Designing and Testing Incentive-compatible and Effective Anti-corruption Measures

A theoretical and experimental study.

Grant proposal for the
GDN/CERGE-EI Regional Research Competition 2003

by

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Thematic area: The reform process including public finance, fiscal burden, and taxation

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Abstract

Corruption has been identified as a major impediment to growth, either directly through welfare-reducing rent-seeking and/or the taxation-like nature of bribes or indirectly through the lack of trust that it engenders in producers, consumers, citizens, tourists, and foreign investors (e.g., Zak & Knack 2001). By all accounts corruption (e.g., CSE 2000) is a pervasive, and apparently worsening, phenomenon in the Czech Republic. A major part of the problem seems to be that the extant anti-corruption laws are rather ineffective. It is therefore the purpose of the research proposed here to devise incentive-compatible and effective anti-corruption measures. Since such theoretical exercises are fraught with dangers, we also propose to test our designs through experimental work. Experimental economics – while currently more or less unknown in the Czech Republic (but see CSE 2001) – has been shown to be an effective component of "design economics" - the science of designing and implementing institutions for a particular purpose (Roth 2002). The Nobel Prize Award in 2002 to professors Kahneman and Smith has authenticated the use of experiments in the social sciences. The methodology proposed here also lends itself to the design and implementation of incentive-compatible and efficient schemes that reduce environmental degradation. Another and related problem to which the methodology proposed here seems applicable, are issues of tax morale.

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Description of the project:

Corruption has been identified as **a major impediment to growth**, either directly through welfare-reducing rent-seeking and/or the taxation-like nature of bribes (e.g., Murphy et al. 1993; Shleifer & Vishny 1993) or indirectly through the lack of trust that it engenders in producers, consumers, citizens, tourists, and foreign investors (e.g., Bohata 2000; Kaufman & Shang-Jin 1999; Mauro 1995, 1998; Potucek 1999; Rose-Ackerman 1999; Tanzi & Davoodi 1997; Tirole 1996; and maybe most importantly Zak & Knack 2001). Corruption is, by all accounts, a pervasive phenomenon in the Czech Republic (e.g., Hanousek & Lizal 2001; Jurajda & Lizal 2002; Kocenda & Lizal 2001a,b; Tanzi 1998; see also EC 2002; CSE 2000; EBRD 1999; GfK 1998, 1999, 2003; Worldbank 2000.)

The **grip of corruption on the Czech Republic is ubiquitous**, running the gamut from high levels to low levels of organizational units across all sectors of the economy (from government to private for-profit and nonprofit), although the percentage of culprits seems to be highest in state administrations. A flurry of recent news – from Kasl's resignation as major of Prague to the resignation of one of the most prominent anti-corruption investigators of the Office for Financial Criminality and State Protection – has high-lighted the extent of the problem. The indications are, furthermore, that **the situation in the Czech Republic** – notwithstanding the "clean hands" campaign and the recent attempt to change public sense of propriety through advertising in metro and trams – **has worsened over the years**, as suggested by all arms-length observers (e.g., Transparency International and the EU). For example, in the TI's Corruption Perception Index the Czech Republic fell from 25th place with a score of 5.4 in 1996 to 52nd-56th place with a score of 3.7 in 2002. (Lower scores mean more corruption.) In the eyes of Supreme State Attorney Marie Benesova, the situation in the Czech Republic is so serious that it requires, and justifies, radical solutions such as

entrapment (as reported in *The Prague Post* April 12, 2002.)

The **reasons for this development** are not completely clear but the following factors seem to be the prime suspects:

1) poorly designed anti-corruption laws and mechanisms

2) lackadaisical enforcement of existing laws and mechanisms, and

3) (the evolution of) cultural norms that accept corruption as a way of life and doing business. Our wording is careful because the very nature of corruption – a form of taxation imposed privately and secretly (e.g., Shleifer & Vishny 1993) – makes it a difficult animal to assess.

