

A principal-agent model of corruption*

NICO GROENENDIJK

Faculty of Public Administration and Public Policy, University of Twente, The Netherlands

Abstract. One of the new avenues in the study of political corruption is that of neo-institutional economics, of which the principal-agent theory is a part. In this article a principal-agent model of corruption is presented, in which there are two principals (one of which is corrupting), and one agent (who is corrupted). The behaviour of these principals and agent is analysed in terms of the costs and benefits associated with different actions. The model is applied to political corruption in representative democracies, showing that, contrary to common belief, the use of principal-agent models is not limited to bureaucratic corruption.

Introduction: Neo-institutional economics and corruption

Although corruption is generally analysed as a social phenomenon, especially in comparative research, it is from the decisions of individuals that corruption stems. In this article a principal-agent model of corruption is presented, one which focuses on these decisions. Our choice of individualism is a methodological one, and must not be understood as a denial of the significance of the social structures of which individuals are a part. Indeed, neo-institutional economics, of which the principal-agent literature is a part, deals explicitly with the institutional factors that affect the decisions of individuals. What can neo-institutional economics contribute to our understanding of corruption? To answer that question let us first give a brief overview of neo-institutional economics in general.¹

Institutions can be defined as collectively binding working rules.² A contract between two persons is such a set of rules, as are school regulations. Proportional representation is an institution, just as the stock market and marriage are. Institutions are distinguished from the preferences of individuals; they structure and constrain the decisions made by them. These institutional constraints are emphasised in various ways, leading to three different, but related branches within the field of neo-institutional economics: the property rights branch, the transaction costs branch, and the principal-agent branch.³

In the *property rights* literature decisions by individuals concerning goods are assumed to be affected not so much by the goods themselves, but by the kind of property rights individuals can exercise. These property rights can be user rights, usufructuary rights and transfer rights. An individual who owns

a house will make different decisions about maintenance than an individual who is a tenant. In the property rights literature institutions constitute property rights of individuals, as well as the means for these individuals to defend themselves against infringements of these rights.

Stemming from the work of Coase, the *transaction costs* branch emphasises the importance of transaction costs for the allocation of resources and the structure of economic organization.⁴ Prior to Coase, the role of transaction costs was minimal since such costs are for the greater part information costs, and most economic theories and models assumed full information. Following Williamson, transaction costs can be divided into *ex ante* and *ex post* costs. *Ex ante* costs are the costs of drafting, negotiating and safeguarding an agreement.⁵ The costs of monitoring and controlling the execution of an agreement are *ex post* costs, as are possible revision costs. Transaction costs will differ depending on the incidence of the transactions, the degree of uncertainty that the individuals face, and the “asset specificity”, e.g. the extent to which the good and the transaction concerned are geared to one another. It should be mentioned that what Williamson calls an “agreement” must be understood to include not only contracts, but other more extensive institutions as well.

In the *principal-agent* branch of neo-institutional economics (or: agency theory) elements of both the property rights theory and the transaction costs theory are integrated and used to model relationships between principals and agents. Principal-agent models assume that the interests of principal and agent diverge, that there is informational asymmetry to the advantage of the agent, but that the principal can prescribe the pay-off rules in their relationship. Furthermore, an important feature of the agency literature is that decisions are considered to be trade-offs between different kinds of costs (monitoring costs, bonding costs and residual loss).

What contribution has neo-institutional economics made, to date, to the study of corruption? The most comprehensive economic models of corruption are those of Rose-Ackerman, Lui, Andvig and Moene, Klitgaard, and Alam.⁶ Rose-Ackerman focuses on a traditional form of corruption, namely, bribery of bureaucrats by companies in the government contracting process.⁷ The incidence of corruption is found to differ according to the degree of competition and the extent to which government has well-defined preferences for the good in question. Her analysis pinpoints the areas in which resources for anti-corruption measures can best be used. In later work, she extends her analysis to other types of corruption, namely, high-level political corruption as well as low-level bureaucratic corruption.⁸ Lui assumes that corruption is more difficult to detect and deter when a greater proportion of the officials is corrupt.⁹ Using a two-period model with overlapping generations of officials,

Lui shows that there can be several stationary equilibrium levels of corruption in an economy. Andvig and Moene offer a fine model of bureaucratic corruption, focusing on the demand as well as the supply side.¹⁰ Their model also has multiple equilibria, which sheds light on the varying incidence of corruption across similar societies and activities. Klitgaard offers a largely heuristic principal-agent model, which encompasses a principal, a corrupt agent, and a client.¹¹ He offers an overview of various measures to fight corruption as well. Alam explains variations in corruption across agencies and societies by the ability of the victims of corruption to engage in countervailing actions.¹² These countervailing actions can be evasive, direct or illicit. The incentives to engage in countervailing activities depend on two kinds of factors, global factors and specific factors. Global factors like property rights explain variation across societies; specific factors such as the type of corruption explain variation across agencies.

Elements of neo-institutional economics have been used by Bakker and Schulte Nordholt, to elucidate the mechanisms by which corruption can take root in societies, especially when societies are going through institutional turnovers.¹³ Similar findings have been put forward by Johnson and Huntington, with regard to institutional discrepancies within a society.¹⁴ To the possibility of such a horizontal institutional gap, Bakker and Schulte Nordholt add the possibility of a vertical institutional gap, which arises when national economic, political and legal institutions are not equipped to deal with internationalization.

Other authors have combined neo-institutional economics with game theory. Manion analyses bribery in Chinese enterprise licencing, assuming that those who offer the bribes are fully entitled to their licenses and do not know whether the bribes are overpayments or fees for valued illicit services.¹⁵ Bribery can be shown to be an equilibrium solution in such an asymmetric information game. A similar analysis is that of Cadot who focuses on the situation in which an applicant has to pass a test in order to get a permit.¹⁶ Different solutions exist for this game, depending on the information sets of both players. Basu, Bhattacharya and Mishra, using game theory as well as the economic theory of crime, based on the work of Becker, offer a simple model of recursive corruption.¹⁷ Recursive corruption occurs when a corrupt official gets caught and bribes the official that caught him. Related work is that of Mookherjee and Png who analyse the delegation of enforcement authority in environmental policy, and the opportunities such delegation brings about for corruption.¹⁸

