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Abstract

This analysis investigates a political corruption model that builds on previous literature on corruption in hierarchies. Our study enriches the literature on political corruption emphasizing the contrasting role of the minorities having a control role of the majorities. In particular, this paper provides a set-up for the conditions in which a briber can choose between either bribing only the majority and accepting the monitoring of the minority, or alternatively, bribing also the minority, which gives up to its control role and increases the probability of success of the illicit action. Minorities can exploit their typical monitoring role in modern democracies either to gain a reputational premium or to get involved in bribing and raising higher stakes. Thus, policy-makers face a sort of paradox when attempting to strengthen the control role of minorities and reduce corrupt behavior because this may cause the opposite effect of inducing the minorities to get involved into the illicit activity and, eventually, spread the corruption disease.

Keywords: Bribing; political corruption; monitoring; rent seeking; minority; political reputation.

JEL: D72; D73; K42.

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1 Introduction

The following analysis builds on the several cases of political corruption, in which private individuals, groups, or firms influence through illicit conducts the state institutions' decision-making process. The distinctive trait of political corruption is the interaction between private and public actors through which a collective good is 'illegitimately converted into private-regarding payoffs' (Heidenheimer and Johnston, 2002). The main element characterizing the illicit conduct is the payment of money or other utilities to corrupt public officials in exchange of some private advantage against the public interest. This situation occurs in a variety of forms and touches upon several state institutions such as the legislative assemblies, the executive power, and the judiciary (Klitgaard, 1988). For instance, private interests can bend legislative assemblies to their will by corrupting elected politicians. In particular, modern elective assemblies consist of a majority, which has the decisional power in the choice and design of laws, rules and regulations, and a minority, which exerts a control over the majority's actions and can become majority in future elections (Varian, 1990). In general, the minority has the interest to expose any misconduct of the majority, especially if this could jeopardize public interest through corrupt activities, and gain reputation in front of the public opinion.

Our analysis is placed exactly on this context. This paper provides a theoretical analysis on the conditions in which a briber can choose between either "buying" only the majority and accepting the control role of the minority, or alternatively, buying also the minority, which gives up to its control role and increases the probability of success of the illicit action. The theoretical idea draws on the literature of corruption in hierarchies (Bac 1996a, Bac 1996b), in which a subordinate can potentially deliver a "corrupt service" to a corrupter, and a supervisor can prevent the subordinate's corrupt behavior because of misaligned goals. The subordinate can also corrupt the supervisor and generate a collusion (Calvo, 1987; Tirole, 1986)). However, in the following setting we address several questions to political corruption with actors operating according to typical political drives. Does stronger control power to minorities reduce corruption? Or, rather, does a stronger control role increases minority's bargaining power *vis-à-vis* the briber? Under which conditions does the briber prefer to corrupt only the majority or, rather, buy the minority and thereby reducing the risk? What are the most suitable policies to address the possible failure in the minority's control role and possibly exploiting the wedge in the conflicting political goals between minority and majority?

From a policy-maker viewpoint to answer these questions is very important. The policy-maker faces a sort of paradox when attempting to strengthen the role of minorities and reduce corrupt behavior because this may give the opportunity to the minorities to rip off high stakes and cause the opposite effect of inducing the minorities to get involved into the illicit activity. The model suggests that the "minority capture" especially regards affairs of significant dimension (i.e., protection of monopoly power, allocation of industrial subsidies, destination of conspicuous public expenditure), which are all typical issues of modern and developed economies (Amundesen, 1999). In the long-run, this situation could cause an institutional decay of political institutions.

Interestingly, this model applies not only to political corruption but also to the state or regulatory capture cases in which bribing is in the form of an influence that is exerted through licit but obscure forms of pressures, which are never overt (Bardhan and Mookherjee, 2000). Along these lines, the cost of being exposed to the public opinion and elections can be considered similar to the cost of being fined and/or jailed as a consequence of the corrupt activity, and the role of minorities can be substituted by the watchdog profile of several associations protecting a wide range or rights.

The article is organized as follows. The next section introduces the model and study the possible bribes and the corruption equilibria. Section 3 provides a welfare analysis and the policies to reduce the negative impact of corruption. Section 4 contains a discussion of results and extensions, especially about the role of minority.