Traditionally, **two basic methods have been used to measure corruption** (e.g., Kocenda & Lizal 2001a,b). The **first draws on hard data** of counts of discovered, monitored, and prosecuted cases. It uses police statistics and statistics from the Department of Justice. Such a measure is appropriate in uncorrupted countries, while it is very likely to indicate but the tip of the iceberg in partly corrupted ones, and, hence, is likely to underestimate the true level of corruption. Such a measure is obviously inappropriate in the most corrupted countries since bribery and cronyism have become socially acceptable, or are at least tolerated, and few (if any) are prosecuted for bribery. The **second method** to ferret out corruption **uses soft data**, opinion polls, surveys, and case studies. To the extent that some of these measures – such as the Corruption Perceptions index (CPI) of Transparency International – have become rather sophisticated means of measurement, they are likely to give us a more reliable picture of the degree of the corruption. The CPI, however, or similar measures does not help us to understand what failures of anti-corruption laws and mechanisms are to fault (and how they could be ocercome), how lackadaisical enforcement could be reduced, or how cultural norms can emerge (be engineered) that make certain forms of corruption socially (not) acceptable.

Here we propose **a novel approach** – theoretical and experimental methods,

or "design economics" (Plott 2001; Roth 2002) – toward the design and implementation of better anti-corruption measures, as well as a better understanding of why and how a society drifts into wide-spread corruption as a way of doing business. While the need for theoretical work (establishing incentive-compatibility) is self-evident, the need for experimental work (suggesting whether indeed the theoretical constructs work efficiently[1]) may be less obvious and deserves justification.

Experimental methods – recently authenticated by the Nobel Prize 2002 in Economic Sciences to Professors Kahneman (Princeton U) and Smith (George Mason U) – have turned out to be rather useful in the testing of theories of individual decision making, "games" and markets (Davis & Holt 1993; Kagel & Roth 1995; Plott & Smith 2003; Ortmann *forthcoming*). Of particular interest in the current context is the fact that experiments **allow researchers to study subtle details of institutional design and implementation as well as issues of social interaction**. The reason is, very simply, that it is easy to manipulate in the laboratory at relatively low cost parameters of institutional settings that could be changed in real life only at potentially very high cost (if at all). It is also relatively easy to manipulate in the laboratory at relatively low cost subjects' expectations and perceptions, and to control for identification problems (e.g., self-selection, neighborhood effects) that field data are routinely beset with.

How is this done? Essentially by
1) mapping a naturally occurring situation in a laboratory setting (which may be computerized or not)
2) then putting experimental subjects into the laboratory setting, and
3) finally studying the behavior of these subjects in the laboratory setting.

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[1] This can not be taken for granted. The provision of incentives in firms, for example, often does not obey the theoretical constructs (e.g., Prendergast 1999). As a general result, incentive compatible schemes are rarely used, probably because they are difficult to implement. The incentive schemes most often used tend to be rather simple but seem reasonably efficient.

The implicit assumption here is that we can indeed learn from these laboratory experiments and make inferences from the behavior of laboratory subjects to that of actors in naturally occurring settings. The assumption is, in other words, that we can learn something from the behavior of laboratory subjects in bribery games (Abbink et al. 2002) and moonlighting games (Abbink et al. 2000) or even more ambitious experimental attempts to understand the causes of corruption (e.g., Azfar & Nelson 2002, or Falk & Fischbacher 2002). While this assumption is not completely innocuous (Hertwig & Ortmann 2001, 2001a), by and large it is correct (Kagel & Roth 1995; Plott & Smith 2003). Specifically, systematic changes in design and implementation of an experiment bring typically about systematic changes in subject behavior. And all this at rather low cost.

Klemperer (2002) gives nice examples of subtle differences in the design and implementation of auctions that had dramatic differences in the revenue that state governments could capture. Had governments tested the auction mechanisms experimentally, they would have very likely been able to avoid some very expensive failures. Similarly, De Maria (2002) describes the dismal failure of so-called whisteblower laws in Australia, New Zealand, South Africa, Ireland and the United Kingdom. (Whistleblower laws are meant to induce those aware of acts of bribery and cronyism to blow the whistle on the perpetrators, without having to fear that there will be repercussions for them.) It's obvious that the whistleblower laws in Australia etc. were not tested in the laboratory before they were implemented. Again, a costly failure.