Focusing on political corruption, Rasmusen and Ramseyer have combined game theory with the theory of "rent-seeking", which is related to neo-institutional economics.¹⁹ They note that the size of bribes in political

corruption is small, and put that down to the imperfect coordination between legislators. When a legislator expects other legislators to sell their votes, and there is no coordination, he will take whatever bribe is offered. Because this is hardly satisfactory, legislators may opt for a ban on bribery. Myerson uses game theory to analyse the effectiveness of different electoral systems in reducing corruption in a multiparty system.²⁰ Galeotti and Merlo, who also investigate the relationship between electoral rules and government corruption, have challenged Myerson's conclusion that proportional representation guarantees the exclusion from government of corrupt parties.²¹

Looking at the contributions from neo-institutional economics we find that, apart from Klitgaard, and to some extent Rose-Ackerman, the principal-agent theory has not been fully used to enhance our understanding of corruption. This article aims to fill that gap, and to do so in two ways. First, unlike Klitgaard and Rose-Ackerman, who assume only one principal-agent relation namely the relation between a corrupt official and his superior, we will look upon the relation between the "client" and the corrupt official as a principal-agent relation as well. Second, the notion of trading-off different costs is taken into account more explicitly.

Johnston remarks that while the principal-agent approach is well-suited to the analysis of bureaucratic corruption, other more broadly-based forms of corruption may fit the framework awkwardly or not at all.²² Moreover, he seems to suggest that the application of the principal-agent approach to corruption, because of its supposed bias towards bureaucratic corruption, takes politics out of our notion of corruption. In this article we will put this proposition to the test by applying the principal-agent framework to political corruption in representative democracies.

In the next section, a basic principal-agent model will be introduced. This basic model demonstrates how non-co-operative behaviour by an agent can occur, and which factors, in terms of different costs, condition such behaviour. In the third section the basic model will be modified. First of all, an appropriate definition of corruption is selected. In this article *corruption* is defined as *any unauthorized transaction between agents and a third party*. In the case of bureaucratic corruption the agents are bureaucrats, and the principals are elected or appointed officials. In the case of political corruption the latter are the agents, and the principals are the voters. The third party is considered to be a second principal to the agent. Given our definition of corruption the basic principal-agent model is amended and turned into a principals-agent model of corruption. In the fourth section this model is applied in a tentative way to political corruption. The fifth section, finally, contains some conclusions.

Modelling principal-agent relations

A basic principal-agent model

Let P be a principal, and A an agent. Assume that A can choose between two alternative actions x and y, and that these actions contribute to the realization of two different outcomes, X and Y. In choosing between different actions A is supposed to represent P's interests in return for payment of some kind. Assume that P is unable – costlessly – to observe A's actions, so that P has only the outcomes by which to assess and to reward A's behaviour. If these outcomes were fully determined by A's actions, P could base his rewarding scheme on these outcomes, and the lack of information about A's actions would not be relevant. The outcomes, however, are not determined by A's actions, they are only affected by them.

Assume that P's interests do not match A's interests, as can be shown by their utility functions, which have different arguments:

$$U_P = U(a, b, c) \quad (1.1)$$

$$U_A = U(d, e, f) \quad (1.2)$$

Assume also that P wants to maximise his own welfare, and that the utilities associated with the two possible outcomes X and Y are U_P^X and U_P^Y . Suppose that $U_P^X > U_P^Y$, so that P will prefer outcome X. If U_A^x and U_A^y are the utilities for A that are involved with the possible actions x and y, and if we assume welfare-maximisation by A, A will choose action x if $U_A^x > U_A^y$, and action y if $U_A^x < U_A^y$. Now there are four different possibilities:

1. the actual outcome is Y and the action chosen by A was y;
2. the actual outcome is Y, despite the fact that the action chosen by A was x;
3. the actual outcome is X, and the action chosen by A was x;
4. the actual outcome is X, despite the fact that the action chosen by A was y.

P is not able to distinguish between the first and the second possibility, nor between the third and the fourth. Confronted with an actual outcome Y and the welfare loss associated with that outcome, there are three different measures that P can take.

First, he can use *incentives*. These incentives change the characteristics of one or more of the actions A can choose from. For example, P could change the original alternative x into a more attractive alternative x+, hoping that $U_A^{x+} > U_A^y$, in which case A will choose x+. Of course, P could also

turn y into a less attractive alternative, y^- , hoping that $U_A^x > U_A^{y^-}$. This use of incentives or disincentives can be seen as a refinement of the original rewarding scheme. Note that the use of these positive and negative incentives does not change A's utility function in any way. Note also that this use of incentives, and the intended revision of A's choice, does not guarantee that the actual outcome will be X.

Second, P can use *persuasion*. The difference between this measure and the use of incentives, is that A's utility function is meant to converge, from U_A to $U_{\underline{A}}$, in the direction of U_P . A possible new utility function for A is then:

$$U_{\underline{A}} = U(a, b, e, f) \quad (1.3)$$

which resembles (1.1) more than did (1.2). If $U_{\underline{A}}^x > U_{\underline{A}}^y$, A will choose action x , which makes outcome X, preferred by P, more likely.

Third, assuming an hierarchical relationship between P and A, P, as A's superior, can use *directives*, thus reducing the discretion A has. Supposing there are only two alternative actions, x and y , which A can take, the use of directives would mean that one action is prescribed (x) and the other (y) is not allowed.²³ This increases the probability that the appropriate action (i.e. x) is chosen, but P can never be sure of that.

More in general, the use of directives is aimed at reducing the set of alternative actions for A, whereas the use of incentives can be seen as changing the characteristics of the alternatives, and the use of persuasion as changing the criteria by which the alternatives are assessed.

As mentioned before, without any monitoring, P has only the outcomes X and Y to evaluate A's behaviour. The use of measures controlling that behaviour requires more information on P's part. Thus, there are two different costs for P associated with monitoring and controlling A's behaviour: *inspection costs* (or: *appraisal costs*) and *prevention costs*.²⁴

What if the actual outcome is X? Can P rest for a while? No, there is still the possibility that A has been non-co-operative by choosing action y (the fourth possibility), although he has been paid by P to act in P's interests. Even though P does not suffer a direct welfare loss as a result of a non-preferred outcome, there is the possibility that he has been wasting money. To prevent that state of affairs P will use the same measures as when Y is the actual outcome. So either way P will incur inspection and prevention costs.

Is there any reason for A to react to all this monitoring and controlling by P? First, suppose A's original choice was y .