2 The model

A potential briber B can obtain a rent, r, by corrupting political parties. We assume only two political parties, the majority X, which has decisional power, and the minority Y, which has the power to monitor X's activities and help detecting possible corrupt activities involving X.[1] The briber can obtain the rent by choosing between two different scenarios: *1)* bribing only X and incurring in Y's monitoring that increases the probability to be detected and punished, or *2)* bribing both X and Y to avoid Y's monitoring.[2]

In the *first scenario*, Y decides which level of monitoring m to exert. Regardless of Y's level of monitoring, there exists an exogenous positive probability $\underline{\pi}$ that the corrupt activities can be detected and punished. The term $\underline{\pi}$ is given and depends on the effort exerted by independent institutions (e.g., police, judiciary, antitrust agencies, consumers' associations, etc.), which are assumed to be incorruptible. Therefore, the probability function π of detection and punishment is such that $\pi(m) : R_+ \cup \{0\} \to [\underline{\pi}, \overline{\pi} < 1]$, which is increasing and strictly concave. Y incurs a cost of monitoring $c(m) : R_+ \cup \{0\} \to R_+$, which is increasing, strictly convex, and such that $c(0) = 0$. If corruption is detected, B and X are punished and each incur in a fine f, while Y obtains a reputational premium p because it has not been involved in bribing.[3]

In the *second scenario*, both X and Y accept the bribes. Therefore, there is

[1] Monitoring can occur through participation in parliamentary activities and committees or any other relevant means by which minority exerts its control role. Minority has also a watchdog role when informing the public about goings-on in the political or governmental choices.

[2] Trivially, a necessary condition for B to obtain r is to bribe X.

[3] This reputational or credibility premium does not stem directly from Y's monitoring activity. Y increases its reputation in front of public opinion and electorate simply because it has clean hands relative to X. Monitoring increases the chances to unveil possible X's misconducts and eventually the Y's probability to obtain the reputational premium.

no monitoring and the probability to be punished and detected is at its minimal level, $\underline{\pi}$. If corruption is detected, B, X, and Y are all involved and each incurs in a fine f.

Hence, we consider under which conditions B bribes only X and accepts Y's monitoring, or B bribes both X and Y.

2.1 The expected utility

By assumption if no bribe occurs the utility of each agent is zero. All agents are considered risk-neutral. For simplicity, we assume that the detection and punishment occurs after the illicit transactions take place, that is after B receives r, and X or both X and Y receive their bribes. This implies that in case of detection and punishment, the corrupt political parties must give up to their bribes and B must refund the state institutions for the illicit rent acquired. This must occur on the top of the sanction f. Finally, we assume that X can deliver r at no cost. In the following, the subscripts 1 and 2 refer to the first scenario (i.e., bribing involves only X) and the second scenario (i.e., bribing involves both X and Y), respectively.

The expected utility functions of the briber in each scenario are EU_{B1} and EU_{B2}, where:

$$\begin{aligned} EU_{B1} &\equiv [1 - \pi(m^*)]\,(r - b_{x1}) + \pi(m^*)\,(-f - b_{x1}) \\ &= [1 - \pi(m^*)]\,r - \pi(m^*)f - b_{x1}, \end{aligned} \tag{1}$$

$$\begin{aligned} EU_{B2} &\equiv [1 - \underline{\pi}]\,(r - b_{x2} - b_{y2}) + \underline{\pi}\,(-f - b_{x2} - b_{y2}) \\ &= [1 - \underline{\pi}]\,r - \underline{\pi}f - (b_{x2} + b_{y2})\,. \end{aligned} \tag{2}$$

Wherein b_{x1} is the bribe given to X in the first scenario, b_{x2} and b_{y2} are the bribes given to X and Y, respectively, in the second scenario, and m^* is the optimal level of monitoring exerted by Y in the first scenario.

The expected utility functions of the majority are $EU_{X1}$and EU_{X2}, where:

$$EU_{X1} \equiv [1 - \pi(m^*)]\,b_{x1} - \pi(m^*)f, \tag{3}$$

$$EU_{X2} \equiv (1 - \underline{\pi})\,b_{x2} - \underline{\pi}f. \tag{4}$$

Finally, the expected utility functions of the minority are $EU_{Y1}$and EU_{Y2}, where:

$$\begin{aligned} EU_{Y1} &\equiv [1 - \pi(m)]\,[-c(m)] + \pi(m)\,[p - c(m)] \\ &= \pi(m)p - c(m), \end{aligned} \tag{5}$$

$$EU_{Y2} \equiv (1 - \underline{\pi})\, b_{y2} - \underline{\pi} f. \tag{6}$$

Notice that since the exogenous probability of being detected and punished, $\underline{\pi}$, is positive, a zero-level optimal monitoring, $m^* = 0$, implies $EU_{Y1} > 0$. Thus, $EU_{Y1} = \pi(m^*)p - c(m^*) > 0 \ \forall m^* \geq 0$. This is not surprising. If corruption hits and X gets involved, Y has positive expected gains in terms of relative reputation from the detection and punishment of X even if Y did not or could not provide direct monitoring. If the corrupt activity is fully successful, we assume that b_{x1} is not reinvested by X to acquire further political consensus.

Lemma 1 *A necessary condition to be in the second scenario is that* $m^* > 0$.

This simple Lemma requires that Y is involved in bribing only if its monitoring activity has an impact on the probability of detection, and thus negatively influence B's expected utility. Otherwise, if $m^* = 0$, B prefers bribing only X, and Y has an expected utility equal to $\underline{\pi} p$.

