

# **Corruption measurement and control.**

## **Towards a unified approach**

**Lucio Picci<sup>1</sup>**

**First draft: 30 May 2005**

**Prepared for the IV Global Forum on Fighting Corruption**

**Brasilia, Brasil, 7-10 June 2005**

### **Abstract**

In the debate on corruption there is a broad agreement on what measures could contribute to its cure. These involve increased accountability, to be obtained through a high degree of transparency, and regular monitoring activities, to show progresses and to allow for proper incentives to be in place.

However, policy suggestions so far have mostly had a piecemeal character, and have failed to find a common thread that can effectively allow for the packaging of the different measures into a single, even if multi-faceted, plan.

I propose such a unified framework, to identify a coherent policy package, to be supported by an Internet-based information system. The proposed solution has several advantages. First, its highly integrated and innovative nature is very promising, and offers far-reaching implications that are worth exploring. Second, it allows for the computation of objective measures related to the governance of public policies. Third, the presence of a general framework offers analytical advantages when dealing with its particular components. Last, a single policy package, instead of several scattered measures, can be more easily communicated, when the intention is lobbying to obtain policy changes.

For illustrative purposes, the proposed governance model is here applied to the management of public works

---

<sup>1</sup> Università di Bologna, Dipartimento di Scienze Economiche. Strada Maggiore 45, 40125 Bologna. E-mail: [lucio.picci@unibo.it](mailto:lucio.picci@unibo.it).

## **1. Introduction**

In the debate on corruption there is a broad agreement on what measures could contribute to its cure. These involve increased accountability, to be obtained through a high degree of transparency, and regular monitoring activities, to show progresses and to allow for proper incentives to be in place.

However, policy suggestions so far have mostly had a piecemeal character, and have failed to find a common thread that can effectively allow for the packaging of the different measures into a single, even if multi-faceted, plan.

I propose such a unified framework, to identify a coherent policy package, to be supported by an Internet-based information system. The proposed solution has several advantages. First, its highly integrated and innovative nature is very promising, and offers far-reaching implications that are worth exploring. Second, it allows for the computation of objective measures related to the governance of public policies. Third, the presence of a general framework offers analytical advantages when dealing with its particular components. Last, a single policy package, instead of several scattered measures, can be more easily communicated, when the intention is lobbying to obtain policy changes.

For illustrative purposes, the proposed governance model is here applied to the management of public works

## **2. Themes**

In what follows I offer a treatment of a number of themes that have been at the center of attention in corruption studies, with the purpose of preparing the field for the proposed policy package. All examples will be related to public works, that constitute the particular application of the proposed governance system.

### **2.1. Assessing corruption.**

Assessing corruption is necessary in order to sustain any policy aiming at its reduction, both for monitoring the effects of the policy and, most importantly, to allow for the

necessary incentives on behaviors that are coherent with the policy's objective. Broadly speaking, we may define three types of corruption assessment.

- **Judicial assessment of corruption.** Corruption is a crime and, as such, of concern to the judiciary. The extent to which corruption crimes are successfully prosecuted by the judiciary depends on many factors, which explains why judicial data are rarely used as a measure of corruption.

- **Societal assessment.** Regardless of how effective the judiciary is in uncovering corruption cases, the public opinion informally assesses the severity and the characteristics of corruption. This may follow personal experience (particularly for petty corruption), hearsay, or the observation of indirect effects of corruption. For example, seeing a police officer eating at a restaurant in a country where its wage is known not to allow for such luxuries signals petty corruption, while a bureaucrat owning luxury goods signals the presence of grand corruption. Such a societal assessment of corruption is facilitated by the presence of a free press, that processes and gives visibility to information that individual citizens would otherwise obtain with difficulty, particularly regarding grand corruption cases.

- **Corruption indexes.** Corruption indexes are measures that summarize one or more aspects of corruption-related phenomena. The characters that are the object of measurement may be aspects of corruption proper, or they may represent occurrences that are understood to be correlated with corruption, such as "public integrity" or various measures of the quality of governance. Most times, such indexes are based on perceptions of the phenomena. This is the case of Transparency International Corruption Perception Index, the result of the aggregation of several other indexes, and the Global Corruption Barometer that Transparency International commissioned to Gallup<sup>2</sup>, focusing more on petty corruption. Other indexes are based on descriptions of broad aspects of governance, and as such are more tenuously linked with the corruption phenomenon. An example is in Kaufmann et al., 1999.

