

# Legal Corruption

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## Abstract:

We challenge the conventional definition of corruption as the ‘abuse of public office for private gain’, making a distinction between legal and illegal forms of corruption, and paying more attention to corporate patterns of corruption (which also affect public corruption). We undertake to identify general determinants of the pattern of legal and illegal corruption worldwide, and present a model where both corruption (modelled explicitly in the context of allocations) and the political equilibrium are endogenous. Three types of equilibrium outcomes are identified as a function of basic parameters, namely initial conditions (assets/productivity), equality, and fundamental political accountability. These equilibria are: i) an illegal corruption equilibrium, where the political elite does not face binding incentives; ii) a legal corruption equilibrium, where the political elite is obliged to incur on a cost to “deceive” the population, and, iii) a no-corruption equilibrium, where the population cannot be deceived. An integral empirical test of the model is performed, using a broad range of variables and sources. Its core variables, namely regarding legal corruption (and other manifestations of corporate corruption) come from an original survey developed with the World Economic Forum (in the Executive Opinion Survey 2004 of the Global Competitiveness Report). The empirical results generally validate the model and explanations. Some salient implications emerge.

**JEL Codes:** O57, P16.

**Keywords:** Corruption, Lobbying, Influence, Political Economy.

Access to the various indices of legal and illegal corporate corruption is available at:

[http://www.worldbank.org/wbi/governance/pubs/legalcorporate\\_corruption.html](http://www.worldbank.org/wbi/governance/pubs/legalcorporate_corruption.html)

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“Are all dinner menus here the same?” - asked a key aide to Menem, the Argentinian president during the nineties, to the chef at the presidential residence.

“The menus change, the presidents change. What never changes is the dinner guests” - retorted the chef, referring to the cadre of businessmen who frequented the residence.<sup>3</sup>

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“You dance with them what brung ya.” - old saying.

## ***1. Introduction***

Corruption has been brought throughout the last decade to an important position in the development and political economy debate/literature. It has been seen as a primary impediment to growth (e.g. Mauro, 1995, Kaufmann and Kraay, 2002), with dramatic consequences in the developing world.

This analysis has been mainly founded on bureaucratic/public sector corruption, emphasizing in particular manifestations such as administrative bribery. This highlighting reflected the availability of cross-country indices of corruption that focus on bribery or other illegal forms of corruption, and it echoed the conceptual underpinnings of the field (which has been viewing corruption as “abuse” – necessitating an illegal act – “of public office” – a public sector-centered definition – “for private gain”)<sup>4</sup>.

However, it is increasingly widely accepted that corruption may arise through other less obvious forms, which may involve collusion between parties typically both from the public *and* private sectors, and may be legal in many countries. Legal lobbying contributions by the private sector in exchange of passage of particular legislation – biased in favor of those agents - or allocation of procurement contracts may be regarded as examples of interaction of both private and public sector representatives where the second makes use of her publicly invested power at the expense of broader public welfare.

In this context, some empirical attention has already been granted to less classical forms of appropriation of public office/policy for private purposes, not necessarily illegal, such as state capture (viewed as direct sale of public policy) and influence (as the institution of influencing public policy in exchange for votes<sup>5</sup>). Hellman, Jones, and Kaufmann (2003) assess these

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<sup>3</sup> Cited by Gabriela Cerrutti and Sergio Ciancaglini in “El Octavo Círculo”, Editorial Planeta, Serie Espejo de la Argentina, 2nd Edition, 1992, page 103, and extracted from Luis Moreno Ocampo, “En defensa Propia, Cómo salir de la corrupción”, Editorial Sudamericana, 1993, page 46.

<sup>4</sup> See Becker and Stigler (1974) and Rose-Ackerman (1978) for a first approach to the economics of corruption. Bardhan (1997) presents a review of the economics literature on corruption, where this definition is taken as the most commonly used.

<sup>5</sup> This is the notion implicitly taken in Shleifer and Vishny (1994).

concepts in the context of transition countries, and conclude that, in their data, captor firms enjoyed clear private advantages in association with aggregate social costs. Hellman and Kaufmann (2004) focus on the impact of inequality in influence, which is reported to generate a self-reinforcing dynamic in which institutions are subverted.

In this paper we therefore see corruption as the use of public office/policy for private gain. But this is in the sense of complete freedom from any legalistic interpretation, as well as any shortsighted closed- public sector correspondence.