When P uses a *negative incentive*, the choice A had between x and y becomes a choice between x and y^- . If $U_A^y > U_A^x > U_A^{y^-}$ the welfare loss for A associated with this negative incentive is $U_A^y - U_A^x$. However, when P uses a *positive incentive*, the choice A had between x and y becomes a choice

between x^+ and y , and, supposing $U_A^{x^+} > U_A^y > U_A^x$, A's welfare will increase from U_A^y to $U_A^{x^+}$.

When P uses *persuasion* it is not clear whether A is worse off or not. First A chose y because $U_A^y > U_A^x$; now he chooses x because $U_A^x > U_A^y$. A's utility level U_A^x cannot meaningfully be compared with his utility level U_A^y , because utility functions U_A and $U_{\underline{A}}$ differ.

When P uses *directives*, A's welfare loss is the same as when P uses a negative incentive: $U_A^y - U_A^x$.

Now, suppose A was already co-operative; his original action was x . He will welcome the use of *positive incentives*, because $U_A^{x^+} > U_A^x$. He will be indifferent to the use of *negative incentives*, because they affect an alternative he did not choose in the first place.

The use of *persuasion* could mean a welfare improvement if $U_{\underline{A}}^x > U_A^x$, but then we would be comparing apples and oranges.

He will be indifferent to the use of *directives*, finally, unless his discretion as such represents a utility to him, in which case his welfare will decrease.

On the whole, the best thing for A to do is to conceal his actions in order to frustrate P's monitoring, and at the same time to try to avoid negative incentives and directives as well as to try to lure P into the use of positive incentives. That strategy is recommendable irrespective of whether A is co-operative or not. However, if A is already co-operative, he can use that fact to conciliate P. Opposed to P's inspection costs and prevention costs, there are A's *concealment costs* and *diversion costs*.

Comparison with the prevailing principal-agent model

The principal-agent model that is presented above differs fundamentally from the model that prevails in the agency literature, although the assumptions are the same: there is divergence of interests between principal and agent, the actions of the agent do not fully determine the outcomes, and the principal cannot costlessly monitor these actions.

In the prevailing model the principal is thought to engage in "monitoring", which covers a variety of activities,²⁵ and the agent is sometimes expected to "bond", e.g. the agent is expected to expend resources to guarantee his principal that he will not take actions that will harm him.²⁶ The agency-problem is then to minimise the agency costs, which are the sum of:

- the monitoring expenditures incurred by the principal;
- the bonding expenditures incurred by the agent;
- the residual loss, e.g. the resulting welfare loss for the principal, given a certain amount of monitoring and bonding.

The main weakness of this model is that it lumps together disutilities of different individuals. The monitoring costs and the residual loss are disutilities

of the principal. The bonding costs, however, are borne by the agent. It is sometimes argued that the bonding costs are disutilities of the principal because it is likely that the agent meets the bonding expenditures using the payment he gets from the principal in return for looking after the principal's interests. However, whether the agent uses these resources, or he uses other resources to pay for these bonding expenditures, is not relevant: they are a disutility of the agent.

A related criticism is that it is unclear whom the "agency problem" concerns: the principal or the agent? Much of the earlier agency literature focused on the normative aspects of the principal-agent relation, from the angle of the principal. That literature showed how to structure the principal-agent relation in order for the agent to make choices that will maximize the principal's welfare given the existence of uncertainty and imperfect monitoring.²⁷ The subsequent positive agency literature has not lived down that original imbalance, which emerges when we want to explain the agent's behaviour. Whereas the principal is supposed to minimise the sum of his monitoring costs and his residual loss, the model does not offer such a trade-off for the agent. Is the agent only to minimise his bonding costs? Why would he bond in the first place? Bonding can only be understood as a means, among other things, of diversion by an agent who is facing the possibility of a welfare loss as a consequence of the controlling activities of his principal. That is why we have, in our basic principal-agent model, two well-matched opponents, who are frustrating each other's plans, by inspecting and camouflaging, by controlling and diverting. One of these individuals, the principal, has the advantage that he can prescribe the pay-off rules, and that (supposing he is the agent's superior) he can use directives to control the agent. For his part, the agent can take advantage of the fact that the principal is faced with a lack of information about the agent's actions and with uncertainty about the link between these actions and the outcomes.

That in our model principal and agent are equally matched is no repudiation of the possible hierarchical character of the relationship between principal and agent, as is shown by the possibility that the principal, as the agent's superior, uses directives to curb the agent's behaviour. Neither are we of the opinion that a hierarchy *has* to exist between principal and agent, in order to label their relationship a principal-agent relation. The question whether a hierarchy is essential for an agency relationship or not, is often confused with the question whether there is any delegation of decision-making authority.²⁸ In our view delegation refers to alleviating one's duties by letting others make choices for you and take actions on your behalf. Delegation refers to tasks that could well have been performed by the principal, were it not for lack of time. Just as hierarchy, delegation is not essential for agency relationships. If a car

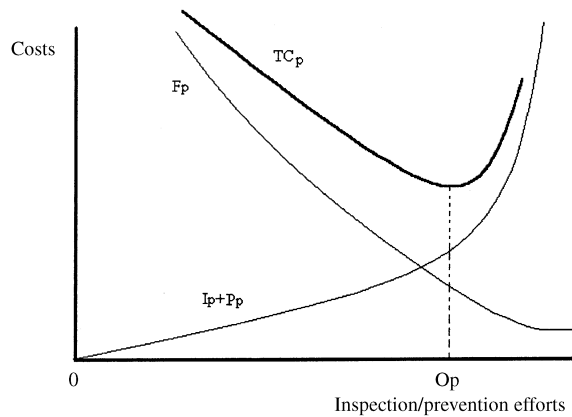


Figure 1. Inspection costs, prevention costs and failure costs.

is brought to a garage for an overhaul, the car-owner becomes a principal and the garagist an agent, even though neither are part of some hierarchical organization, and even though there is no delegation of authority. What is essential for an agency relationship is discretion of the agent. This discretion follows from the informational asymmetry in the relation between principal and agent,²⁹ and not from the delegation of authority.³⁰

Trading-off different costs

Turning back to our basic model, P has to bear three different costs:

- inspection costs, I_P ;
- prevention costs, P_P ;
- failure costs, F_P . These are the costs associated with the welfare-loss P eventually suffers (his “residual loss”).

The inspection and prevention costs will vary with the amount of inspecting and preventing that takes place, as will the failure costs, as is shown in Figure 1. The total costs are the sum of inspection and prevention costs on the one hand, and failure costs on the other.³¹ P aims at minimizing his total costs, TC_P .