The three types of assessment of corruption may present some degree of simultaneity. A high public opinion exposure to media coverage on scandals may cause an artificial increase on perception-based indexes. For example, Italy's ranking in the 1995 Transparency International CPI was below Mexico and Colombia, and just above Thailand, India and The Philippines. Such an unrealistic ranking is probably at least in part explained by the spate of attention that the corruption issue had received in Italy in the early 1990's, corresponding to

---

<sup>2</sup> See <http://www.transparency.org/surveys/barometer/barometer2003.html>

the so called “Tangentopoli” judicial inquiries<sup>3</sup>. Perception-based corruption indexes could also influence corruption perception, given their wide dissemination they receive from the media, raising the possibilities that they influence the very same perceptions on which they are based. Judicial activity may also be influenced by the perception of corruption, either of the informal type, or as expressed by an index, wherever the judiciary has degrees of freedom in allocating its effort.

We now better specify some relevant characteristics of indexes.

### **The character object of observation**

Perception based indexes often (as in the TI-CPI case) define corruption proper as the object of measurement. Depending on the questions asked and on the recipients of the survey, the perceptions will be more closely related to one or the other variety of corruption, where the main distinctions to be made regard the *size* of the bribes (grand vs. petty corruption), the identity of the persons committing a crime (politicians, bureaucrats, entrepreneurs, etc), and the sector of economic activity involved.

In other cases, the character object of observation is not immediately identifiable with corruption proper; in the Golden and Picci (2005) case, to be discussed below, it reflects regional differential in the ability of transforming financial resources into finished works.

### **Corruption indexes: *ad hoc* vs. integrated, and the degree of institutionalization.**

The distinction between an *ad hoc* and an “integrated” (corruption) index refers not to its nature, but to the organization of the data collection and processing. We call an index *ad hoc* if it requires an explicit data gathering and processing effort. Most statistical data that we are familiar with are of this type, being based on some voluntary activity to design the data collection process, then to collect the information (through surveys, interviews, etc.), to eventually process the collected information in order to compute the desired summary statistics according to a given methodology. It will be important to realize that today’s information technologies allow for a different way to produce data and descriptive statistics.

The construction of an *ad hoc* index can be more or less institutionalized, that is, built-in into the habits of existing institutions. For example, if a short-lived government decides a one-shot analysis of the corruption phenomena, and as a result computes only once some data

---

<sup>3</sup> Italy moved up significantly on the TI-CPI ranking over the years.

on corruption, we would conclude that their data are weakly institutionalized, given the high chance that the following government will not pursue the same activity. On the other hand, the TI-CPI has been computed yearly for the last ten years, so we may judge it to be fairly institutionalized. Obvious examples of highly institutionalized statistics are the ones produced by the National Statistical Offices as part of their core activities, such as the ones regarding GDP or the consumer's price index.

If had hoc statistics require an active effort, which may be more or less institutionalized, "integrated" ones are automatically produced as a by product of a day by day working of an information system. An example would be a set of statistics on accesses to a Web site, that are produced on a regular basis by a dedicated software running on a computer connected with the Internet, usually the same one hosting the Web site, without requiring any outside interventions, apart from the initial effort to set up the program. Note that integrated statistics tend to be highly institutionalized: if the information system on which they are based is stable, it takes very little effort, once it is in place, to be kept producing its output indefinitely.

Integrated statistics on corruption are not currently available. I anticipate that an important role in the policy proposal to follow will be played by an "objective" and "integrated" set of corruption related measures.

### **Corruption indexes: subjective vs. objective.**

Most corruption indexes are of the subjective type, being based on perceptions of the character that is the object of measurement (either one variant of corruption, or some related concept).

Recently an objective measure of corruption has been proposed, and showed to be viable. Golden and Picci (2005) compute a corruption measure for the Italian regions based on the contrast between two alternative measures of the public capital stock in the Italian twenty regions. The first measure derives from the total amount of money spent over the years to endow Italy of infrastructure, and it is computed using the permanent inventory technique. The second is a physical inventory of the infrastructure that are actually present – km of roads and railroads, number and sizes of public buildings, etc. - appropriately measured and aggregated. The two measures offer a strikingly different contrast, with Southern Italy that, over the years, has received a disproportionately high amount of financing, that only to a

limited extent has turned into finished works. Such contrast is the base for the computation of a “corruption index”.