2.2 The bribe

In the first scenario X will find it profitable to be engaged in the illegal action provided that $EU_{X1} \geq 0$. So that b_{x1}^{ask} must be such that:

$$b_{x1}^{ask} \geq \frac{\pi(m^*)}{1 - \pi(m^*)} f. \tag{7}$$

Likewise, the maximum bribe B is willing to offer must satisfy the individual rationality constraint $EU_{B1} \geq 0$. Thus, b_{x1}^{bid} must be such that:

$$b_{x1}^{bid} \leq [1 - \pi(m^*)]\, r - \pi(m^*) f. \tag{8}$$

The following condition must hold:

$$b_{x1}^{bid} \geq b_{x1}^{ask}. \tag{9}$$

In the second scenario, the bribe asked by X must satisfy the condition that $EU_{X2} \geq 0$. So that b_{x2}^{ask} must be such that:

$$b_{x2}^{ask} \geq \frac{\underline{\pi}}{1 - \underline{\pi}} f. \tag{10}$$

The bribe asked by Y must satisfy the condition $U_{Y2} \geq EU_{Y1}(m^*) > 0$, $\forall m^* > 0$. Thus, b_{y2}^{ask} must be such that:

$$b_{y2}^{ask} \geq \frac{\underline{\pi}}{1 - \underline{\pi}} f + \frac{\pi(m^*)p - c(m^*)}{1 - \underline{\pi}}. \tag{11}$$

In the case B bribes both X and Y then $b_{y2}^{ask} > b_{x2}^{ask}$. In other words, if bribed, Y asks more than X because the former has an expected positive payoff from remaining clean *vis-à-vis* X and can trigger its entitlement to monitoring so to increase the probability π to obtain p by exposing X's misconduct to public opinion. In this perspective, X can only ask to be compensated by the expected cost of being caught and punished.[4]

The maximum bribe B is willing to offer must satisfy the individual rationality constraint $EU_{B2} \geq 0$. Thus, $b_{xy}^{bid} \equiv b_{x2}^{bid} + b_{y2}^{bid}$ must be such that:

$$b_{xy}^{bid} \leq (1 - \underline{\pi})\, r - \underline{\pi} f.$$

Therefore, the following condition must hold:

$$b_{xy}^{bid} \geq b_{x2}^{ask} + b_{y2}^{ask}. \tag{12}$$

For simplicity, we assume no bargaining, such that B can drive bribes to their minimal amount. Consequently:

$$\begin{aligned}
b_{x1}^{*} &= b_{x1}^{ask} = \frac{\pi(m^*)}{1-\pi(m^*)} f, \\
b_{x2}^{*} &= b_{x2}^{ask} = \frac{\underline{\pi}}{1-\underline{\pi}} f, \\
b_{y2}^{*} &= b_{y2}^{ask} = \frac{\underline{\pi}}{1-\underline{\pi}} f + \frac{\pi(m^*)p - c(m^*)}{1-\underline{\pi}}.
\end{aligned}$$

The bribe b_{x1}^{*} is proportional to the fine f, and because the risk of detection and punishment increases, b_{x1}^{*} is increasing in m^*. In the second scenario, m^* influences positively b_{y2}^{*} and identifies the potential threat that Y can move against the positive ending of corruption through its impact on $\pi(m^*)$. B incurs in a cost for removing this threat, which is proportional to the expected potential profit of Y in case of monitoring. On the contrary, b_{x2}^{*} does not depend on m^* but simply depends on the risk of incurring in a fine, and for any $m^* > 0$, this is the lowest bribe that X can achieve. In the same way, Y must also be covered against the risk of being detected and punished. As a consequence, in the second scenario, Y obtains a higher bribe than X, due to the potential threat of monitoring that it can exert. Therefore, the minority can exploit a role that is originally assigned to increase the democracy rate within a specific context, such as a legislative assembly, to it own interest by exploiting corrupt practices.

2.3 Solutions

Consider the following functions, which derive from the compatibility conditions of the bribes (9) and (12):

$$r \geq \frac{\pi(m^*)\left[2 - \pi(m^*)\right]}{\left[1 - \pi(m^*)\right]^2} f \equiv r_1(m^*), \tag{13}$$

[4] Notice that by assumption X delivers r at no cost.

$$r \geq \frac{2\underline{\pi} f + \pi(m^*)p - c(m^*)}{(1-\underline{\pi})^2} + \frac{\underline{\pi} f}{1-\underline{\pi}} \equiv r_2(m^*). \quad (14)$$

The frontier $r_1(m^*)$ includes all the allocations (m^*, r), with $m^* \geq 0$, such that B is indifferent between bribing or not bribing only X. Similarly to $r_1(m^*)$, the frontier $r_2(m^*)$ includes all the allocations (m^*, r), with $m^* > 0$, such that B is indifferent between bribing or not bribing both X and Y. Notice that when $m^* = 0$, $r_2(m^*)$ is not defined because the second scenario does not arise. Furthermore, notice that both $r_1(m^*)$ and $r_2(m^*)$ do not depend on $\overline{\pi}$.