A also has to bear three different costs:

- concealment costs, C_A ;
- diversion costs, D_A ;

- failure costs, F_A . This is the “residual loss” A eventually suffers, compared to the situation in which A could have it his own way, without any monitoring and controlling by P.

Just like P, A will want to minimise his total costs (TC_A), which are the sum of his concealment, diversion, and failure costs.³²

The course of the F_P -curve in Figure 1 is affected by the amount of concealment and diversion by A. If there is much concealment and diversion, P’s inspection and prevention will be less effective than if there is only a little concealment and diversion. The effectiveness of P’s activities is reflected in his failure costs. The less effective his activities are, the higher his failure costs. Suppose A increases his concealment and diversion activities, resulting in a shift upwards of the F_P -curve and thus of the TC_P -curve. With increasing concealment and diversion, new optima for P are brought about, at higher total costs, and at a higher level of inspection and prevention. Of course, the increased level of inspection and prevention makes A less successful in *his* activities to reduce *his* residual loss, shifting up the F_A - and TC_A -curves, with optima at increased levels of concealment and diversion. These increased levels of concealment and diversion make P’s activities less effective, shift up the F_P - and TC_P -curves, and increase the level of inspection and prevention, thus making A’s concealment and diversion less successful etc. What is striking is that P and A, as a result of each others’ activities, are pushed towards these high levels of inspection, prevention, concealment and diversion.

This problem is similar to that of a duopoly, and whether it is solved or not depends on additional assumptions being made about the behavior of P and A. If P is passive he chooses an as his optimal amount of inspection and prevention, regardless of the indirect effect that level of inspection and prevention has on his own failure costs. If A is also passive (the Cournot-type of duopoly), he will also make an independent choice concerning his optimal amount of concealment and diversion. If A is not passive (the Stackelberg-type of duopoly) a solution exists as long as P remains passive. If neither are passive, i.e. both P and A react to each other’s decisions (the indeterminate type of duopoly), then they are on the road to high levels of their activities, and high total costs. Just as in the case of a collective monopoly, it is imaginable that some kind of collusion takes place, in which P and A bury the hatchet, and arrangements are made that minimize the sum of P’s total costs and A’s total costs.

Apart from choosing the optimal amount of inspection and prevention given the F_P - and I_{P+P} -curves, and given the level of A’s activities, P can try to shift these curves downwards. Shifting downwards the I_{P+P} -curve is equivalent to raising the *cost-efficiency* of his monitoring and controlling activities. To get the F_P -curve downward, P can choose more *effective* mon-

itoring and controlling activities. But even if P can persuade A to prefer the same outcome as he does himself, even if there is no divergence of interests between P and A whatsoever, there will still be failure costs for P, because the outcomes are not fully determined by A's actions. And even if there is no monitoring and controlling problem at all, that is to say if P can costlessly monitor and control A's actions, these failure costs will arise, for the same reason.

Ultimately then, P will have to turn his mind to the problem of indeterminacy of the outcomes. The more vaguely and abstractly P has defined these outcomes, the less likely it is that A's actions will determine them. And the more agents are involved with the same outcomes, the less likely it is that one agent's actions will be determining.

Corruption as a principal-agent problem

A definition of corruption

There are almost as many different definitions of corruption as there are contributions to the research on the phenomenon. Surveys and discussions can be found in Johnston, Holmes, Hoetjes, and Heidenheimer.³³ The aim of this article is definitely not to conjure up a new definition of corruption. However, in order to present an adequate principal-agent model of corruption, we need an adequate definition of corruption. A concise definition, and therefore a good starting-point, is that of Bayley, who defines corruption as the misuse of authority, as a result of considerations of personal gain.³⁴ There are several elements of this definition that are worth discussing.

First, there is the element of considerations of personal gain. In economics the behaviour of an individual is assumed to be brought about by his looking after his own interests. What these interests are is for the individual to decide; he can be a materialist or an idealist, an egoist or an altruist, a crook or a saint, or (like most people) a little bit of all of these. From the point of view of (neo-institutional) economics the element of personal gain in a definition of corruption is a superfluous one. This is more important than it may seem at first glance. If for example, a bureaucrat accepts a bribe from a company, and in return grants a license to that company, we unmistakably have a case of corruption. Now what if the company does not offer a bribe but offers a job to the bureaucrat's brother? And what if the bureaucrat turns down a bribe, but instead wants the company to donate to the campaign of his favourite politician, or to Greenpeace? If any of these favours in return are able to bring about a misuse of authority, they apparently signify an increase in welfare for the corrupt bureaucrat. There is no need for us to go into the nature of

these favours, as we have to if we confine ourselves to “personal gain” as the bureaucrat’s motive.

Second, there is the element of misuse of authority. As was discussed above, it is best to swap “authority” for “discretion”, which leaves us with “misuse of discretion”. What differentiates non-cooperative behaviour in general, as pictured in our basic principal-agent model, from corruption? Not the fact that the corrupt agent acts contrary to his principal’s interests, in choosing an action that the principal would not have chosen. Is it the nature of the action itself then? If an agent chooses an action which not only his principal would not give preference to, but which is unauthorized or illegal as well, then we have to do with fraud. Corruption differs from fraud, however, in two ways. In the first place, corruption in itself does not necessarily involve an unauthorized or illegal action by the agent. There is nothing illegal in granting a license to a company, nor is it unauthorized to do so for the bureaucrat involved. Fraud, however, is always about illicit actions. In the second place, corruption always involves a third party, whereas fraud is committed by a single person. It is this involvement with an accomplice that is essential for corruption. In other words, it is the unauthorized dealing with a third party that distinguishes corruption from non-co-operative behaviour in general, as well as from simple fraud. The granting of a licence (the agent’s action) may be authorized, taking a bribe in return (the transaction) is not. In our view then *corruption* can be defined as *any unauthorized transaction between agents and a third party*. This third party acts as a second principal to the corrupt agent, in which respect we differ from Klitgaard, who thinks of the third party as a client to the agent.³⁵

Which transactions are permitted and which are not is for the first principal to decide, on moral grounds. This first principal can be an elected politician or an appointed official, in which case it is a matter of *bureaucratic corruption*. *Political corruption* refers to the situation in which the electorate acts as a principal to a politician-agent.

Below we will turn our basic principal-agent model into a principals-agent model of corruption.

A principals-agent model of corruption

- What does the possibility of corruption mean to P, A?
- Who will we label C?