Obviously, geographic differences in the effectiveness of public investments to generate finished infrastructure could be explained by factors other than corruption, such as disparities in the efficiency of the construction industry, in costs, or in the efficiency of the local public administrations in doing its part to ensure that infrastructure are built. Golden and Picci (2005) rule out the first possibility, control for the second, and propose a general interpretation on the third one, to which we now turn.

### **2.3 Corruption and governance**

There is a growing appreciation of the fact that corruption cannot be considered in isolation, since it is part of a complex nexus of relations within a given governance model. It follows that anti-corruption policies narrowly focusing on the corruption issue miss the complexity of the relations and as such are likely to fail. More appropriate are then policies whose aim is a reform of the prevailing governance systems, to transform so as to make it less prone to corruption.

In particular, consider the relations between corruption, efficiencies and effectiveness within a given policy domain. For a public official who receives an illegal sum of money in order to place someone ahead in a line, the value of such a favor depends on the length of the line, by itself an indicator of the efficiency of the bureaucracy. Corruption may cause inefficiency, since a corrupt official is interested in keeping the line long enough, so that from it he can extract a valuable rent. Corruption, then, leads to resistance to bureaucratic reform. It is also true, however, that inefficiency may cause corruption, which at least in part is a crime of opportunity: an opportunity is there for an official to exploit, when there is a long line, and not otherwise.

Lack of efficiency may also lead to corruption, because in general, the more complex and lengthy is a governance process, the more numerous are the occasions to circumvent its controls.

There is also a possible relation between corruption and effectiveness: the ability of an administration to choose its projects so that they respond well to public needs. A corrupt official, or politician, may choose a project because it more easily allows to extract unlawful rents. For example, cross-country analyses indicate that more countries where corruption is high spend relatively more in public works, and Italy consumes twice as much cement per

capita than the US, and three times as much as Germany and Britain (cited in Rose-Ackerman, 2004). The extreme case is provided by so-called “white elephant” projects, that are chosen because they are so ineffective that only the ruling elite is understood to be credibly committed to them, and as such constitute a reliable form of patronage.

Corruption may cause ineffectiveness, but it is also true that the incapacity of a public administration to choose well its projects may cause corruption. For example, if a project is unsound, and it is widely understood that it is wasting money no matter how well it is executed, then any moral restraint may loosen up and the people who are in a position to embezzle funds, may do so it without staining a clean conscience.

Corruption, efficiency, and effectiveness, then, are strictly linked phenomena. Such an understanding dictates that, from the viewpoint of policy designing, it does not make much sense to propose narrowly-focused “anti corruption policies”. To the contrary, both analysis *and* policy recommendations ought to be forged at a higher level, that is, in terms of general governance<sup>4</sup>.

## **2.4 Allocation methods**

Between 1995 and 2000, 43.3% of the construction projects carried out in Northern California by the private sector were awarded through private negotiations, and the rest using some form of bidding. In the same period, public administrations in Northern California used private negotiations only in 1% of the cases. Even when the private sector used bidding, a remarkable difference occurred: public administrations almost always chose open bidding, while the private sector more often chose bidding upon the invitation of participants<sup>5</sup>. Such a striking difference in behavior is easily explained: while the private sector is free to choose the award system of choice, the public sector, with few exceptions, is forced to choose (open) bidding<sup>6</sup>.

---

<sup>4</sup> Such an emerging consensus has found an echo also in the production of quantitative information, that from an early emphasis on measuring (perceptions of) corruption, is gradually evolving towards the development of broader “quality of governance measures”. See Kaufmann et al, 1999, documenting World Bank’s activities. Also, see the considerations in Golden and Picci, 2005.

<sup>5</sup> See Bajari et al, 2003. The source of the data is the Construction Market Data Group. The data consists of about 25600 projects, of which about 4100 were awarded in the private sector.

<sup>6</sup> In the United States, by the Federal Acquisition Rules, that strongly limits the use of awarding methods not characterized by “full and open competition” (<http://www.arnet.gov/far/>)

“Full and open competition” has much to commend it, because it places the buyer in the best position to fully exploit the competitive forces of the market in order to obtain what it desires at the lowest price. Limiting competition, by using a form of non open bidding (such as invited bidding, where the buyer decides the participating firms) or, even more so, private negotiations, would seem to be illogical, because it would weed out of the selection process firms that are potentially more efficient than the chosen ones.