The two functions $r_1(m^*)$ and $r_2(m^*)$ help to define the allocations (m^*, r), or likewise $(\pi(m^*), r)$, for which B has either no convenience to pay bribes or finds it profitable to corrupt only X or both X and Y. The following proposition hold.

Proposition 2 *For a given m^*, a) if $r > \min[r_1(m^*), r_2(m^*)]$, then bribing occurs; b) if $r < \min[r_1(m^*), r_2(m^*)]$, then no bribing occurs; c) if $r_2(m^*) > r > r_1(m^*)$ or $r_1(m^*) > r > r_2(m^*)$, then B bribes only X or both X and Y, respectively; d) if $r > r_2(m^*) > r_1(m^*)$ or $r > r_1(m^*) > r_2(m^*)$ then B bribes only X iff $EU_{B1} > EU_{B2}$, otherwise B bribes both X and Y.*

Proof. See the Appendix. ■

Hence, it is important to understand under which circumstances $r_2(m^*) > r_1(m^*)$ or vice-versa. Now let us define the following upper and lower bounds for the two functions $r_1(m^*)$ and $r_2(m^*)$ such that we can analyze their behavior for any m^*.

$$\underline{r_1} = \lim_{m^* \to 0} r_1(m^*) = \frac{\underline{\pi}(2-\underline{\pi})}{(1-\underline{\pi})^2} f,$$

$$\underline{r_2} = \lim_{m^* \to 0} r_2(m^*) = \frac{2\underline{\pi} f + \underline{\pi} p}{(1-\underline{\pi})^2} + \frac{\underline{\pi} f}{1-\underline{\pi}}$$

$$\overline{r_1} = \lim_{m^* \to +\infty} r_1(m^*) = \frac{\overline{\pi}[2-\overline{\pi})]}{(1-\overline{\pi})^2} f$$

$$\overline{r_2} = \lim_{m^* \to +\infty} r_2(m^*) = \frac{2\underline{\pi} f + E}{(1-\underline{\pi})^2} + \frac{\underline{\pi} f}{1-\underline{\pi}} \text{ with } E \in (\underline{\pi} p, \overline{\pi} p)$$

Corollary 3 *The following inequalities hold: a) $\overline{r_1} > \underline{r_1}$; b) $\overline{r_2} > \underline{r_2}$; c) $\underline{r_2} > \underline{r_1}$; d) $\overline{r_2} > \overline{r_1}$ iff $\frac{E}{f} > \frac{(1-\underline{\pi})^2}{(1-\overline{\pi})^2}[\overline{\pi}(2-\overline{\pi})] - \left(3\underline{\pi} - \underline{\pi}^2\right)$, whereas $\overline{r_2} \leq \overline{r_1}$ otherwise.*

Proof. Trivial. ■

Following the Corollary (3), if $\overline{r_2} > \overline{r_1}$ then $r_1(m^*) < r_2(m^*)$ $\forall m^* > 0$

Proposition 4 *a) $r_1(m^*)$ is increasing and convex in m^*; b1) $r_2(m^*)$ is increasing and concave in m^* iif $\frac{\partial \pi(m^*)}{\partial m^*} p - \frac{\partial c(m^*)}{\partial m^*} > 0$; b2) $r_2(m^*)$ is decreasing and concave in m^* iif $\frac{\partial \pi(m^*)}{\partial m^*} p - \frac{\partial c(m^*)}{\partial m^*} < 0$.*

Proof. See the Appendix ■

The previous Corollary (3) and Proposition (4) state that $r_2(m^*)$ is always higher than $r_1(m^*)$ for low levels of m^*, that is for levels of $\pi(m^*)$ that are close to $\underline{\pi}$. For higher levels of m^*, two different cases can occur: A) $r_2(m^*) > r_1(m^*)\ \forall m^*$;[5] B) there exists a couple $(m^{*\prime}, r^\prime)$ such that $r_2(m^{*\prime}) = r_1(m^{*\prime})$, and $r_1(m^*) > r_2(m^*)\ \forall m^* > m^{*\prime}$. In other words, for relatively high levels of m^*, and thus for increasing levels of $\pi(m^*)$, bribing both X and Y is the only available option for B. Notice that $\overline{r_1} \geq \overline{r_2}$ regardless of which Proposition (4-b1) or (4-b2) hold. Trivially, if Proposition (4-b2) holds, $\overline{r_1} \geq \overline{r_2}$ is more likely to occur.