Let us concentrate on newcomer C first. C faces two different problems. First of all he has to consider whether corruption in itself pays or not. The benefits of corruption for C consist of the service rendered or the good provided by A, and/or not having to bear any deadweight costs. Against these benefits,

there are the costs associated with corruption, such as the costs of finding a corrupt agent, of negotiating the size of the bribe, and of course of the bribe itself. Besides that, there are the costs of keeping the transaction secret, the expected value of the penalty in case C gets caught, and moral costs.

Supposing that a decision is made in favour of corruption, C is confronted with a second problem: he becomes a principal to A.

Suppose C, facing the possibility of a long wait at a customs post, bribes a customs officer in order to get a swift passage through.³⁶ Just as in the previous section, there are four different possibilities:

1. C is promptly allowed to pass, partly as a result of A's action in return for C's bribe. This is the only possibility that would fully please C.
2. C is promptly allowed to pass, although A merely collects the bribe and does nothing to C's advantage.
3. C has to wait like everyone else, despite A's efforts.
4. C has to wait like everyone else, with A just pocketing the bribe.

Assume that C cannot costlessly monitor A's actions, and that these actions affect but do not determine the outcomes. What steps can we expect C to take? If we are dealing with *one-off corruption*, and C is allowed a swift passage through, he will probably congratulate himself on his foresight. If he has to wait, he will look upon the ineffectual bribe as a one-time item of loss. If we are dealing with *recurrent corruption*, however, the monitoring and controlling activities that are part of the basic principal-agent model enter the picture. Suppose C is confronted with a constant wait, despite his bribes. C is not in a position to issue directives that narrow the set of alternative actions A can choose from, so he has to rely on either changing the characteristics of the alternative actions themselves (through incentives), or changing the way the agent assesses these alternative actions (by persuasion). The use of these instruments requires monitoring by C. His inspection and prevention costs (I_C and P_C) are to be traded-off against his failure costs (F_C). These failure costs are either the costs of a non-preferred outcome (a wait) or the cost of a redundant bribe. Of course, C's decisions are linked. His total costs as a principal will be part of his deliberations about engaging in, and proceeding with, corruption. C's costs and benefits are stated in Table 1.

Second, let us turn to the corrupt agent, A. He faces three different problems. First, there is his principal-agent relation with P, and the minimisation of C_{A-P} , D_{A-P} and F_{A-P} .³⁷ In the second place, there is his second principal C. In this second principal-agent relation A will use the same concealment and diversion tactics as in the first, and he will be concerned with a similar minimisation of his total costs as agent (C_{A-C} , D_{A-C} and F_{A-C}). Third, there is the decision to be corrupt or not. The costs associated with corruption

Table 1. Costs and benefits for the corrupting principal.

| Costs | Benefits |
|--|-------------------------------------|
| Searching costs | Service rendered/good provided by A |
| Negotiating costs | Prevention of deadweight costs |
| Bribe | |
| Covering-up costs | |
| Penalty \times probability of getting caught | |
| Moral costs | |
| <i>Costs as a principal vis-à-vis A</i> | |
| Inspection costs | |
| Prevention costs: | |
| • costs of incentives | |
| • costs of persuasion | |
| Failure costs | |

Table 2. Costs and benefits for the corrupt agent (A).

| Costs | Benefits |
|--|-------------------------------|
| <i>Costs as an agent vis-à-vis P</i> | |
| Concealment costs | |
| Diversion costs | |
| Failure costs | |
| <i>Costs of corruption</i> | |
| Searching costs | <i>Benefits of corruption</i> |
| Negotiating costs | Bribe |
| Covering-up costs | |
| Penalty \times probability of getting caught | |
| Moral costs | |
| <i>Costs as an agent vis-à-vis C</i> | |
| Concealment costs | |
| Diversion costs | |
| Failure costs | |

for A are searching costs, negotiating costs, covering-up costs, the expected value of the penalty should he get caught, and moral costs, which must be offset by the bribe. Just as with C, the last two decisions of A are interwoven. Furthermore, A can expect some economies of scale to arise, especially with respect to his concealment efforts. Table 2 shows the cost and benefits for A.

How about P? First of all, P still has to minimise his costs as a principal in his principal-agent relationship with A. These costs are affected by the

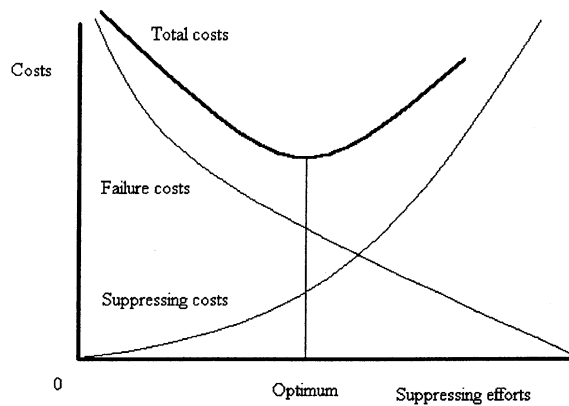


Figure 2. Costs of suppressing corruption, and failure costs.

corruption of A and C. First, there are externalities stemming from the use of incentives and persuasion by C. If P and C prefer the same outcome these externalities are positive, otherwise negative. Second, the activities of A to cover-up the corruption, as well as similar activities vis-à-vis his second principal C, render P's inspection and prevention less effective, and increase his failure costs. Besides these effects of the corruption on his costs as principal, there are possible direct effects.

First, there is a possibility that the corruption involves some kind of theft by A. Shleifer and Vishny distinguish corruption without theft from corruption with theft.³⁸ In a situation of corruption without theft the agent turns over the official price of the good or service (assuming the goods/services are priced) to his principal, and keeps the bribe. In a situation of corruption with theft, the sale as such is hidden, and the official price as well as the bribe is pocketed by the agent. In the latter case corruption is, according to our definition, combined with fraud by the agent.

Second, consider the case of corruption in awarding public-works contracts. It is not unlikely that C, after he has won the contract, passes the costs of corruption (notably the costs of the bribe) on to P, either by simply increasing the price P has to pay, or by doing substandard work.