This paper aims at providing a theoretical framework and corresponding empirical test to answer the questions: “Which are the determinants of the pattern of Illegal and Legal Corruption across the world? Which channels do these determinants use?”. For this purpose, we use a recently available firms survey (Executive Opinion Survey, conducted by the World Economic Forum for its Global Competitiveness Report 2004-2005) of 104 countries, where specific questions were asked regarding illegal and legal forms of corruption.

A formal theoretical model is presented in section 2. We argue that the pattern of Legal and Illegal Corruption is defined in the context of a repeated political model with three agents, where a favor is allocated at every period by one of these agents to another, and where the loser (thought as the population) may insurrect at every period. Different equilibria are characterized as a function of fundamental parameters (initial productivity, equality, and underlying political accountability).

Section 3 presents the testable implications of the model and Section 4 offers an integrated test. In the latter, we use a number of different empirical measures for the concepts introduced - most importantly, we use data from the survey referred above to measure Legal Corruption, a notion that has been lacking empirical measurement in the literature. We show that the model and respective parameters are, generally, consistent with the data.

## ***2. A Political Economy Model of Legal and Illegal Corruption***

### **2.1. Overview and Relation to Literature**

Our theoretical model proposes a new (to the best of our knowledge) explicitly micro-founded definition of corruption: it is viewed as a collusive agreement between a part of the agents of the economy who, as a consequence, are able to swap (over time; we present a repeated game) in terms of positions of power (i.e. are able to capture, together, the allocation process of the economy). This is the idea underlying high-level corruption or “influence”, and is broader than the notion of bribery, which corresponds to a particular sharing pattern of the joint payoff from the referred relationship.

The most direct and common example of this agreement we have in mind is the one where a politician has close “connections” to the private sector and both exploit such connection for mutual benefit. These two parties may exchange favors over time that “pay each other”: through the allocation of specific legislation or procurement contracts (by the politician to the private sector counterpart) and earmarking political campaign funding (by the private sector connection to the politician); or simply through an explicit switch in the political power “chair” among the elite players (where every period one of them allocates the chair to the other); simple repeated bribery of politicians may also be encompassed by this notion if we think of the bribe as the “political campaign funding” itself.

This notion of corruption as arising in the explicit context of an allocation mechanism<sup>6</sup> is linked with that of influence in Bernheim and Whinston (1986) – who study first-price auctions –, with the work of Banerjee (1997) – who analyses mechanisms with red tape and asymmetric information –, and the already vast (but disperse) literature on collusion (between bidders) in auctions<sup>7</sup>.

We endogenize corruption in the context of a political economy model<sup>8</sup>. We assume a population that can react to corruption by “insurrecting”. This is in the sense of making the corrupt agents (whom we think of as the “elite” in our model) suffer a sufficiently high penalty. We model this penalty as generally corresponding to an aggressive overthrow (though many coups cannot be seen as implying high penalties for the ruling elite, and correspond to simple transfers of power *within* the elite). We are, however, aware that in many countries this penalty may take more peaceful forms: e.g. bad reputations, overturning elections, effective legal-system penalties.

The notion of insurrection in our model is linked to Acemoglu and Robinson’s (2000, 2001) threat of revolution by the population – these authors introduced this idea in the context of the historical explanation of political transitions (e.g. democratization) in Western Europe and Latin American countries<sup>9</sup>.

In this context we regard Legal Corruption as arising when the elite prefers to hide corruption from the population (what we will call ahead as investments in “legal barriers”). We specifically model this as a decision of the elite to reduce the horizon of analysis of the population, which can be interpreted as undermining collective action. This entails a cost for the elite. Red tape may be seen as a good example of a device implemented by an elite to obscure allocations from the population.<sup>10</sup>

Three different equilibria (as a function of different sets of parameters) are found, characterizing a given country:

- (3<sup>rd</sup> world) high inequality / low (initial) income implying Illegal Corruption and the initiation of insurrections; the logic being that high inequality (through the relative little power to “arm an army” by the population) and low income (through the implied diminished threat of destruction of assets by the population) imply the population does

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<sup>6</sup> In fact this is the only point of connection of our notion to the ones in the literature.

<sup>7</sup> This goes from the classical article on bid rigging by McAfee and McMillan (1992), to recent procurement auctions papers (e.g. Compte, Lambert-Mogiliansky and Verdier, 2000), and to the recently established literature of repeated auctions (e.g. Hopennhayn and Skrzypacz, 2001).