The construction data example here provided, however, by showing that the private sector only rarely uses auctions to solve its procurement needs, suggests that open bidding has its downsides. In fact, the benefits of competition may be less important when the exchanged goods are very complex, so that it is hard, or outright impossible, to fully specify in a contract all the contingencies of its production and delivery. In those cases, contractual flexibility allows both the buyer and the seller to better deal with unforeseen occurrences.

Current legislature on public procurement, certainly motivated by commendable reasons, constrains bureaucrats and distorts their choices of procurement methods. Such a distortion has a series of negative consequences, whose seriousness is directly related with the complexity of the product. First, the products delivered may in fact be more expensive than analogous goods bought by the private sector. Firms facing a completely predetermined contract, in situations where the outcome of their work presents a substantial degree of uncertainty, may react by asking a higher price as a way to insure themselves against the risk. Second, the products delivered may be worse. A fixed contract may force the firm to take actions that could have been optimal ex-ante, before production started, but that would be optimally revised once the production process reveals information unknown before<sup>7</sup>.

A last and fundamental shortcoming of open bidding, at least as it is commonly practiced in public procurement, is its lack of considerations for the reputation of the interested parties. In most private negotiations, the reputation of the firm plays a prominent role. In open bidding, on the other hand, the reputation of the participating firms matters at best indirectly (for example, through their capacity of finding the necessary financial guarantees). Such a lack of concern provides firms interacting with a public administrations with weaker incentives to behave virtuously, because opportunistic behaviours are less likely to be punished by a “vindictive” administration.

---

<sup>7</sup> To be sure, changes within an open bid setup are possible (so-called “change orders” in the US construction industry). However, since they require a renegotiation of the original stipulations, they are costly to obtain and often the source of acrimony between the interested parties.

### 3. Internet based reputation system

When private firms look for their contractor of choice, an important role is played by reputation: given the incomplete nature of contracts, rational agents are often willing to trade a high reputation of the contractor in exchange for a less convenient price tag. In this context, traditional word-of-mouth plays an important role in informing about contractors' reputation, together with more institutionalized sources of information, such as those provided by chambers of commerce.

Recently there has been a considerable interest towards so called "Internet-based reputation systems". As Dellarocas (2003) notes, such systems amount to the "digitalization of word of mouth". An Internet-based reputation system is defined by a set of characteristics<sup>8</sup>, that I now describe, while reporting how they map into what probably is best known example, the E-Bay (<http://www.ebay.com>) auction electronic market<sup>9</sup>.

First, an Internet-based reputation system provides an information infrastructure that allows for a set of transactions. In E-Bay, sellers can post information on their products. Prospective buyers can see them and place their bids on the products that they desire. The system records the bids and manages the needed interactions between sellers and buyers. A noteworthy characteristic of E-Bay is that the transactions that it allows are not backed up by formal contractual guarantees, so that in principle there is ample space for cheating, in the form of not paying for a delivered good, paying late, delivering merchandise that does not correspond to the published specifications, etc.

Second, it allows the interested parties to record their opinion on the transactions, in a highly structured manner. On E-Bay, both sellers and buyers, after a transaction, can voluntarily rate each other. The rating can be "positive", "negative", or "neutral". Other reputation systems allow for greater granularity of ratings.

Third, some function(s) of the opinions expressed are made public. On E-Bay, it is the sum of negative, positive and neutral ratings received by each buyer/seller during the past six months. Such a filtering of information is also called the "feedback mediator". The resulting publicly available data is descriptive of the reputation of each interested party.

---

<sup>8</sup> See Dellarocas, 2003, for a review.

<sup>9</sup> E-Bay is also the most widely studied example of a reputation system. Reisnick et al. (2002) cite 14 empirical studies on E-Bay.

Last, an incentive system is in place that prizes a good reputation, and that punishes a bad one. On E-Bay, buyers will tend to be wary of conducting business with sellers that performed badly in the past, and sellers will do the same with respect to buyers.

The desired outcome of such a system is one where people have an incentive to behave well, in order to build and to maintain a good reputation. When such an outcome is obtained, we should in principle observe that most people behave well: the most effective punishments are the ones that people are afraid of, but that, precisely because they are effective, are rarely needed and, hence, observed<sup>10</sup>.