Corollary 5 *If $\overline{r_2} > \overline{r_1}$, then case A (i.e., $r_2(m^*) > r_1(m^*)\ \forall m^*$) occurs. A necessary condition for $\overline{r_2} > \overline{r_1}\ \forall m^*$ is $p > 2\frac{\overline{\pi}}{\underline{\pi}}f$.*

Proof. See the Appendix. ■

According to Corollary (5) as reputational premium decreases, the cost of punishment for the corrupt agents increases, and $(\overline{\pi} - \underline{\pi})$ increases, then case B is more likely to occur.

The following figures depict these two different cases, according to the values of r and $\pi(m^*)$.

[5] A necessary and sufficient condition for this to occur is $\overline{r_2} > \overline{r_1}$.

Figure 1 - A

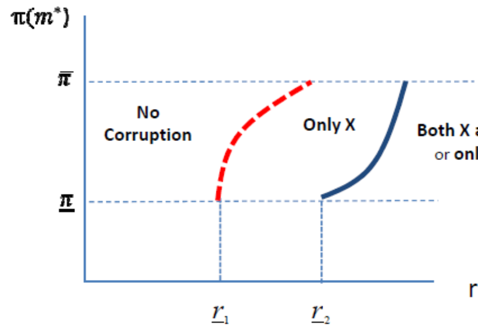
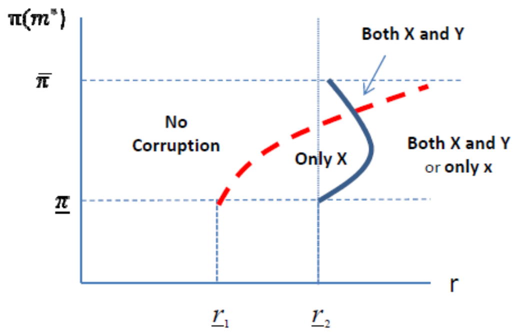


Figure 1 - B



In both figures, the set of allocations $(\pi(m^*), r)$ such that $r > \min[r_1(m^*), r_2(m^*)]$ allow B to bribe in at least one of the two scenarios. In Figure (1-A), from the no corruption area (i.e., $r < r_1(m^*)$), as r increases, corruption is possible only by involving X (i.e., $r_2(m^*) > r > r_1(m^*)$). For further increases in r, then B has the option to involve also Y on corrupt activities (i.e., $r > r_2(m^*) > r_1(m^*)$). This situation does not depend on m^*. To put it simply, when the stake is not high enough but it is sufficient to trigger some form of bribing, then the minority is not involved and pursues its control role. Higher stakes may cause a full capture of the bribers of the decisional and control role. In Figure (1-B), the situation is very similar for levels of $\pi(m^*)$ relatively close to $\underline{\pi}$. This means that if minority's monitoring does not have a significant impact on the probability of detection and punishment then the briber may be induced to corrupt also the minority only if the stake is rather high. This holds regardless of the two cases depicted in the figure. However, if monitoring is rather harmful (i.e., $\pi(m^*)$ rather distant from $\underline{\pi}$) for the criminal misconduct, then corrupting the minority becomes a priority: from a no corruption area, as r increases, corrupting both X and Y is the only available option (i.e., $r_1(m^*) > r > r_2(m^*)$). This situation occurs because 1) the expected gains from monitoring can become particularly high as $\pi(m^*)$ increases, and 2) Y's monitoring can contribute significantly to detection and punishment (i.e., $\overline{\pi} - \underline{\pi}$ is high).

From Proposition **(2)** if $r > r_2(m^*) > r_1(m^*)$ then B bribes only X iff $EU_{B1} > EU_{B2}$. As shown in both Figure (2-A) and (2-B), even if r is sufficiently to bribe also Y, the risk reduction from $\pi(m^*)$ to $\underline{\pi}$ by bribing Y provides a lower expected benefit than paying a bribe to Y and buying its "silence". Therefore, we can identify an area where both scenarios may occur, but eventually B finds it profitable to bribe only X. In this area the condition $EU_{B1} > EU_{B2}$ holds.

Figure 2 - A

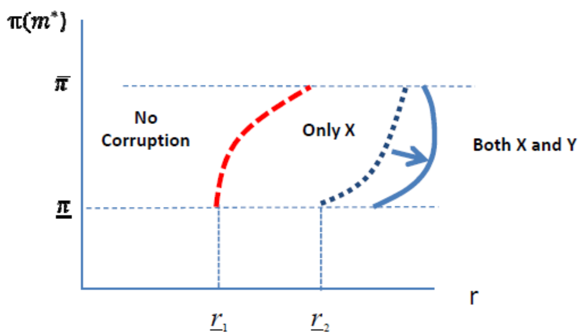
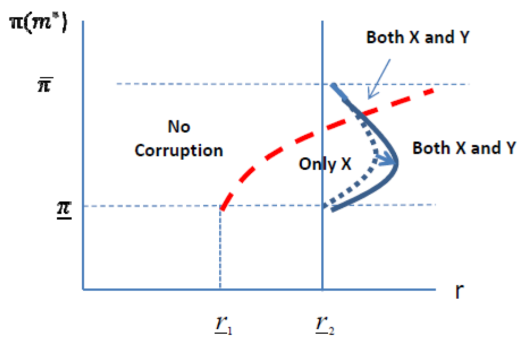