<sup>8</sup> We see a political economy model as one where politician(s) interact with the population, with the population having the possibility of using the (formal) political instruments to affect the welfare of the politician(s). See Grossman and Helpman (1994) for a classic political economy model dealing with lobbying (aimed at endogenizing special-interest groups political contributions in the context of a political equilibrium where the politicians’ welfare depends on total contributions and voters’ welfare, and the lobbies are only interested in the government’s choice of policy) - Damania and Frederiksson (2000) extend that paper by using a repeated version of its model (this procedure, though parallel to ours, is aimed, in their case, at a different end: studying collusion between bidders, i.e. formation of lobbying groups).

<sup>9</sup> These authors model political transitions as a response to a threat of social unrest by the population (one of their key assumptions).

<sup>10</sup> Another good example of legal corruption (in our sense) is the one implied in the complex mechanisms of campaign fundraising described in the Washington Post (2004) - regarding the “Pioneer” and “Ranger” networks of the US presidential campaign: these are aimed at escaping the legal individual limits in campaign funding. The limits provide assurance to the general population, but they are in fact made irrelevant through a complex web of smaller collusive contributions.

not have the power to threaten the elite with a successful insurrection (note that this is in the sense above – of imposing the threat of a high penalty), so that the elite opts for the cheapest (for them) form of corruption (illegal);

- low inequality / high (initial) income implying insurrections are not started (they would be successful otherwise and that would be too costly for the elite);
  - (2<sup>nd</sup> and much of the 1<sup>st</sup> world) if accountability (which can be represented by the price of legal barriers) is low (we think of accountability as the population’s awareness of corruptible behavior by the elite), Legal Corruption arises; in this context, the elite is able, at a low price, to “confound” the population and undermine collective action;
  - (Nordics) if accountability is high, no corruption emerges; i.e. there is nothing the elite can do to stay in power (in a corrupt way) – a successful insurrection would surface; in other words, provided the level of awareness of the population (she cannot be confounded), not even Legal Corruption may arise.

Our theoretical analysis also presents conditions for stability of each of the above equilibrium features. In Vicente (2005), an extension of a slightly differently-structured version of the model presented here is studied where the allocations of the model imply a certain degree of allocative efficiency: this enables deriving the conditions where inefficiency surfaces – associated with corruption<sup>11</sup> when contract incompleteness is higher<sup>12</sup>.

## 2.2. The Model

We assume an infinitely repeated game with observable actions and complete information populated by 3 agents in each period. These agents have exogenously drawn ability (for simplicity, constant across the players) and given initial (period 0) wealth.

### 2.2.a. Corruption

Every period an auction (or allocation mechanism) takes place for a good, which can be interpreted as a “favor” – this can be a procurement contract offered by the public sector, or a private sector position allocated by some lobby to a former politician<sup>13</sup>. Bidders submit generalized versions of bids: contract offers, corresponding to conditional (on allocations) payment patterns over time (only one contract may be in place at a time, and repeated auctions means contracts may be renegotiated). The initial auctioneer is pre-defined<sup>14</sup>; all auctioneers after her are defined to be the winners of the previous period auction. We assume the due gain from winning an allocation corresponds to the respective player’s ability when this agent gets to be auctioneer.

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<sup>11</sup> If a pervasive corruption context can be seen as lowering the capacity by talented people to keep their rents, then Murphy, Shleifer and Vishny (1991) also present a model where corruption is associated with inefficiency (in their words: rent-seeking/lower growth).

In a model structure related to ours, Sonin (2003) presents an endogenous growth model where agents may invest in private protection of property as a theoretical foundation for persistence of a bad equilibrium with low growth rates, high inequality of income, and widespread rent-seeking.

<sup>12</sup> This is consistent with Campante and Ferreira (2004), who present a model of lobbying where it causes inefficiency in a context of imperfect credit.

A different story – not based on corruption - is presented by Esteban and Ray (2004) to support the association of poverty and inequality with inefficiency: even a benevolent government may be confounded by lobbies whose loudness (observable) is determined by true merit and wealth.

<sup>13</sup> In this sense, this allocation game is neutral in terms of who is the allocator and which is the favor.