Relatedly, we have studied **Czech anti-corruption laws which have rather incentive-<u>in</u>compatible properties**. **Take as example the "regret" provision** which – while well-intentioned – under certain conditions allows someone who has offered or promised a bribe to report this to the police or a public prosecutor and get off scot-free. At the same time, the person who accepted the bribe, might see significant prison time. It should be

obvious (but obviously wasn't to those who wrote the law) that this scheme has undesirable incentive properties in that it gives the person who initiates the bribe the possibility to punish the bribee if he or she does not deliver on the proposed (illegal or sweet) deal. This provision of Czech anti-corruption law is hence another classic example where some experimental testing would have quickly revealed the undesirable features of the scheme .[2]

In another related study, Falk & Fischbacher (2002) have proposed a promising experimental paradigm – essentially a public bad provision mechanism – that suggests strongly that the extent of "crime" is not just function of punishment and the probability of detection but of social interaction: Whether people engage in acts of corruption is, in other words, to a significant degree a function of people's perception of what other people do. Extension of their model (e.g., introduction of rising income inequality) are straightforward and important.

Our research, however, is not just trying to show failure of extant laws and mechanisms. We are very much interested in finding and testing in the lab incentive-compatible and efficient anti-corruption measures as well as ways to stop, and possibly reverse, the drift into the public perception that it's o.k. to bribe or be bribed.

Specifically, we intend to pursue **experiments along the following three major directions**:

1) It seems widely accepted that corruption is more pervasive in some areas (i.e., state bureaucracies; various motivations of bureaucracy are overviewed in Hampl, 2001) than others. Our research question is whether this is a function of self-selection of certain types of people into certain professions. A simple way to test this conjecture is **to run well-known**

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[2] The issue of regret provisions, or leniency clauses as they are known in other contexts, has also caught the interest of other researchers (e.g., Apesteguia, Dufwenberg, & Selten 2003).

experiments such as the trust game (Ortmann et al. 2000), **or the moonlighting and bribery games** (Abbink et al. 2000; 2002), **and variants thereof, on subjects that are recruited from various settings. Our working hypothesis** is that we will not see any significant differences. A confirmation of our hypothesis would strongly suggest that the **problem is not that people in some professions are more corrupt than others but that the incentives to engage in bribery and cronyism differ across professions**. This result would suggest strongly that the appropriate design and implementation of incentive systems is the real problem.

2) We **will test** – through especially designed experiments that map naturally occurring situations into the laboratory – **the incentive compatibility of the "regret" provision discussed earlier, other whisteblower provisions, and various strategies of entrapment**. We **will also design incentive-compatible mechanisms that are likely to undermine attempts of bureaucrats and others to extract bribes** (e.g., when buying an apartment or house, or starting a firm) **or to overcharge customers** (e.g., Prague taxi drivers). The latter, for example, is a straightforward translation into an experimental setting of the well-established quality control institution of the mystery shopper paired with something like a three-strikes-and-you-are-out rule.

3) We **will try** – again through especially designed experiments that map naturally occuring situations into the laboratory – **to improve our understanding of how a society drifts in pervasive, and widely accepted, corruption. And what to do about it.** An interesting theoretical argument in this context is Tirole's (1996) suggestion that corruption is associated with *hysteresis* causing the corruption to increase faster than to decrease due to the fact that the corruption "equilibrium" is partially depending on the people's expectations of other people's corruption behavior. Expectations are notoriously difficult to control in naturally occuring settings but can be easily controlled in lab settings. While Falk & Fischbacher (2002) do not address this issue – which is of obvious importance --, their experimental paradigm lends itself with relatively minor modifications to a test of Tirole's

suggestion and, more generally, the study of effective belief-management strategies (e.g., what one could call the Giuliani[3] strategy).

We note that the methodology proposed here also lends itself to the design and implementation of incentive-compatible and efficient schemes (following the rather sophisticated schemes of the U.S. Sentencing Commission) that reduce environmental degradation. Increasing tax morale is another and closely related problem.

This research agenda as sketched out is obviously a multi-year project.

During the time of the GDN grant we want to make significant progress on items 1) and 2) above. **We shall run batteries of well-known experimental games** such as the trust game (Ortmann et al. 2000), or the moonlighting and bribery games (Abbink et al. 2000; 2002), and variants thereof, on subjects that are recruited from various settings. These experiments will be reported in CERGE-EI discussion papers.