Figure 2 - B



According to previous Propositions **(2)** and **(4)**, the equilibria depend on the features of the institutional environment. In particular, the overall level of exogenous contrast against corruption (i.e., $\underline{\pi}$), how much profitable in terms of reputational premium is monitoring for Y (i.e., p), the effectiveness of Y's control role (i.e., $\pi(m)$), the ability in monitoring (i.e., $c(m)$), and trivially the fine f, all influence B's choice of bribing or not, and which scenario to choose. If $r > r_2(m^*) > r_1(m^*)$ or $r > r_1(m^*) > r_2(m^*)$ the following condition holds.

Proposition 6 *A sufficient condition for* $\Delta\left[EU_{B2} - EU_{B1}\right] > 0$ *is* $r > \frac{r_2(m^*)(1-\underline{\pi})}{\pi(m^*)-\underline{\pi}}$.

Proof. See the appendix ■

This sufficient condition identifies all the allocations $(\pi(m^*), r)$ such that the second scenario is preferred to the first one. Following Figure (2-A) and (2-B), these allocations lie in the area on the furthest right. This condition implies that for a given r, an effective monitoring, such that $\pi(m^*)$ is well above $\underline{\pi}$, induces to bribe also the minority.

3 Welfare analysis

In this section we focus on the impact of bribing on collective welfare. Social welfare depends on whether corruption occurs or not, and which scenario takes place. If corruption does not occur, welfare loss (EW_0) is simply put to zero. If corruption occurs, we assume that if corruption is not detected and punished $(1-\pi(m^*))$, welfare decreases by $M(>0)$, which is lower than r.[6] Furthermore, notice that the bribes and the fines are zero-sum terms. Finally, in the first scenario, social welfare must take into account Y's positive expected payoff (i.e., $\pi(m^*)p-c(m^*)$). Thus, the possible welfare-loss functions when corruption occurs are:

$$EW_1 = (1-\pi(m^*))\,[r-M] + \pi(m^*)p - c(m^*) \text{ first scenario} \tag{15}$$

$$EW_2 = (1-\underline{\pi})\,[r-M] \text{ second scenario} \tag{16}$$

Assume that

Condition 7 $\pi(m^*)p - c(m^*) < (1-\pi(m^*))\,[M-r]$

This condition implies that the positive payoffs obtained by bribing and monitoring (in the presence of bribing) are always lower than the negative externality caused by bribing (i.e., M). Consequently, no corruption (i.e., EW_0) is socially preferable.

Proposition 8 *$\forall m^* \geq 0$, $EW_0 > EW_1 > EW_2$.*

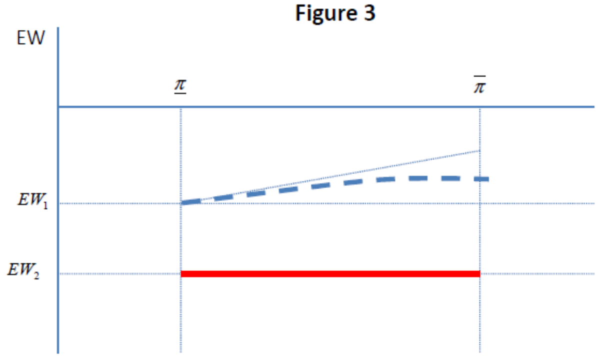
Proof. See the Appendix. ∎

Corollary 9 *$|EW_1 - EW_2|$ is increasing in m^*.*

From a social viewpoint, the first scenario is preferable to the second scenario because of a lower welfare loss. However, the welfare loss EW_1 decreases as the optimal monitoring increases.

[6] For simplicity, we assume that the cost of detection and punishment by the exogenous institutions is zero.

Figure 3



3.1 Policies

Policies can have a direct and an indirect impact on social welfare. The direct impact has an effect on the welfare-loss functions. The indirect impact has an effect on agents' decisions about which scenario takes place (i.e., either EW_1 or EW_2). We can identify four possible policies; Figure 4-A and 4-B help to understand their effects.