The availability of the Internet offers the potential to drastically renovate the time-honored institution of word of mouth. First, it brings it to a huge scale: reported opinions spread vastly and instantaneously. Secondly, it democratizes it, because the recorded opinions are in principle accessible to everyone, and not just to the people who are well placed within informal social networks. Thirdly, Internet-based reputation systems are not simply the result of social interaction as they manifest themselves, but they can be carefully engineered, to make their working coherent with a desired outcome. Ongoing research is trying to better understand how various reputation-systems' characteristics – their general rules, the way feedback mediators are designed and, eventually, the required costs to participate or to change one's identity, etc. – influence the equilibrium outcome.

Reputation systems also have shortcomings. The information that they collect is decontextualized. Unlike in a traditional setting, it is not possible to extrapolate information from the non-verbal aspects of communication: for example, if a prospective business partner is maligned by someone who's dressed like Napoleon, such an opinion may as well be discounted. On the other hand, all non-verbal information is lost on the Internet.

The availability and truthfulness of reported opinions also represents a thorny issue. Ratings are a public good and, as such, we'd expect their underprovision. Also, there could be misrepresentation of personal opinions, following strategic behaviors and, possibly, collusive practices, where actors exchange good ratings, either in-kind or for money. How to assure a truthful revelation of opinions is an area of current research.

Notwithstanding these limitations, several successful applications of reputation systems are in place, and reputation systems are today the object of much research interest, in

---

<sup>10</sup> This is the observed outcome on E-Bay, where less than 1% of the reported comments are negative. See Dellarocas, 2003.

an attempt to better understand their properties, and to learn how to design them in order to solve actual problems.

#### **4. A reputation-based governance system**

A reputation-based governance system of public works provides the desired common framework to address corruption. In what follows I provide its description.

All public projects are included in a Web-based database, that can be accessed by administrators, firms, and by the public. The public administration includes each project into the database upon selection<sup>11</sup>. Preliminary information about a project contain a general description according to codified taxonomies (type of good, location, expected cost, etc.), technical drawings, and a set of data pertaining to any documentation that may accompany the early stage of the project (environmental impact and cost-benefit analyses, etc.). As the project evolves, more information is provided, to eventually include the costs, and data about the final outcome (pictures, etc.).

Each project is linked to information about the administration that selected it and that is responsible for its execution, and about the firms involved, with details about their responsibilities. For each firm and administration, the information system records all the projects that they are and have been involved into.

To summarize, the information system is the result of a) a careful definitions of types of goods and of their characteristics; b) an information system proper, allowing for the coding of public works c) a set of procedures, suitably engineered, for the recording of information.

The information system would allow for a monitoring system, a set of procedures that, applied to the information system, automatically generate a series of summary statistics of the available information. These statistics, whose purpose is to allow comparisons between different projects, would include: unit costs of projects of the same type (for example, of a km of road of a given category), various rankings of projects; their time to completion. All the data would be available both for the whole population of projects documented in the database, and also for various subsets and disaggregations: by geographic unit, by type of administrations, and by executing firm. The ranking of each project, administration and firm would be provided.

---

<sup>11</sup> Inserting candidate projects at the beginning of the selection phase would create the possibility for a participatory selection process, as I'll discuss in the conclusions.

All relevant actors could express their opinion on given characteristics of the realized works. Administrators would express their opinion on the firms that carried out the infrastructure. Firms, on their side, would voice their points of view on the public administration with which they interacted. The public would state judgments on pieces of infrastructure. Such opinions would be highly structured, and would refer to a small set of well defined characteristics. For example, the public could judge “aesthetic qualities”, “usefulness”, “accessibility”, etc., of the manufactured goods.

The design of the feedback mediator is a critical aspect of a reputation system, and should be carefully crafted, possibly allowing for a trial and error approach. The two most relevant issues here are the incentives for the relevant actors to maintain a good reputation (see Dellarocas, 2003), and the incentives to correctly report one’s opinions. With respect to the latter, it could be devised a weighting of reported opinions according to one’s record: people who are detected to be systematically biased, would see their opinions discounted. The system would then provide a ranking of the votes received by projects, and by the administrations and firms who carried them out, variously disaggregated.