Suppose that P and C have matching preferences for a certain outcome, that there is corruption without theft, and that C does not pass his costs on to P. Would corruption in that case not be a blessing in disguise for P? No, because in defining corruption as an unauthorized transaction we have assumed that P will have objections to corruption on moral grounds. These moral costs should work as an incentive to start monitoring for corruption, and to take measures to prevent corruption taking place. What we have here, is a second cost-minimisation problem for P. His moral costs (failure costs) can be forced

Table 3. Costs and benefits for the first principal (P).

| Costs | Benefits |
|---|---|
| <i>Costs as a principal vis-à-vis A</i> | |
| Inspection costs | |
| Prevention costs | |
| <ul style="list-style-type: none"> • costs of incentives • costs of persuasion • costs of directives | |
| Failure costs | |
| <i>Costs as a result of A's and C's corruption</i> | |
| Negative externalities from C's prevention (if P's and C's preferences do not match) | <i>Benefits as a result of A's corruption</i> Positive externalities from C's prevention (if P's and C's preferences match) |
| Increased failure costs | |
| Costs of monitoring and preventing corruption | Possible yield of penalties |
| Failure costs (moral costs) with respect to corruption | |

back if he engages in suppressing corruption, but he cannot do so costlessly. Figure 2 depicts P's optimal amount of corruption-suppressing effort. Table 3 shows the costs and benefits for P.

Political corruption in representative democracies

In this section we apply our principals-agent model to political corruption. First, however, the validity of the assumptions of the basic principal-agent model has to be assessed. After all, if these assumptions are too far-fetched in the context of political corruption, it would not make any sense to continue our endeavour. The same goes for our assumptions concerning corruption.

Without doubt, the relationship between voters and politicians in a representative democracy can be considered to be a principal-agent relationship.³⁹ Voters want politicians to look after their interests, and in exchange provide these politicians with their votes and thus with positions. Of course, politicians have their own interests, which may diverge from the voters' interests. At the heart of the agency problem, as formulated in section two, lie the assumptions of costly monitoring and of the "weak" connection between the agent's action and the outcomes. Both assumptions are realistic in the context of representative democracy: voters cannot costlessly monitor the actions of politicians, and policy outcomes are hardly ever an unambiguous result of these efforts.

However, the large number of principals-voters in most representative democracies may be problematic. Voters cannot costlessly monitor politicians, but what is more, for the average voter it does not pay to invest a lot of resources in the costly gathering of information (Downs' "rational ignorance"). Yet this does not hold for the electorate as a whole. Collusion can be profitable, if it can overcome free-rider problems resulting from externalities. In this section we will treat the electorate as one principal, and we will add "collusion costs" to that principal's statement of costs.

Earlier, we defined corruption as any transaction between an agent and a second principal that is unauthorized by the first principal. We argued that neither the nature of the bribe nor the nature of the favour in return mattered. The dividing lines between regular financial support of a favourite candidate, pork-barrel politics, rent-seeking and corruption can be thin however, to the analyst as well as to the politician.⁴⁰ Corruption can well be seen as an illegal form of rent-seeking.⁴¹ Yet where corruption starts and rent-seeking ends is for the principal (i.e. the electorate) to decide.

From the previous section it follows that political corruption is concerned with three (archetypal) individuals, facing seven different but intertwined decisions:

1. the general agency problem for the electorate;
2. the general agency problem for politicians;
3. the corruption problem for politicians;
4. the corruption problem for the corrupting principals;
5. the agency problem for the corrupting principals;
6. the agency problem for the politicians vis-à-vis the corrupting principals;
7. the corruption problem for the electorate.

A comprehensive application of our model to political corruption would show how all these different and correlated costs and benefits are affected by:

- characteristics of the goods/services produced;
- characteristics of the production processes, including the electoral systems;
- characteristics of the individuals involved.

Unfortunately, such a comprehensive application is beyond the scope of this article. Below we will focus on some of the characteristics.

Private and public goods

Pure public goods are 100% externalities. It is extremely unlikely that a corrupting principal would invest a bribe in a good/service, without being

able to exclude others from the benefits of that good/service. Thus, the extent to which government goods/services have externalities negatively affects the incidence of corruption, due to the *spread of benefits* of corruption, or the *collusion costs* corrupting principals have to bear to prevent that spread. It must be noted, however, that the production of a public good is a private good. Defence is a public good, which is not likely to be the subject of corruption; defence orders are private goods, and can well be the subject of corruption.

Basu's principle of efficient pricing

An important factor in the decision of C to turn to corruption are the *deadweight costs* associated with the goods/services. In some instances, like the customs example in the previous section, corruption is concerned only with a reduction of deadweight costs. Goods/services that are not adequately priced, including cases where private goods are not priced at all, but are financed out of taxes, are prone to corruption. This is known as Basu's principle of efficient pricing.⁴² If a good/service has a low price, or no price at all, and high deadweight costs (for instance due to a rush), corruption may become a viable option.

The implications of "deadweight costs"-bribery are not unambiguous. In many instances bribery acts as a mechanism by which these deadweight costs are redistributed, leaving the total deadweight costs unchanged. Lui offers a queuing model of bribery in which the administrative process is sped up by the corrupt officials who try to obtain as many bribes as possible.⁴³ That speed money is socially harmless, even helpful,⁴⁴ is not true however. First, the distribution of the "ability to bribe" is not equitable. Second, the relevant "zero option" is the situation where the goods/services are efficiently priced in the first place.

If corruption is rampant, it may become an alternative way of financing government. Nye points out that when government lacks tax capacity, corruption may be an important source of capital formation.⁴⁵ Shleifer and Vishny show that corruption, because of its illegality and the need for secrecy, is more distortionary and costly than its sister activity, taxation.⁴⁶

Exit, voice and disloyalty

Alam distinguishes between different types of countervailing actions: evasive countervailing actions, direct countervailing actions, and illicit countervailing actions.⁴⁷ Paraphrasing Hirschman, these three types of actions can be labelled exit, voice and disloyalty. We will not go into the latter possibility, although it can explain the rise of rampant corruption or, as Caiden and Caiden have labelled it, systemic corruption.⁴⁸

The first type of action refers to entry and exit decisions by those who are confronted with corruption. In our model of corruption this possibility has not been fully appreciated. Each individual faces different entry and exit decisions. The entry decisions of corrupt agents and principals are part of our model, as are the costs and benefits of a longer lasting principal-agent relationship, but the exit decision is absent in our model, as is the possibility for the first principal to end his principal-agent relationship with a corrupt agent.