Figure 4 -A

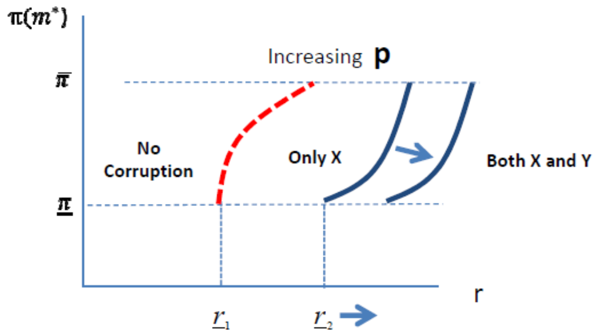
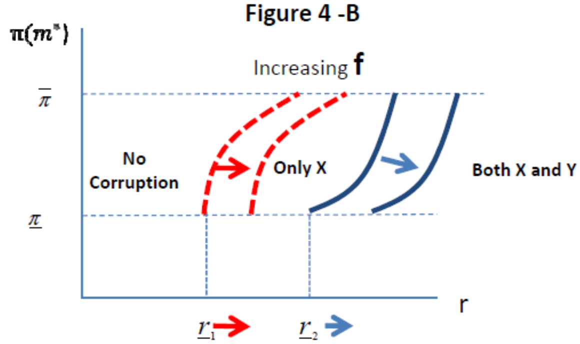


Figure 4 -B



First, the policy-maker can affect the cost of monitoring by, for instance, enforcing more transparency through more efficient control rules, simpler access to documentation by the minority, etc. This policy reduce directly the welfare loss in the first scenario, that is $|EW_1|$ decreases, while the second scenario is not directly affected. At the same time, this policy indirectly modifies the scenarios occurring over the allocations $(\pi(m^*), r)$ in the Figures 1 and 2. In particular, $r_2(m^*)$ moves to the right, this implies that the area in which the second scenario takes place is larger. *Second*, another policy can affect the reputational premium p, exactly in the same way of $c(m^*)$, for instance, by emphasizing the transparency role of the minority or its monitoring role. *Third*, an increase in the level of the fine f, for instance by stiffening the penalties against corruption, has only indirect effects through the increase of the no corruption area. *Fourth*, the policy-maker can increase $\underline{\pi}$ by improving its investigative and judiciary system. In this case both direct and indirect effects occur: in both scenarios the welfare loss decreases, and the corruption area decreases.

4 Conclusions

This analysis investigates a political corruption model that builds on previous literature on corruption in hierarchies. Our investigation enriches the literature on corruption emphasizing the contrasting role of the political minorities. On the one hand, the minority can reduce corruption behavior due to their control role and obtaining a reputational premium for its political credibility; on the other hand, we found that this role gives a bargaining power *vis-à-vis* the briber, and consequently spread corruption throughout political institutions. In particular, the more important the control of the minority the higher the bribing stakes that it can receive from the briber. Notice that the existence of corruption itself provides a positive expected payoff to the minority. Therefore, if the briber wants to involve the minority and reduce the risk, the briber must offer a bribe that takes into account not only the detection and punishment risk but also an additional compensation for the loss of gain from reputation.

The policy-maker faces a sort of paradox when attempting to strengthen the role of minorities to reduce corrupt behavior because this may give the opportunity to the minorities to rip off high bribes. This situation can especially occur where the rents from corruption are substantial, such as in developed economies. In addition, the reputational premium is also affected by the institutional setting. For instance, in a democratic system, the freedom of speech and the presence of several watchdogs can increase the reputational premium of those in charge of a control role. Paradoxically, the feelings of moralization against political corruption may generate a serious setback because the minority can use the potential reputational premium to its own advantage.

Coherently with the economics intuitions, high rents from corruption can facilitate to extend corruption to the minority. Therefore, the investigative authorities should increase the spectrum of the controls to all politicians in the presence of potential high stakes from corruption.

Finally, this model easily applies to the phenomenon of regulatory or state capture where the briber is the lobby attempting to capture the regulator/legislator, and the minority can expose the potential social welfare loss from the capture to the public opinion. In this context, the minority can be intended outside politics, such as a consumers' associations or independent watchdogs, and they can also be eventually "bought" by the lobbyist.

Appendix

Proof of proposition 2

The compatibility conditions of the bribes (9) and (12) imply that the bribing occurs; otherwise If $r < \min\left[r_1(m^*), r_2(m^*)\right]$, then no bribing occurs.

Thus, if $r > r_2(m^*) > r_1(m^*)$ or $r > r_1(m^*) > r_2(m^*)$ then for a given m^*, B bribes only X if $\Delta\left[EU_{B2} - EU_{B1}\right] < 0$. where

$$\Delta\left[EU_{B2} - EU_{B1}\right] = \left[\pi(m^*) - \underline{\pi}\right](r + f) + b_{x1} - (b_{x2} + b_{y2})$$

