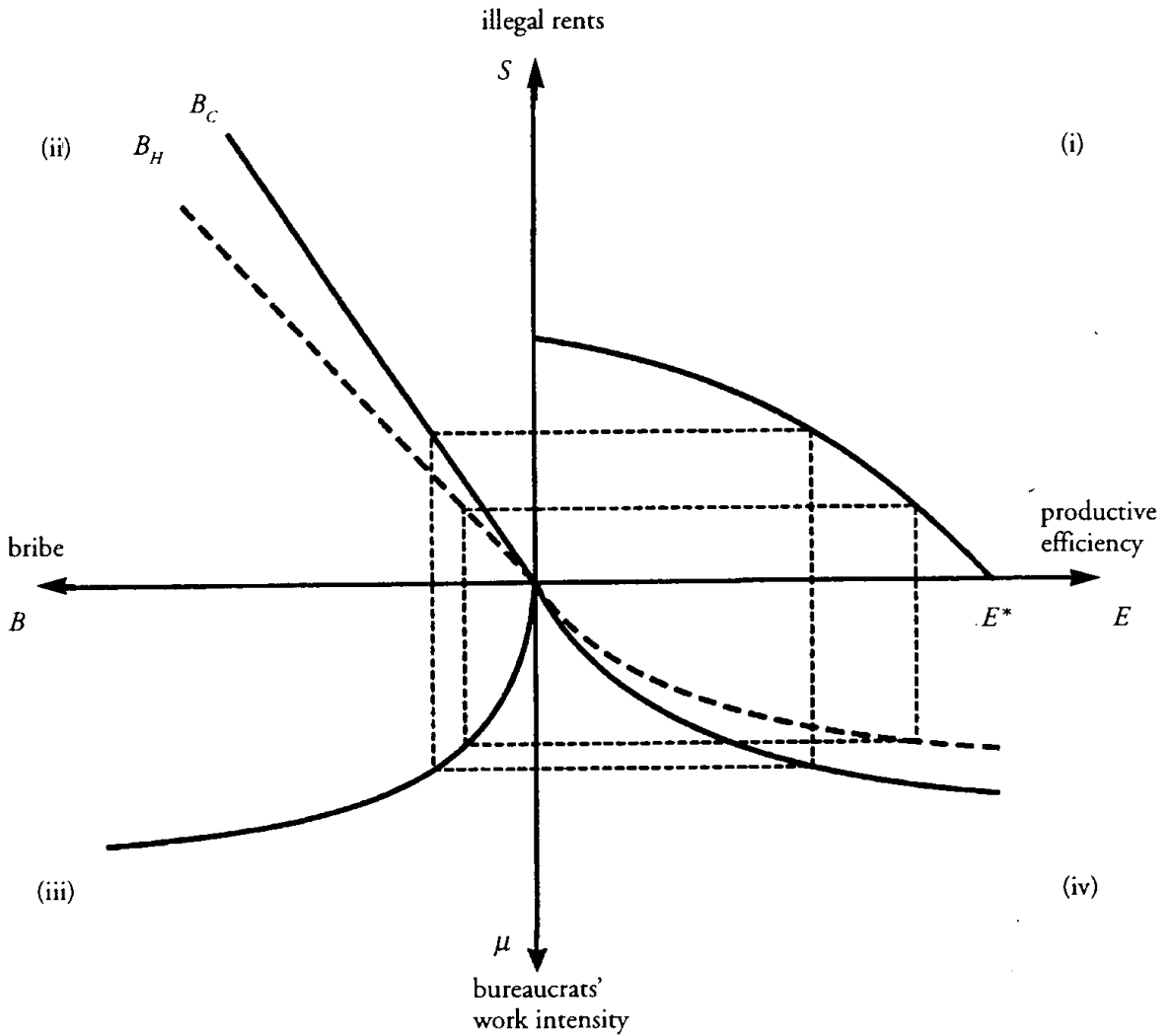


Figure 2

The bonus also has an impact on firms' incentives to seek illegal rents. The firm knows that with a bonus bureaucrats have to be paid higher bribes to be willing not to report illegal rents if they identify them. This is captured by the first order condition for maximum profits via the impact on the left hand side of (7) via the dependence of  $\phi$  on  $\gamma$ . In Figure 2, this is illustrated by the shift of the curve in the forth quadrant, which exhibits the firm's choice of  $E$  for each level of bureaucratic work intensity  $\mu$ .

The shifts in the location of the two curves just described, generate a new equilibrium that is illustrated by the levels of illegal rents, bribe, bureaucratic work intensity and

productive efficiency that are connected by the dotted lines in Figure 2. The unique implication of a higher bonus is that productive efficiency increases in the sense that the profit maximizing level of  $E$  goes up. In this manner a bonus scheme to bureaucrats can bring more of the economy back from the underground. Depending on the parameters of the model, the equilibrium bribe and therefore also the bureaucratic work intensity may or may not go up as well. The fact that bureaucrats obtain a higher share of the illegal rents that they detect, may lower the chosen level of  $S$  so much that the level of the bribe in fact goes down. This case is the one illustrated in Figure 2, where a higher bonus



is associated with a lower equilibrium bribe  $B_C$  a lower work intensity  $\mu$ , but a higher level of productive efficiency  $E$ .