Alam suggests that an individual who is confronted with corruption may relocate, seek out officials who are not corrupt, find substitutes or private alternatives to provision by corrupt officials, or forego such goods and services altogether.⁴⁹ In other words the individual may look for a substitute product, or forego the product; or he may look for a substitute producer or forego the producer. The first possibility (substituting or foregoing the product) is subject to “asset specificity”. If the goods/services are custom-made for the corrupt principal, or the bribe is tailored to the agent’s wishes, exit becomes less likely. *The goods/services and the bribe are too valuable.* The second possibility refers to the degree of competition: the degree of competition in the “corruption-market”, and the degree of electoral competition (i.e. the degree of competition in the basic principal-agent relationship).

Let us focus on electoral competition. Discontent on the part of the electorate can be due to non-cooperative behaviour by politicians in general, but can also be the result of corrupt behaviour. Whether corrupt politicians are found out or not, depends on the monitoring and prevention activities of the electorate on the one hand, and the effectiveness of the concealment and diversion activities of corrupt politicians on the other. If corrupt politicians are found out, full electoral competition in principle counters corruption, in that they are not re-elected. Even with full competition and a well informed electorate however, corruption may occur. Because of the strongly diminished probability of re-election, the *bribes* corrupt politicians are offered just have to be *larger*.⁵⁰ As mentioned in the introduction to this article, there has been some discussion concerning the actual degree of competition in different electoral systems. What is important from the perspective of our model is that competition increases the *searching costs and negotiating costs* for corrupting principals, as well as for corrupt agents.

In short, electoral competition can counter corruption with retroactive effect (by throwing the rascals out), but what is more important is that it increases the minimum magnitude of the bribes as well as the transaction costs for those contemplating corruption.

Della Porta's 'Business Politicians'

Finally, let us turn to the characteristics of those who are involved in corruption, particularly the corrupt agents. Della Porta depicts the Italian political class that now appears to have been swept away by the *Tangentopoli* investigations as consisting of business politicians.⁵¹ The emergence of this political class interacted with the spread of corruption. She shows that members of this class had very little sense of civic morality. They viewed politics as just another business. In terms of our model, these business politicians therefore may differ from their principals as far as the perception of corruption is concerned. What is viewed as an impermissible transaction by the electorate, may be viewed as standard business practice by business politicians. The *moral costs* of corruption for these business politicians will be very low. Political parties can even become agencies of socialization in illegality.⁵²

What is also striking in Della Porta's description is the complexity of corruption as such. The searching and negotiating procedures are obscure, which means that the *searching and negotiating costs* for newcomers are relatively high, and relatively low for those already in business. The *concealment and diversion activities* of the politician-agent vis-à-vis the corrupting principal are eye-catching: ranging from arbitrary actions to outbursts of rage. On the other hand, business politicians are keen to be perceived as "honest" in their relationship with corrupting principals.

Although we did not apply our model at length, we can conclude this section by observing that contrary to Johnston's suggestion the use of principal-agent models of corruption need not be limited to bureaucratic corruption.⁵³

Conclusion

This article has dealt with trade-off costs. Principals have to bear failure costs and inspection/prevention costs, and have to minimise the sum of these costs, hindered by the agent's concealment and diversion activities. Moreover, principals that are confronted with corruption have to minimise the sum of the costs of suppressing corruption and failure costs.

We have observed that in the general agency problem, the principal will eventually have to turn his mind to the cost-efficiency of his inspection and prevention efforts, as well as to the fundamental problem of the indeterminacy of outcomes. In this respect there are two important elements: the extent to which the desired outcomes are concrete, and whether agents are part of a team or not. From the point of view of suppressing corruption, teamwork is to be preferred, but not from the general principal-agent perspective. Though it may limit corruption, teamwork gives way to shirking. The same holds for

political corruption. In most democracies, Acton's principle that power tends to corrupt and absolute power corrupts absolutely, has led to complicated systems of checks and balances, which have contributed to the obfuscation of party function and responsibility.⁵⁴ Next to the two different trade-off-problems mentioned above, then, there is a third: the trade-off between the general agency problem and the problem of corruption. It is in this direction that we point for further research.

Notes

* The author wishes to thank James Newell for his helpful comments.

1. T. Eggertsson, (*Economic Behaviour and Institutions* (Cambridge: Cambridge University Press, 1990)) offers the most comprehensive overview of neo-institutional economics. M.K. Nabli and J.B. Nugent, ("The New Institutional Economics and its Applicability to Development," *World Development*, 1989 (17), 1333–1347) is an accessible introduction which focuses on the applicability of neo-institutional economics to development issues.
2. Netherlands Institute of Government, *Government Institutions: Effects, Changes, and Design* (Enschede: University of Twente, 1995), p.4.
3. G.H.J.M. Neelen, *Principal-Agent Relations in Non-Profit Organizations* (Enschede: Faculty of Public Administration and Public Policy, University of Twente, 1993), p.11.
4. R.H. Coase, "The problem of social cost," *The Journal of Law & Economics*, 1960 (3), 1–44.
5. O.E. Williamson, *The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting* (New York: Free Press, 1985), p.20.
6. S. Rose-Ackerman, "The economics of corruption," *Journal of Public Economics*, 1975 (4), 187–203; S. Rose-Ackerman, *Corruption. A Study in Political Economy* (New York: Academic Press, 1978); F.T. Lui, "A dynamic model of corruption deterrence," *Journal of Public Economics*, 1986 (31), 215–236; J. Chr. Andvig and K.O. Moene, "How Corruption May Corrupt," *Journal of Economic Behavior and Organization*, 1990 (13), 63–76; R. Klitgaard, "Gifts and Bribes," in R.J. Zeckhauser (ed.), *Strategy and Choice* (Cambridge, Mass.: MIT Press, 1991); and M.S. Alam, "A Theory of Limits on Corruption and some Applications," *Kyklos*, 1995 (48), 419–435.
7. Rose-Ackerman, 1975, 1978, op. cit.
8. Rose-Ackerman, 1978, op. cit.; S. Rose-Ackerman, "Reforming Public Bureaucracy through Economic Incentives?," *Journal of Law, Economics and Organization*, 1986 (2), 131–161.
9. Lui, 1986, op. cit.
10. Andvig and Moene, 1990, op. cit.
11. Klitgaard, 1991, op. cit.
12. Alam, 1995, op. cit.
13. H.E. Bakker and N.G. Schulte Nordholt, "Introduction" and "Epilogue," in H.E. Bakker and N.G. Schulte Nordholt (eds), *Corruption & Legitimacy* (Amsterdam: SISWO, 1996).
14. O.E.G. Johnson, "An economic analysis of corrupt government, with special application to less developed countries," *Kyklos*, 1975 (28), 47–61; and S.P. Huntington, *Political Order in Changing Societies* (New Haven, Conn.: Yale University Press, 1968).
15. M. Manion, "Corruption by Design: Bribery in Chinese Enterprise Licencing," *Journal of Law, Economics and Organization*, 1996 (12), 167–195.
16. C. Cadot, "Corruption as a gamble," *Journal of Public Economics*, 1987 (33), 223–244.