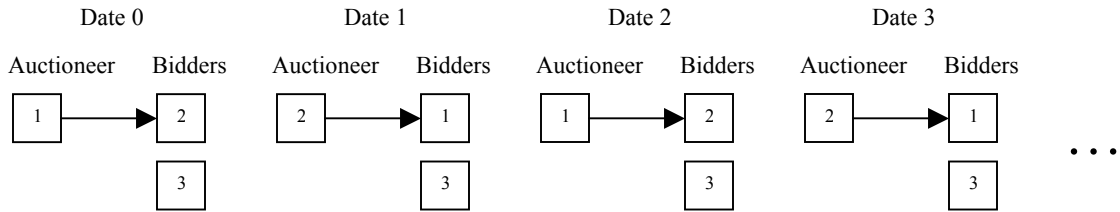
<sup>14</sup> As an initial condition, the first auctioneer’s identity is given.

The loser of any auction is a special agent:

- (i) the loser should be regarded as the “population”, interpreted as a composite agent;
- (ii) this agent’s utility time span may have two horizons: 1-period utility (myopic<sup>15</sup>), and the one where she has infinite utility (non-myopic). We can interpret this myopia as the inability to, for the population, to act as a whole, endogeneizing every period utility under one agent. Myopia may be inflicted by the other players, as will be specified below.

Corruption is seen here as an agreement between an auctioneer and a bidder to switch favors every period, and therefore “capture” the allocation process of the economy. Implicitly the corrupted rule in this definition is: “the population should not be excluded from allocations<sup>16</sup>”. Note that these agreements are a general way to represent abuse of the referred rule - encompassing instantaneous (e.g. bribery) or spanned-in-time (e.g. influence) relationships, interpreted as including public sector officials or both public and private sector representatives.

The pattern of a corrupt relationship is depicted below.



### 2.2.b. Legal Barriers

At the moment of deciding the winner of the auction, the auctioneer may decide to spend a proportion  $\varpi$  of the received (from other player) transferred earnings (at a period) on Legal Barriers (this amount is assumed to be wasted for simplicity). This proportion may simply take a very high value ( $\infty$ ) or a not too high (as defined in the main proposition below) value. In parallel, we assume this expenditure leads the third/excluded party to be made “myopic”.

The  $\varpi$  parameter may then be interpreted as the ability of the population to organize itself in terms of surveillance of the allocation of power (Accountability). A real world example: in a context where freedom of the press is low ( $\varpi$ ), an elite may “invest” in a pure marketing campaign (bearing the cost  $\varpi$ ) in order to contribute to obscure the population on what is going on in the allocation, and therefore undermine collective action (i.e. causing myopia).

### 2.2.c. Insurrections

At the end of every period, the loser of the auction may start an insurrection (where insurrection is just a broad way to refer to revolution or aggressive reaction from the loser).

We assume an “insurrection function”  $\lambda(.)$  whose arguments are ability  $a$  (the idea being that more productivity implies a greater leverage in the destruction implied in the insurrection), and the production (value added), or ability if used to produce, in the last three periods by the population,  $\alpha_t = (v_{t-2} + v_{t-1} + v_t)$ , (as a proxy for the relative power in a violent conflict). We also assume the function  $\lambda(.)$  is weakly increasing in the referred arguments,

<sup>15</sup> The intuition being that the shorter lived this agent is, the more “myopic” her actions will be.

<sup>16</sup> We are assuming these “allocations” are political in the sense of being a consequence of general population’s delegation of political power.

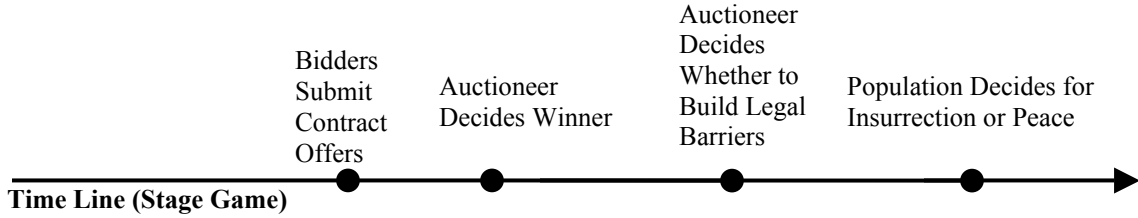
$\lambda_t = \min\{k_a + a, k_\alpha + \alpha_t\}$  (where  $k$ 's are constants). We assume for simplicity the initial production of the population is equal to her initial wealth<sup>17</sup>.

