Counterproductive Leniency Programs against Corruption

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Abstract

The paper shows that ghting corruption with leniency programs reductions of the legal sanctions for wrongdoers who spontaneously report to law enforcers may be highly counterproductive. These programs are typically moderate, in the sense of only reducing, or at best cancelling the sanctions for the reporting party. Moderate leniency programs may be too weak to deter long-run corrupt relations and, as it turns out, provide an effective enforcement mechanism for other forms of corruption, one-shot and infrequent corrupt transactions, which would be unenforceable (and therefore absent) otherwise.

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1 Introduction

This paper shows that the legal system might in the attempt to deter traditional forms of corruption enforced by repeated interaction provide an effective enforcement mechanism for other forms of corruption, one-shot and infrequently repeated ones, that would not be feasible otherwise.

The economists traditional benevolence toward corruption, seen as a way to overcome excessive regulation, has been heavily questioned by several recent studies showing that corruption, and bad law enforcement in general tend to reduce investment, nancial development, and growth (see e.g. Bardhan, 1997, for a comprehensive overview; Shleifer and Vishny, 1993, for the general distortionary effects; and La Porta et al., 1997, on law enforcement and nancial development).

Regarding the order of magnitude of these negative effects, Mauro s (1995) cross-country analysis estimates that a one-standard-deviation improvement in a country corruption index is associated with an increase in the investment rate by about 3 percent of GDP. Recent work on transition economies, particularly on Russia, places corruption and weak enforcement of property rights (corruption and extortion can be seen as ex-post taxes on pro ts) at the heart of their poor post-privatization performance (e.g. Boycko et al. 1995; McMillan et al. 1999; and Black et al. 1999).

Generally speaking, corruption, as any other illegal exchange, suffers of an enforcement problem because it obviously cannot rely on explicit contracts enforced by the legal system. Unless the exchange between an agent s bribe and a bureaucrat s favor is perfectly simultaneous, a rare case, corrupt exchanges need to be repeated frequently enough. Then the parties nd it convenient to stick to the terms of the illegal agreement in order to maintain their reputation of honest criminals and be able to realize expected future gains from corruption.

Nevertheless, deterring corruption is usually quite problematic, not least because where corruption is more widespread the law enforcing agencies in charge of monitoring and sanctioning illegal behavior are also inefficient and corrupt (law enforcement agencies are often the rst part of the administration to get corrupt, and economists spent already some efforts to understand how the incentives of these agencies should be structured to minimize corruption; see e.g. Mookherjee and Png, 1995).

Since a corrupt transaction involves at least two parties, it has been often proposed to ght corruption by using private incentives that play one corrupt party against the other(s), that is, to structure the law so that agents involved in a corrupt deal nd

themselves in a situation as close as possible to a Prisoner s Dilemma. This is the idea behind the so called *Leniency Programs*, modi cations of the law that reduce the legal sanctions for a wrongdoer when this reports his behavior, allowing law enforcers to capture the rest of the gang involved in the illegal act.[1] The Prisoner s Dilemma itself is perhaps the best known example of a leniency program, one that reduces the sanctions for a prisoner that unilaterally confesses his crime, allowing to prove guilty and punish heavily his former partner(s).

The Prisoner s Dilemma refers to a situation in which the joint law violators are already under investigation, and the leniency program seeks to elicit the cooperation of at least one of them in order to reduce the costs of prosecution and maximize the probability of proving them guilty.[2] However, leniency programs have been also advocated as a way to deter crime and reduce investigation costs by inducing *undetected* law violators to self-report. Leniency programs reserved to law violators who are not yet under investigation may indeed destabilize multiparty criminal arrangements such as long-run corrupt relations by increasing the risk that one of the involved parties unilaterally reports to enjoy the bene ts of the leniency program (which are typically restricted to the rst reporting party only). This paper focuses on the effects of this kind of leniency programs, directed to agents involved in corrupt deals who spontaneously report their behavior when they are not yet under any sort of investigation.

In principle, these programs could be very powerful. They could costlessly deter most kinds of collusive transactions enforced by reputational considerations, making leniency programs for agents under investigation, and the investigation activity itself redundant. To have such pervasive effects, though, these programs should not only reduce sanctions, but also have (even high) prizes for wrongdoers that spontaneously report allowing to prove guilty their partners.[3] Instead, for a number of reasons, in reality these programs are advocated and/or implemented only up to the cancellation of the legal sanctions for the reporting party. In this paper we argue that this may be a counterproductive policy.