17. K. Basu, S. Bhattacharya and A. Mishra, "Notes on bribery and the control of corruption," *Journal of Public Economics*, 1992 (48), 349–359; and G.S. Becker, "Crime and Punishment: An Economic Approach," *Journal of Political Economy*, 1968 (76), 169–217.
18. D. Mookherjee and I.P.L. Png, "Corruptible law enforcers: how should they be compensated?," *Economic Journal*, 1995 (105), 145–159.
19. E. Rasmusen and J.M. Ramseyer, "Cheap bribes and the corruption ban: A coordination game among rational legislators," *Public Choice*, 1994 (78), 305–327.
20. R.B. Myerson, "Effectiveness of Electoral Systems for Reducing Government Corruption: A Game-Theoretic Analysis," *Games and Economic Behavior*, 1993 (5), 118–132.
21. G. Galeotti and A. Merlo, "Political Collusion and Corruption in a Representative Democracy," *Public Finance*, 1994 (49), 232–243.
22. M. Johnston, "The search for definitions: the vitality of politics and the issue of corruption," *International Social Science Journal*, 1996 (XLVIII), 321–335.
23. One could argue that in this case A is not an agent anymore, but is merely implementing the choices that are made for him. Even then, if P cannot properly monitor A's actions, A can choose action y . Of course, A is usually left with more than one alternative to choose from.
24. These terms are derived from the analysis of quality costs in business economics.
25. Including controlling activities.
26. See M.C. Jensen and W.H. Meckling, "Theory of the firm: Managerial behavior, agency costs and ownership structure," *Journal of Financial Economics*, 1976 (3), 305–360.
27. Jensen and Meckling, op. cit. pp. 309–10; M.C. Jensen, "Organization Theory and Methodology," *The Accounting Review*, 1983 (58), 319–339.
28. This question has been addressed by Spremann who holds the same view as is expressed here. See K. Spremann, "Agent and Principal," in G. Bamberg and K. Spremann (eds), *Agency Theory, Information, and Incentives* (Berlin: Springer, 1989), p.9.
29. J.W. Pratt and R.J. Zeckhauser, *Principals and Agents: The Structure of Business* (Boston, Mass.: Harvard Business School Press, 1985), p.4.
30. Of course, delegation of authority brings about an informational asymmetry, but such an asymmetry can also occur without any delegation of authority.
31. In figure 1 we have put together all the monitoring and controlling activities of P, resulting in one I+P-curve and one F_P -curve. Of course, the effectiveness of the different (substitutable) controlling instruments (incentives, persuasion, directives) in reducing the failure costs may differ. Furthermore, monitoring and controlling are not perfect substitutes, but are complementary: monitoring as such does not reduce non-co-operative behaviour by A. It is the follow-up that counts.
32. Because of the similarity between the composition of P's costs and the composition of A's costs, figure 1 illustrates A's costs as well, if I+P is changed into C+D, F_P into F_A , and TC_P into TC_A .
33. Johnston, 1996, op. cit.; L. Holmes, *The End Of Communist Power* (Cambridge: Polity Press, 1993); B.J.S. Hoetjes, *Corruptie bij de overheid* (The Hague: VUGA, 1982); and A.J. Heidenheimer, (ed.), *Political Corruption. Readings in Comparative Analysis* (New Brunswick: Transaction Publishers, 1970).
34. D.H. Bayley, "The effects of corruption in a developing nation," *Western Political Quarterly*, 1966 (4), 719–732.
35. Klitgaard, 1991, op. cit.
36. Note that in this case the benefits of corruption for C consist only of the reduction in deadweight costs (in this case waiting costs).
37. The suffix A-P is used to indicate that these costs arise for A in his relationship with P. The suffix A-C will be used to indicate costs in the relationship of A and C.
38. A. Shleifer and R.W. Vishny, "Corruption," *Quarterly Journal of Economics*, 1993 (108), 599–617.

39. McCormick and Tollison, cited in H. Streim, "Agency Problems in the Legal Political System and Supreme Auditing Institutions," *European Journal of Law and Economics*, 1994 (1), 177–191.
40. See O. Kurer, "Clientelism, corruption, and the allocation of resources," *Public Choice*, 1993 (77), 259–273; J.C. Scott, *Comparative Political Corruption* (Englewood Cliffs: Prentice-Hall, 1972), p.96; J. Zimmerman, *Curbing Unethical Behavior in Government* (Westport, Conn.: Greenwood Press, 1994), p.5.
41. H.E. Bakker, "Corruption and Legitimacy: An Institutional Perspective," in H.E. Bakker and N.G. Schulte Nordholt (eds), *Corruption & Legitimacy* (Amsterdam: SISWO, 1996), p.30.
42. K. Basu, "Some Institutional and Legal Prerequisites of Economic Reform in India," in H.E. Bakker and N.G. Schulte Nordholt, *Corruption & Legitimacy* (Amsterdam: SISWO, 1996).
43. F.T. Lui, "An Equilibrium Queuing Model of Bribery," *Journal of Political Economy*, 1985 (93), 760–781; see also Rose-Ackerman, 1978, op. cit., ch. 5.
44. See Klitgaard, 1991, op. cit. p.221.
45. J.S. Nye, "Corruption and Political Development: A Cost-Benefit Analysis," in: *American Political Science Review*, 1967 (61), 417–427.
46. Shleifer and Vishny, 1993, op. cit.
47. Alam, 1995, op. cit.
48. See G.E. Caiden and N.J. Caiden, "Administrative Corruption," *Public Administration Review*, 1977 (37), 301–309.
49. Alam, 1995, op. cit. p.425.
50. Rose-Ackerman, 1978, op. cit., pp.10–11.
51. D. Della Porta, "Actors in corruption: business politicians in Italy," *International Social Science Journal*, 1996 (XLVIII), 349–364.
52. Ibid. p.355.
53. Johnston, 1996, op. cit.
54. See A.A. Rogow and H.D. Lasswell, *Power, Corruption, and Rectitude* (Englewood Cliffs/New York: Prentice-Hall, 1963), pp16–18.