This insurrection will be successful with certainty if it takes a value higher than a fixed exogenous threshold  $\bar{\lambda} > 0$ . Otherwise the insurrection will only be successful with a (sufficiently, for the results below) low (constant) probability. If the insurrection is successful, auctioneer and winner are eliminated and substituted by two exogenous agents with the third agent becoming the new auctioneer.

Notice that the basic parameters introduced here, as influencing the outcome of the model, are ability  $a$  (productivity) and inequality  $1/\alpha$ .

#### 2.2.d. Stage Game Playing Sequence

Each period, the auction, with corresponding bidding and allocative decisions takes place at the beginning of the period. The choice by the auctioneer on legal barriers follows. The stage ends with the loser deciding for or against insurrection.



#### 2.2.e. Payoffs

Values of ability for the current auctioneer and winner are available at the end of the period (i.e. production happens at the end of the period). Consumption by all players takes place after that as a fixed proportion  $(1-s)$ , for simplicity, (with  $s \in ]0, 1[$ ) of the end-of-period wealth,  $w^e$ .

We assume contracts can be enforced - an exogenous entity is available to enforce these and act as a profitless intermediary (agents can credibly commit to future conditional transfers when “bidding/offering”). However, we assume a rigidity (contract incompleteness) is in place in the sense that only before production is realized transfers can be done to/from the entity, i.e.  $(1-s)$  of a period production cannot be negotiated ex-ante since it has to be consumed.

The end of period wealth is given by:  $w^b + \tau + a - \varpi$  for the auctioneer,  $w^b + \tau$  for the winner, and  $w^b$  for the loser (where  $w^b$  is the beginning-of-period wealth, and  $\tau$  is the net transfer from the intermediary entity).

The game payoff for player  $i$  is:  $\sum_{t=0}^{\infty} [\delta_i^t (1-s) w_i^e]$ , where  $\delta_i$  is the discount factor. We assume that  $\delta_i$  is always equal to  $\delta$  (assumed positive, and high enough) except when  $i$  is made myopic at time  $t$ , when it takes value  $\theta$  from time  $t+1$ .

### 2.3. Equilibrium

<sup>17</sup> We also assume for simplicity that before period 2, initial wealth takes 2/3 of the weight (end of date 0) or 1/3 of the weight (end of date 1) in the alpha function.

In this section, we focus on the best (in the view of the initial auctioneer) symmetric (meaning same strategies for players in the same position in the game) Sub-Game Perfect Equilibria. This may be interpreted as a sort of first-mover advantage - the asymmetric capacity to convince other players to focus on a convenient equilibrium - on the hands of the first auctioneer (the one that controls power in the first place)<sup>18</sup>.

We begin by a simple result.

*Lemma 1:*

*If we restrict equilibrium behavior to having no insurrections started, the highest payoff the initial auctioneer can make corresponds to holding power together with a second auctioneer (rotating as auctioneer and winner – an elite is formed), without spending on Legal Barriers, and by capturing the full transferable surplus of the economy.*

*Proof (and Intuition):*

Define  $p(x, y) \equiv \sum_{t=y}^{\infty} [\delta^{2t} x(1-s) \sum_{i=0}^{\infty} (\delta s)^i]$  as total consumption (payoff) from surplus  $x$  every other period starting at period  $y$ .

No insurrections assure that the initial auctioneer lives forever, which means this agent is not constrained in her actions by that insurrection threat.

Provided there is a contract incompleteness, the initial auctioneer always prefers occupying the position of auctioneer as much as possible (i.e. every other period).

From competition by the first bidding agents, the first auctioneer can extract the full surplus from being in power every other period  $p(a, 0)$ , and capture the full transferable surplus of the other favors,  $p(sa, 2)$ . This is done by rotating in “power” forever with the second auctioneer (corruption), since any deviation from the first auctioneer would not be an equilibrium. This stems from the fact that conditionality of payments (done by the second auctioneer), in the event that the first auctioneer sticks to the agreement, will make the second auctioneer indifferent between deviating or not (she will have to lose her transferable raised surplus anyway). On the other hand if the first auctioneer deviates, the second auctioneer would prefer to make a slightly higher payoff with the third agent (she would not be constrained by the initial agreement).

Note that, this way, the second politician gets to “eat” the non-transferable part of what she raises, and third party gets zero surplus. Regarding the remaining payoff – from initial wealth -, given competition, it mainly goes to the initial auctioneer, who reaches payoff close (from above) to  $(w_{0,auc}^b + w_{0,pop}^b)(1-s) \sum_{i=0}^{\infty} (\delta s)^i$  (where *auc* represents the first auctioneer and *pop* represents the population<sup>19</sup>) with it (note that the initial auctioneer cannot reach the initial wealth of the population provided then the second auctioneer would lose the above referred indifference; also, the second auctioneer will only “bid” enough to surpass the population, which is the population’s wealth).