[1] Other leniency programs, direct to individual crimes, simply reduce the punishment for a law-breaker that self-report his crime. On these programs see e.g. Kaplow and Shavell (1994).

[2] See Motta and Polo (1999) for a recent analysis of these kinds of programs in Antitrust law enforcement.

[3] Of course, there are drawbacks in giving prizes to law violators that self-report. Abstracting from moral considerations, one important drawback is that such programs give agents incentives to distort information in the attempt to get the prizes.

On the one hand, reducing or even cancelling sanctions for a self-reporting agent has little deterrence effect against long-term corrupt relations. If such relations were enforced before the introduction of the leniency program, it means that there where positive expected gains from corruption sufficient to both curb incentives to cheat within the relation, and compensate for the probability of being caught and sanctioned by the law-enforcing agencies. Then, self-reporting within a leniency program that reduces or at best cancels the sanctions for a reporting agent would bring this agent a net loss of expected gains from corruption.[4]

On the other hand, as we demonstrate below, the introduction of such programs may have the deleterious side effect of enforcing other kinds of corrupt transactions, one-shot or infrequently repeated ones, which were not enforceable before. One-shot illegal transactions, such as occasional corrupt deal between bureaucrats and rms, are normally (i.e. absent leniency programs) difficult to enforce because the party that delivers rst has no credible threat available to induce the other party to stick to its promise. For example, suppose that in a one-shot rm-bureaucrat corrupt transaction the rm pays the bribe rst. The bureaucrat can then simply not deliver the illegal favor. The rm might threaten to retaliate by reporting to the police, but such threat would clearly be empty. The rm would eventually not report to the police, since if it would, it would also face the high legal sanctions against corruption. The converse happens if the illegal favor is delivered by the bureaucrat before the payment of (part or all of) the bribe.

Moderate leniency programs that reduce sanctions for a reporting party alter this situation and provide the would-be corrupt parties with the credible threat they need to enforce their deal. To see this, within the example above consider a leniency program that reduces the legal sanctions against a rm that spontaneously reports

[4] This is probably why the early US Corporate Leniency Program for Antitrust law violations, which was directed exclusively to reporting rms not yet under investigation, was relatively ineffective in terms of number of reporting rms (Antitrust Division, 1994, quoted in Motta and Polo, 1999). Its effectiveness increased when the Leniency Program was extended to rms under inquiry because, of course, for a rm in that situation a reduction in expected sanctions becomes a prize. But this increase came probably at the cost of a reduction in the deterrence effect of the overall program, since rms might then be led to collude by the possibility of reporting and getting reduced nes if caught (see Motta and Polo, 1999). An alternative route, which would have increased both the effectiveness and the deterrence effect of the program, would have been to allow the rst rm in a cartel that spontaneously reports hard information on the collusive agreement not only to have its sanctions cancelled, but also to cash a prize, say part or all the monetary ned eventually paid by other colluding rms.

having paid a bribe to a monetary ne smaller or equal to the paid bribe. In this case, if the bureaucrat accepts the bribe but does not deliver the promised illegal favor, the rm has incentives to report, help law-enforcers to ne the bureaucrat and recover the bribe, and then pay the ne. Knowing this, the bureaucrat delivers the illegal favor. If the bureaucrat also delivers, then none of the agents has incentives to report, since doing it they lose the realized gains from (illegal) trade. Therefore, by making the threat of reporting in case of non-delivery credible, the leniency program has made enforceable one-shot corrupt deals which were not possible before.

In the next sections we generalize this example, also endogenizing the timing of the exchange, and characterize the parameters con gurations that make leniency programs counterproductive.

2 The model

The model describes the choices made by two players, a bureaucrat (B) and an entrepreneur (E). They both have to perform actions in order to realize an investment whose net value for the entrepreneur is $v > 0$. The bureaucrat s action, a, is illegal because it is contray to his/her duties, therefore he/she may ask for a bribe, $b < v$, to perform it. Furthermore, he/she bears a private cost, c. We de ne corruption as the agreement entered into by the bureaucrat and the entrepreneur according to which the former does a and the latter pays b. Corruption exists even if the two players do not fully obey to this agreement. As we limit our analysis to one shot game, the term corruption hereafter refers only to occasional illegal arrangements. We assume that a law enforcer is not able to detect corruption unless one of the players defeats. If this happens both players loose their illegal gain (v and b) and may be imposed a ne, F_i, $i = B, E$, with $F_i > 0$[5]. A leniency program reduces the ne in icted to one of the wrongdoers if he/she denounces the illegal conduct and provides evidence sufficient to convict the other offender. We denote with L_i, $i = B, E$ the amount of