Proof of proposition 4

$r_1(m^*)$ is increasing and convex in m^* because $\frac{\partial r_1(m^*)}{\partial m^*} > 0$ and $\frac{\partial^2 r_1(m^*)}{\partial {m^*}^2} > 0$ where

$$\frac{\partial r_1(m^*)}{\partial m^*} = \frac{f}{(1 - \pi(m^*))^3}\left[2 - 2\pi(m^*) + \pi(m^*)^2\right] > 0,$$
$$\frac{\partial \partial r_1(m^*)}{\partial \partial m^*} = \frac{f}{(1 - \pi(m^*))^3}\left[\frac{6 - 4\pi(m^*) + \pi(m^*)^2}{(1 - \pi(m^*))}\right] > 0$$

$r_2(m^*)$ is increasing and concave in m^* because $\frac{\partial r_1(m^*)}{\partial m^*} > 0$ iif $\frac{\partial \pi(m^*)}{\partial m^*}p - \frac{\partial c(m^*)}{\partial m^*} > 0$ and $\frac{\partial^2 r_1(m^*)}{\partial {m^*}^2} < 0$ and

$r_2(m^*)$ is decreasing and concave in m^* because $\frac{\partial r_1(m^*)}{\partial m^*} < 0$ iif $\frac{\partial \pi(m^*)}{\partial m^*}p - \frac{\partial c(m^*)}{\partial m^*} < 0$ where

$$\frac{\partial r_2(m^*)}{\partial m^*} = \frac{1}{(1 - \underline{\pi})^2}\left(\frac{\partial \pi(m^*)}{\partial m^*}p - \frac{\partial c(m^*)}{\partial m^*}\right)$$
$$= \begin{cases} > 0 \Leftrightarrow \frac{\partial \pi(m^*)}{\partial m^*}p - \frac{\partial c(m^*)}{\partial m^*} > 0 \\ < 0 \Leftrightarrow \frac{\partial \pi(m^*)}{\partial m^*}p - \frac{\partial c(m^*)}{\partial m^*} < 0 \end{cases}$$
$$\frac{\partial^2 r_2(m^*)}{\partial {m^*}^2} = \frac{1}{(1 - \underline{\pi})^2}\left(\frac{\partial^2 \pi(m^*)}{\partial {m^*}^2}p - \frac{\partial^2 c(m^*)}{\partial {m^*}^2}\right) < 0$$

Proof of Corollary 5

$\overline{r_2} > \overline{r_1} \Leftrightarrow \frac{\overline{\pi}[2-\overline{\pi}]}{(1-\overline{\pi})^2}f > \frac{2\pi f + E}{(1-\underline{\pi})^2} + \frac{\pi f}{1-\underline{\pi}}$or ,by computing

$$\frac{E}{f} > \frac{(1 - \underline{\pi})^2}{(1 - \overline{\pi})^2}\left[\overline{\pi}(2 - \overline{\pi})\right] - \left(3\underline{\pi} - \underline{\pi}^2\right)$$

It is trivial to demonstrate that

$$\frac{E}{f} \geq \frac{\pi p}{f} > \frac{(1 - \underline{\pi})^2}{(1 - \overline{\pi})^2}\left(\overline{\pi}(2 - \overline{\pi})\right) - \left(3\underline{\pi} - \underline{\pi}^2\right) > \left(\overline{\pi}(2 - \overline{\pi})\right) - \left(3\underline{\pi} - \underline{\pi}^2\right) > \left(\overline{\pi}(2 - \overline{\pi})\right).$$

Thus a necessary condition for $\overline{r_2} > \overline{r_1}$ $\forall m^*$ is that

$$\frac{\underline{\pi} p}{f} > \overline{\pi}(2-\overline{\pi}) \Longleftrightarrow p > 2\frac{\overline{\pi}}{\underline{\pi}} f$$

Proof of proposition 6

If $r > r_2(m^*) > r_1(m^*)$ or $r > r_1(m^*) > r_2(m^*)$ then for a given m^*, B bribes only X if $\Delta\left[EU_{B2} - EU_{B1}\right] > 0$. where

$$\begin{aligned}
\Delta\left[EU_{B2} - EU_{B1}\right] &= \left[\pi(m^*) - \underline{\pi}\right](r+f) + b_{x1} - (b_{x2} + b_{y2}) \\
&= \left[\pi(m^*) - \underline{\pi}\right] r - (1-\underline{\pi})\, r_2(m^*) + g(m^*) f \\
\text{where } g(m^*) &= \pi(m^*)\left(\frac{2-\pi(m^*)}{1-\pi(m^*)}\right) \text{ increasing and convex.}
\end{aligned}$$

Thus, sufficient condition for $\Delta\left[EU_{B2} - EU_{B1}\right] > 0$ is that

$$r > \frac{(1-\underline{\pi})}{\pi(m^*) - \underline{\pi}} r_2(m^*).$$

Proof of proposition 8

$$\begin{gathered}
EW_1 > EW_2 \Leftrightarrow \\
\pi(m^*)p - c(m^*) > \left[(\pi(m^*) - \underline{\pi}\right]\left[r - M\right] \\
\text{it always holds.}
\end{gathered}$$

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