At the same time **we shall demonstrate experimentally the perverse incentive effects of the "regret" provision of Czech anti-corruption law and introduce an effective way of addressing the notorious problem of taxi drivers who charge**. We shall document this work too in CERGE-EI discussion papers, and it is this work that we have high hopes of placing in reputable journals. It is likely that we will start with 3) but it is unrealistic to expect any comprehensive results until December 2004.

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[3] Former mayor of New York. When he took over the city, it was considered widely ungovernable. When he left office, almost everyone acknowledged that he had demonstrated that it could be done. A key ingredient of his success seems to have been that he rigorously enforced city ordinances (e.g., no jay-walking). It has been argued that this attention to what most considered as minor and unimportant details was in fact a major ingredient of the success that he had in bringing crime rates down. For a related discussion of "belief-management", see Falk & Fischbacher 2002, p. 867.

Our **current time table/game plan** is to develop the models and design and pilot-test the experiments in the fall of 2003. Simultaneously we shall start recruiting subjects (which is likely to be a difficult undertaking given the subject pools that we intend to use). A first battery of experiments will be run in the spring, with follow-up experiments run in the fall after the results have been written up in preliminary form during the summer.

Our **budget proposal** has **two major items**: First, there are **"subject payments".** Since experimental economics is not yet well-established in Central Europe – in fact, to the best of our knowledge CERGE-EI is the only institution in Central Europe that has a dedicated experimental laboratory - a few words on this item. In contrast to most psychologists, all experimental economists use such payments. This is a well-established and strictly enforced convention in experimental economics (e.g., Davis & Holt 1993; Kagel & Roth 1995; see also Hertwig & Ortmann 2001, 2001a, and the various comments on our target article) that cannot be violated if one wants to get one's work published. It also is a practice with a good rationale. Imagine the participants in an experimental bribery game (e.g., Abbink et al. 2002) that have to make decisions only hypothetically. Clearly, when nothing is at stake, the participants are likely to have very different incentives to bribe or accept bribes. In short, one cannot do experimental work in economics without subject payments.

The second major budget item is an **equipment request for two laptop computers.** As part of a generous grant by Bank Austria, CERGE-EI established in the Spring of 2001 a mobile experimental laboratory. The laboratory -- to the best of our knowledge the first mobile laboratory in the world -- can be used for conducting computerized experiments with up to 14 participants. By bringing the lab to our participants rather than participants to the lab, we have access to subject pools that are otherwise difficult to reach. The current configuration allows us to implement real-time interaction between participants, record their actions, process databases and the like. Software platforms used for experimental designs vary from

specialized software packages to a wide range of programming languages including web-based script languages such as Perl or ASP. The latter allows us to use Web-browsers (Internet Explorer or Netscape Navigator) as the experimental environment. More details are available at http://195.113.12.52/ortmann/BA-PEL.htm. For some of the experiments that we intend to do (e.g., the ones based on Falk & Fischbacher 2002), it would be more efficient to be able to conduct experiments with up to 16 participants.[4] We therefore ask for funds to purchase two laptop computers comparable to the ones that we already have to increase our lab size.

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[4] This is a function of the particular matching schemes that are typically used in the kind of public good games that are at the heart of that particular and related papers. Groups of contributors typically consist of 4 contributors that get re-assigned each round in a random manner (from a set of 8); 16 participants would allow us to collect two truly independent observations rather than 1 per session.

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Appendix 2: Detailled curricula vitae of participating investigators

Appendix 3: Budget proposal

Salary supplements and other compensations

including assistants for

Ortmann (coordinator) & Lizal (partner).. $ 3,200

Grant related travel .... $ 1,800

Editing fees .... $ 400

Equipment purchases..$ 3,200*

Materials, supplies, telecommunication charge . ...$ 400

Subtotal for partners ....$ 9,000

Subject payments ....$ 4,000**

Total direct research costs $13,000

Overhead (10 %) ....$ 1,300

Total   ....$ 14,300

* 2 laptop computers for expansion of the mobile CERGE-EI experimental lab to 16 terminals. For the rationale, please see body of text.

** For rationale, please see body of text. The numbers result from our plan to conduct 6 experiments, with 60 subjects each (30 for a baseline condition, 30 for a treatment). Expected earnings will be about $12 per subject.

Appendix 4: Sponsoring institution agreement