[5]This assumptiom may be relaxed assuming that there is a positive probability of detection, p, if nobody cheats which depends on the amount of resources employed by the law enforcer in carring out its actvity. This probability equals 1 if one of the players cheats. If we adopted this assumption we should substitute in the payoff of the entrepreneur the value of the project, v, with its expected value given by: $(1-p)v - p(F_E + b)$, and in the payoff of the bureaucrat, his expected gain given by: $(1-p)b - pF_B$. This formulation improves the realism of the model but does not change its fundamental results. Therefore, for the sake of simplicity, we adopt the simpler assumption described in the text.

the ne for the two players set by the leniency program, with $L_i \leq F_i$. If $L_i = F_i$ for any i, then we are in the case of no lenienecy . The leniency program may also establish a negative ne, $L_i < 0$, for the cheater, however as long as $-L_i < g_i$, where $g_B = b$ and $g_E = v$, the cheater looses his/her gain obtained from the illegal transaction. A leniency program gives a reward to the cheater if $-L_i > g_i$. We denote with $\Lambda = \Lambda_E \times \Lambda_B$, the set of all available leniency programs.

Corruption is carried out over time. Therefore we describe the execution of the illegal agreement as a sequential game. It can take two different timings: in the rst timing the entrepreneur pays the bribe before the action a is performed by the bureaucrat; in the second timing the bureaucrat performs a and then the entrepreneur pays b.

Timing 1 ($T1$) is described in gure 1. In the rst node E_0 the entrepreneur has two actions: either pays b (b) or does not (n). If he pays the game moves to node B_0. At this node the bureaucrat has three actions: denouncing the entrepreneur (d); doing nothing (n); or perfoming a (a). If he chooses n, the game reaches node E_1 where the entrepreneur can either denounce the bureaucrat (d) or not (n). If the bureaucrat perfoms a, the game gets to E_2 where the entrepreneur has the same set of actions as in E_1 (d or n). At each nal node the payoffs of the two players are reported with the entrepreneur s payoff rst and the bureaucrat s payoff second.

Timing 2 ($T2$) is described in gure 2. In the rst node, B_0, the bureaucrat has two feasible actions: nothing (n) or performing a (a). If he chooses a, the entrepreneur moves (E_0). He can: denounce the bureaucrat (d); do nothing (n); or pay the bribe (b). If he chooses n or b the bureacrat has to move again (B_1 or B_2) and he can either denounce the entrepreneur (d) or not (n). The payoffs are reported at the nal nodes as in timing 1.

The two players can always choose the timing of the game. Therefore, if a leneiency program wants to deter corruption it must be able to do so in both timings.

These games are solved by backward induction and therefore the equilibrium concept is that of Subgame Perfect Nash Equilibrium (SPNE).

We say that corruption is enforceable if there is a SPNE in which the burecraut performs the illegal action, a, the entrpreneur pays the bribe, b, and neither player denounces the other. Our aim is to analyze how the introduction of a leniency program affect the enforceability of corruption.

We rst analyze the situation in which no leniency programs exists: $L_i = F_i$ for any i.

Proposition 1 *If there are no leniency programs corruption is not enforceable both in $T1$ and in $T2$.*

Proof. Let us denote with A_t^i, $i = E, B$, the set of available actions for player i at the node i_t, $t = 0, 1, 2$. The correspondence $S_i : A_t^i \to A_t^i$ de nes the best actions for player i at the node i_t in a discending order, given that in the prosecution game all the actions not in $S_i(A_{t+n}^i)$, with $n = 1, 2$, (if these nodes exist) are eliminated. If $S_i(A_t^i)$ is a singletone at each node, it de nes the only SPNE of the game. In $T1$ we have:

$S_E(A_2^E) = n$ as $(v - b) > (-b - L_E)$ since $L_E = F_E > 0$;
$S_E(A_1^E) = n$ as $-b > (-b - L_E)$ since $L_E = F_E > 0$;
$S_B(A_0^B) = n$ as $b > -L_B$ since $L_B = F_B > 0$; and
$S_E(A_0^E) = n$ as $0 > -b$.

Theferore in this SPNE the entrepreneur does not pay the bribe and the bureaucrat does not perform the illegal action, a. In $T2$ we have:

$S_B(A_2^B) = n$ as $(b - c) > (-c - L_B)$ since $L_B = F_B > 0$;
$S_B(A_1^B) = n$ as $L_B = F_B > 0$ as $-c > (-c - L_B)$ since $L_B = F_B > 0$;
$S_E(A_0^E) = n$ as $v > -L_E$ since $L_E = F_E > 0$; and
$S_B(A_0^B) = n$ as $0 > -c$.