A relevant issue about the functioning of the voice system has to do with the identity of who is allowed to post an assessment of a given project. Within a firm, we would expect that its administrator, or a person authorized by the administrator, would be in charge of such a task. Within the public administration, we may think that it is the person that is in charge of a given project who eventually assesses the performance of the firms involved. It would be possible to keep track both of the administration, and of the administrators’ identity, so that each administrator would develop a personal track both of his assessments to others, and his ratings by others.

Voice activities present some further problematic issues when they are carried out by the public. In principle, private citizens and organized private entities could be entitled to carry out voice activities. Private citizens could register on the Web site, and then express their opinions on all projects carried out in their region. For major network infrastructures, each person could also express an opinion on realizations elsewhere.

Citizens’ organizations could also be allowed to participate, since they could more easily afford the time to carefully assess public works. However, dealing with organizations’ participation presents difficulties. First, it is not immediately clear how to weight their assessment. The weighting could be done according to their membership, but this would establish an incentive to artificially inflate it.

Also, compared to individuals, organizations would more easily be prone to collusion with the other interested parties. Collusion and the presence of political scheming, in fact, is a general concern for the working of the voice system. Political parties or factions could encourage people to express positive opinions on projects that they carry out, and to smear projects within the jurisdiction of adversaries. They could encourage the formation of *ad hoc* organizations that do the same, enjoying the added weight that fake memberships by party activists would guarantee. Enterprises could also encourage the formation of fake organizations to support their projects, and to discredit their competitors' creations.

Several answers to these objections are possible. First, the capability of creating some form of consensus on a given realization would somehow proxy its worth. In a context where barriers for entering the voice system would be very low, whoever is able to organize consensus on a given project, no matter how that is done, is implicitly showing that, at least to some extent, that consensus is warranted.

More importantly, a set of cautionary measures could be taken to guarantee that as little scheming and collusion as possible takes place. For example, private organizations could be required to post their budget sheets, and to declare any contributions that they receive. Their members could be required to register, and to declare any link that they may have with firms or administrations. Moreover, each person's or organization's expressed opinion could be tracked, and possibly weighted according to a set of suitable parameters.

While several steps could be taken in order to limit collusion, a different stance to confront the issue could simply be, to give low or no weight to organized opinions, that is, to put a premium on individual participation to voice activities. As a rationale for this option, consider that the proposed information system is a tool to reduce transaction costs of various kinds. To the extent that organizations are instruments to counter transaction costs, in this new setting, they would be less needed than before<sup>12</sup>.

A number of incentives and disincentives would be available. Through the feedback mediator, the general public could browse a series of rankings on projects, on administrations who carried them out, on the administrators involved, and on the firms who executed them. By itself, this would put a premium on virtuous behaviors: the politicians within the administrations would be under pressure to get good ratings, in order to improve their chances of reelection. The bureaucrats would also be pressured not to be looked down by their peers.

---

<sup>12</sup> However, it is also true that the proposed system would also lower the costs to carry out watchdog activities, and this would instead put an incentive to the formation of organized watchdogs. Again, the fine tuning of the system would require flexibility and experimentation.

To the extent that administrators can choose the firms that they work with, firms would also be obviously interested in having good ratings. Moreover, if a firm works both in the public and in the private sector, a good reputation in the former would be expendable in the latter.

All this could be secured simply by publishing and publicizing the data produced by the monitoring system, according to the rules of the feedback mediator. Such effects could then be made more cogent by deliberate publicity activities, such as publishing in newspapers the “ten best projects” of the year, “the ten worst projects”, and the like.

A further set of incentives could be added by allowing administrations to choose firms to carry out projects while taking into considerations their ranking. This is possible when administrations are allowed to buy projects “on the shelf”; on the other hand, including such considerations in a context where competitive bidding prevails, would present both practical and legal obstacles. While such obstacles could in principle be overcome, note that the proposed governance system would make more attractive an allocation mechanism based on off-the-shelf purchases, instead than on competitive biddings, a possible evolution of procurement systems already hinted at in Rose-Ackerman, 2004.

Last, the published rankings could be used by an oversight body to determine which administration gets an audit. A probabilistic rule could be used, attributing a higher probability to be audited to the administration with a low ranking, while not making it completely impossible for high ranking administrations (or administrators) to be checked. Such a publicly known rule, by itself, would act as a further incentive for virtuous behavior.