### The impact of higher level corruption

The efficiency of the bonus scheme depends on the incidence of higher level corruption. From (5) it is clear that  $\phi$  and the bribe  $B_C$  are decreasing in the incidence of corruption  $\theta$  among higher-level authorities. The reason is that an appeal from the bureaucrat is a less severe threat to the firm as long as it can bribe its way also at this level, and that an appeal by the firm would lead to a lower expected bonus to the bureaucrat the more corruption there is at this higher level. Thus a high level of corruption among higher-level bureaucrats weakens the position of the bureaucrat and strengthens the position of the firm.

Moreover, the impact of an increase in the bonus on work effort becomes smaller when the incidence of corruption of higher-level officials goes up. This is so because the bribe  $B_C$  increases less with the bonus at higher levels of  $\theta$  according to (5). In fact, in the limit there is no impact of the bonus on work effort when all higher-level officials are corrupt, that is when  $\theta = 1$ . The bureaucrat then obtains no expected gain in bonus income by appealing the case to higher-level authorities. When no bonus income is foregone by accepting the bribe for not reporting illegal rents the bureaucrat has no incentive to work harder with a bonus than without.

For these reasons it is important to incorporate how the incidence of corruption among higher-level officials  $\theta$  is affected by the bonus to lower level bureaucrats. A robust and simple way to make higher-level corruption endogenous in the model is to assume that it is positively related to the potential gain from acting in a corrupt manner. The gain is just

the bribe  $B_H$  that higher officials may obtain when cases end up in their hands, implying that

$$\theta = F(B_H) \quad (8)$$

where  $F(\cdot)$  is an increasing function. Now, since  $B_H = \alpha S$ , an increase in the bonus to bureaucrats reduces  $S$  and therefore also  $B_H$  and, as a consequence, the incidence of higher level corruption  $\theta$  declines. Thus the impact of a bonus on the functioning of the system implies that bureaucrats work harder for each level of  $S$  and that firms choose to be less involved in illegal activities. This implies again that productive efficiency improves and the level of  $S$  declines which again reduces the incidence of corruption among higher-level bureaucrats. As  $\theta$  goes down, the bribe  $B_C$  increases further and the  $E$  rises both because  $\mu$  is higher for each level of  $S$  and because there is less to be gained by an appeal to higher level authorities.

In this manner the introduction of a bonus scheme leads to more honesty in parts of the administration that are not directly remunerated by the bonus. Moreover, a more honest top level of the administration makes the bonus scheme more efficient. Thus a virtuous circle may result in the sense that a bonus makes firms more honest which again induces higher officials to act in a more honest way as there is less to gain from corruption. This again induces firms to engage less in illegal activities and so on.

In Figure 2 a reduction in  $\theta$  can be illustrated by further shifts in the two dotted curves in the same direction as with an increase in the bonus parameter.

### Tax evasion as an example of illegal activities

Tax evasion is a widespread case of illegal activity. In the spirit of the model exercise

above the firm chooses how much of its profits to report. With the tax rate denoted by  $t$ , reported profits by  $R$  and true profits by  $\Pi$ , the model results above can be interpreted by suitable transformations as follows: Reported profits play a similar role as  $E$  above, legal profits are  $(1-t)\Pi$ , tax evasion  $t(\Pi-R)$  is now the illegal rent under consideration. Thus we have

$$V = (1-t)\Pi, \quad S = t(\Pi-R) \quad V+S = \Pi-tR \quad (8)$$

To disguise the true profit involves costs. The firm has to bear costs associated with underground activities that are not so easily monitored by tax collectors. In addition it has to keep double accounts and so on. The costs of trying to evade taxes implies that  $\Pi$  and  $R$  are related as  $\Pi = \Pi(R)$  with  $\Pi'(R) > 0$  (and  $\Pi''(R) < 0$ ). The firm optimizes by its choice of  $R$ . For further details see Chand and Moene (1997).

With these assumptions in place the core results of the model easily translates. With a bonus proportionate to the amount of tax revenues they collect, tax collectors work harder for each level of tax evasion that they may detect. This provides incentives for firms to narrow the gap between reported and true tax liabilities. Thus the tax base widens and the fiscal situation of the government is improved for given tax rates. The reduced tendency to evade taxes among private agents, may also lead to more honesty among higher-level tax officials simply because less can be gained by being corrupt. A more honest top level of the tax administration makes the bonus to tax collectors even more effective. A positive spiral may emerge.

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