Therefore also this game has only one SPNE in whch corruption is not enforced. ■

Proposition 2 *Corruption is not enforceable both in $T1$ and $T2$ if the leniency programs is such that the cheater looses his/her illegal gain and pays a positive ne ($L_i > 0$; $i = E, B$).*

Proof. As long as L_i are positive the result of the previous proposition holds as it was not based on any assumption on L_i other than $L_i = F_i > 0$ for any i. ■

Now we examines the cases in which $L_i \leq 0$. First of all we set some thresholds for both L_E and L_B. The minimum ne that can be given to the entrepreneur equals the value of the project plus the bribe paid to the bureaucrat and the ne imposed on the latter, i.e $\min \Lambda_E \equiv L_E^m = -(v+b+F_B)$. The minimum ne for the bureaucrat is given by the bribe plus the ne imposed on the entrepreneur, i.e. $\min \Lambda_B \equiv L_B^m = -(b+F_E)$. The other relevant values are: $L_E^{(1)} = -(v - b)$; $L_E^{(2)} = -v$; $L_B^{(1)} = -(b - c)$; and $L_B^{(2)} = -b$. The maximum ne for the two players is given by the No Leniency Point ($L_i = F_i$, $i = E, B$).

Using these values we partition the set of all possible leniency programs, Λ, in four subsets Λ_1, Λ_2, Λ_3, and Λ_4, as depicted in gure 3.

Analitically these subsets are de ned as follows:

$$\begin{aligned}\Lambda_1 &= \left\{\lambda \in \Lambda : L_E^{(2)} < L_E < 0,\, L_B^{(1)} < L_B \leq F_B\right\} \cup \\ &\cup \{\lambda \in \Lambda : L_E = 0,\, 0 < L_B \leq F_B\} \cup \\ &\cup \left\{\lambda \in \Lambda : L_E = L_E^{(2)},\, L_B^{(1)} \leq L_B \leq F_B\right\} \cup \\ &\cup \left\{\lambda \in \Lambda : L_E^{(2)} < L_E < L_E^{(1)},\, L_B = L_B^{(1)}\right\}\end{aligned}$$

$$\begin{aligned}\Lambda_2 &= \left\{\lambda \in \Lambda : 0 < L_E < F_E,\, L_B^{(2)} \leq L_B < 0\right\} \cup \\ &\cup \left\{\lambda \in \Lambda : L_E^{(1)} \leq L_E < 0,\, L_B^{(2)} \leq L_B < L_B^{(1)}\right\} \cup \\ &\cup \{\lambda \in \Lambda : 0 < L_E < F_E,\, L_B = 0\} \cup \\ &\cup \left\{\lambda \in \dot{\Lambda} : L_E = F_E, L_B^{(2)} < L_B < 0\right\} \cup \\ &\cup \left\{\lambda \in \Lambda : L_E = 0,\, L_B = L_B^{(2)}\right\};\end{aligned}$$

$$\begin{aligned}\Lambda_3 &= \left\{\lambda \in \Lambda : L_E = 0,\, 0 \leq L_B \leq L_B^{(1)}\right\} \cup \\ &\cup \left\{\lambda \in \Lambda : L_E^{(1)} \leq L_E < 0,\, L_B^{(1)} \leq L_B < 0\right\}\end{aligned}$$

and

$$\Lambda_4 = \Lambda \mid (\Lambda_1 \cup \Lambda_2 \cup \Lambda_3)$$

Using this partition we can prove the following lemma.

Lemma 3 *With all leniency programs in Λ_1 corruprion is enforceable if and only if the game is played according to $T1$. With all leniency programs in Λ_2 corruption is enforceable if and only if the game is played according to $T2$. With all leniency programs in Λ_3 corruprion is enforceable both in $T1$ and in $T2$. With all leniency programs in Λ_4 corruprion is not enforceable both in $T1$ and in $T2$.*

Proof. The proof is sketched in an appendix. ■

In many leniency programs the wrongdoers that reports information to the law enforcer gets an overall sanction which is below the gain he/she earned from the illegal transaction. In our formalization this means that $L_i < 0$. In addition to this, leniency programs usually do not discriminate between the two (or more) parties that

take part to the illlegal deal. Therefore they may receive roughly the same reduction of the legal sanction. We can de ne three subsets of Λ with these features. In the rst subset the cheater gets a negative ne which is not higer than the net illegal gain, i.e. $0 < -L_E \leq v - b$ and $0 < L_B \leq b - c$. We call it the set of *Moderate Leniency Programs* (MLPs). The second subset is formed by those leniency programs in which the cheater gets a ne below the gross value of the illegal transacion, i.e. $v - b < -L_E < v$ and $b - c < -L_B < b$. They are named *Intermediate Leneiency Programs* (ILPs). Finally it is conceivable to establish a leniency program according to which the cheater can keep his/hel illegal gain and even get a reward, $-L_E \geq v$ and $-L_B \geq b$. As far as we know these programs do not exist. We call them: *Extreme Leniency Programs* (ELPs).