## **5. Conclusions and discussion**

In this paper I have argued that the integration, within an Internet-based information system, of monitoring and voice activities, and of an appropriate incentive system, could contribute to a governance model characterized by effectiveness, efficiency, and lack of corruption.

The proposal is prone to further developments. For example, if candidate projects are recorded in the information system before they are selected, then room is created for participatory forms of decision making. Within this context, the public could be entitled not just to *ex-post* voice activities, but also to present proposals for new public works, and the planned reputation-based governance model would support far reaching “electronic

democracy” practices, where the word “democracy” would be taken both to mean participation, and accountability.

The monitoring system range of action could be increased. Public works shape the territory where they are constructed, and suitably organized information on them would allow for a vast series of activities that require to process information about a given territory, and would be very useful in planning exercises of many forms.

A further consideration is in order. The present proposal, with its emphasis on data collection, and on the organizations of automatic data processing procedures, should be seen within an ongoing process that is gradually changing our appreciation of the quantitative aspects of public administrations and, more generally, of governance. The study of corruption provides a good exemplification of the issue.

As we saw, in the 1990’s several organizations made available perception based corruption and governance indexes. Golden and Picci (2005) provide a measure of corruption that is based not on perceptions, but on hard data. Moving from measuring perceptions, to constructing measures that are based on objective data, is a process that deserves encouragement. However, such a process is difficult to realize, because objective data are often hard to find, and very time consuming to organize.

The methodology proposed by Golden and Picci (2005) could certainly be carried out for countries other than Italy<sup>13</sup>. Such an endeavor would be intrinsically expensive, and by necessity it could hardly be sustained on a regular basis, to provide for a timely updating of information. The availability of an information system of the type here proposed, however, would allow for an “integrated” monitoring system, with all its qualities. Such a monitoring system would compute a vast array of useful indexes and measures, and would help address a more general problem that besets current studies on public administration’s related fields: the difficulty to collect suitable quantitative information.

These considerations help casting the proposed governance model under a different light. The stated issue is about improving governance. However, it is also about the creation of a conceptual and technological model for the systematic organization and collection of quantitative information about the working of a governance system. The two issues, in fact, are closely related.

---

<sup>13</sup> Work in this direction is currently under way by independent researchers for Mexico and Japan.

## References

- Bajari, Patrick L., McMillan, Robert S., and Steve Tadelis, 2003, Auctions versus negotiations in procurement: an empirical analysis, NBER Working Paper 9757.
- Della Porta, Donatella and Alberto Vannucci, 1992, Un paese anormale. Come la classe politica ha perso l'occasione di Mani Pulite, Laterza, Roma e Bari.
- Dellarocas, Chrysanthos, 2003, The Digitalization of Word of Mouth: Promise and Challenge of Online Feedback Mechanisms, *Management Science*, Vol. 49, No. 10, pp. 1407-1424.
- Golden, Miriam and Lucio Picci, 2005, Proposal for a New Measure of Corruption Illustrated Using Italian Data, *Economics and Politics*, March.
- Greif, Avner, 1993, Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition. *American Economic Review* 83, pp. 525-548.
- Greif, Avner, Paul Milgrom and Barry R. Weingast, 1994, Coordination, Commitment, and enforcement: The Case of the Merchant Guild, *The Journal of Political Economy*, Vol. 102, N. 4, pp. 745-776.
- Kaufmann, Daniel; Kraay, Aart and Pablo Zoido-Lobatón. 1999. "Aggregating Governance Indicators." Policy Research Working Paper 2195. Washington, D.C.: World Bank.
- Lambsdorff, Johann Graff, 2003, Framework Document 2003, Background Paper to the 2003 Corruption Perceptions Index, Transparency International, mimeo, <http://www.transparency.org/cpi/2003/dnld/framework.pdf>
- Mauro, Paolo. 1995. "Corruption and Growth." *Quarterly Journal of Economics*, vol. 110, n. 3 pp. 681-712.
- Reisnick, P., R. Zeckhauser, J. Swanson, K. Lockwood, 2002, The Value of Reputation on E-Bay: A controlled experiment. Working Paper, University of Michigan, Ann Arbor, MI.
- Rose-Ackerman, Susan. 1978. *Corruption: A Study in Political Economy*. New York: Academic Press.
- Rose-Ackerman, Susan, 2004, The Challenge of Poor Governance and Corruption, Copenhagen Consensus Challenge Paper, mimeo