Most of the existing leniency progams falls in the rst subset, however for them the following proposition applies.

Proposition 4 *All MLPs make occasional corruption enforceable.*

Proof. All MLPs fall either in the set Λ_1 or in the set Λ_2 or in the set Λ_3 (see gure 3). Therefore, according to Lemma 3, there is alsays a timing that can be chosen by the two players in which with these MLPs corruption is enforceable. ■

As for ILPs and ELPs the following proposition holds.

Proposition 5 *With ILPs and ELPs occasional corruption is never enforceable*

Proof. All ILPs and ELPs belong to the set Λ_4. Thus if one of these programs is adopted corruption is not enforceable both in $T1$ and in $T2$ as proved by Lemma 3. ■

Finally, there may be mixed programs in which the entrepreneur and the bureaucrat are treated differently. For instance the leniency program can be moderate for the entrepreneur and inermediate for the boreaucrat or extreme for the bureaucrat and intermediate for the entrepreneur and so on. Nothing can be said in general for mixed leniency programs. However, some important results hold. They are reported in the following propositions.

Proposition 6 *If the leniency program is extreme for one player, regardless of the way the other player is treated, occasional corruption is never enforceable.*

Proof. All leniency programs described in the proposition belong to Λ_4. Lemma 3 applies ■

Proposition 7 *If the leniency program is moderate for one player and intermediate for the other, occasional corruption is always enforceable.*

Proof. The leniency programs described in the proposition belong either to the set Λ_1 or to the set Λ_2 or to the set Λ_3. Lemma 3 applies. ■

Concluding this section, it is important to notice a signi cant difference between ELPs and other leniency programs concerning the informative requirement for their enforcement. If a (mixed) ELP is adopted the law enforcer does not need to know the value of the gain the corrupted cheater earned from the illegal transaction. According to an ELP, the party that provides the evidence needed to prove that corruption occured does not have to pay back his/her gain and may get a positive reward which does not depend necessarily on the values involved in the transaction. All other leniency programs can be enforced only if the law enforcer is able to establish the exact values of the exchange for the two players. If this is not the case, a leniency program which is meant to be intermediate actually might be moderate determining counterproductibe effects.

3 Conclusions

In this paper we showed that some leniency programs, in the attempt to deter traditional forms of corruption enforced by repeated interaction, might provide an effective enforcement mechanism for occasional illegal trasactions that would not be feasible otherwise. In particular we proved that this counteproductive effect occurs if moderate leniency programs are adopted. Extreme leniency programs that give a reward to the party that provides the evidence required to prove the existence of corruption and to punish the other player do not have this adverse consequence. Furthermore they are easier to enforce as courts and the other law enforcers do not need to know the exact value of the transaction for the two players.

4 Appendix

Proof of Lemma 3. The proof of Lemma 3 is lenghty, but trivial. Therefore in this appendix we only sketch it. The reader can easily complete the proof. Propositions 1 and 2 provide some examples of leniency programs which belong to Λ_4 that make corruption non enforceable. Now we prove that corruption is enforceable in $T1$ if it the leniency program belongs to the following set:

$$\left\{\lambda \in \Lambda : L_E^{(2)} < L_E < 0,\, L_B^{(1)} < L_B \leq F_B\right\},$$

which is part of the set Λ_1.

Let us employ the same formalization as in the proof of proposition 1. The following holds:

$S_E(A_2^E) = n$ as $(v - b) > (-b - L_E)$ since $-L_E < v$;

$S_E(A_1^E) = d$ as $-b < (-b - L_E)$ since $L_E < 0$;

$S_B(A_0^B) = a$ as $-L_B < b - c$; and

$S_E(A_0^E) = b$ as $v - b > 0$.

Thus there exist a SPNE in which the entrepreneur pays the bribe, the breaucrat performs the action a, and neither deconunces the other player.

In the same way we can prove all the statements that form Lemma 3. ■

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