<sup>18</sup> See Schelling (1960) for a classic treatment of focal points in games with multiple equilibria.

<sup>19</sup> Note that this means the wealthiest bidder in the beginning of the game will be the chosen one by the initial auctioneer.



The described quantities (from surplus and initial wealth) then correspond to the highest payoff the initial auctioneer can make in an equilibrium of this economy without insurrections.

We are now in position to derive a more complete result.

*Proposition 1:*

1. *If initial inequality is sufficiently high (as given by  $1/\alpha$ ) and/or ability is sufficiently low (as given by a sufficiently low initial  $a$ ) in the economy, then:*

- ***Insurrections are started*** but not successful almost all the time;
- *the economy is in the situation characterized in the Lemma above in the sense that an endogenous leading pair arises – i.e. **Corruption arises**;*
- ***Legal Barriers do not arise***;
- *the economy stays in this equilibrium (for the initial players) with very high probability (**Unstable**);<sup>20</sup>*

2. *If initial inequality ( $1/\alpha$ ) is sufficiently low and/or ability ( $a$ ) is sufficiently high in the economy:*

a. *if Accountability  $\varpi$  is low, then:*

- ***no Insurrections are started*** (at least initially);
- *the same endogenous leading pair as in 1. stays in power forever – i.e. **Corruption arises**;*
- ***Legal Barriers arise*** every period;
- *the economy may tend to the equilibrium described in 1. if increasing inequality overcomes the effect of the sufficiently high ability in the function  $\lambda$  (**Unstable?**);*

b. *if Accountability is high,  $\varpi=\infty$ , then:*

- ***no Insurrections are started***;
- ***Corruption does not arise*** (in the sense of no pairs being constituted to hold power forever);
- ***Legal Barriers do not arise***;
- *the economy stays in this equilibrium forever (**Stable**).*

*Proof (and Intuition):*

Under the conditions of 1., the population is at date 0 almost powerless in terms of response through insurrection (i.e.  $\lambda$  is not high enough for the third party to pose a nontrivial threat in terms of successful insurrection at the first period – if started, it is successful with sufficiently low probability). Assume this is the case forever. This means the initial auctioneer will behave the same way as described in the Lemma since the

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<sup>20</sup> Note that only if  $s=1$  this equilibrium would be equivalent to one where the initial auctioneers capture the whole surplus but do not engage in corruption – in these circumstances, agents could “bid” their full raised surplus (including the part that would be non-transferable with  $s<1$ ) along the equilibrium path.

expected cost of insurrections is close to zero and therefore lower than the cost of making an agreement with the population on allocations or spending on legal barriers (assuming these would prevent the initiation of insurrections – see below). In this context initiating insurrections is indeed the best response from the population. The initial auctioneer will therefore be able to extract ex-ante approximately, from below (provided the third party is now initiating insurrections at every period), all the payoff characterized in the Lemma.

Note that, in this equilibrium, before the population gets a successful insurrection, inequality never decreases (since the population does not get favors and therefore does not get to use her ability). This means, with very high probability (provided a successful insurrection happens with sufficiently low probability), the population will remain having sufficiently low probability of success in an insurrection throughout the game.

Under 2., the population has the power to successfully insurrect (at least initially), and therefore impose incentives on the first auctioneer.

In a., the leading pair of 1. still has an opportunity to stay in power indefinitely through every-period<sup>21</sup> investments in Legal Barriers. Under the described investments, the population indeed poses no threat (does not start insurrections): she does not gain from the successful insurrection provided the corresponding gain happens outside the span of her life (she is indifferent between starting an insurrection or not). For the leading pair, this represents an inferior (relative to 1.) payoff, because of the non-trivial waste  $\varpi$ . However, because of not “too high”<sup>22</sup>  $\varpi$  (assumed), it is worth implementing.

This equilibrium pattern may imply a convergence to the equilibrium pattern of 1 (where the population loses her threatening power) - note that, as for 1., the population value added is weakly decreasing; however, if  $k_\alpha$  is high enough (in practice this is equivalent to consider the insurrection function as not depending on  $\alpha$ ), even with the referred weakly decreasing value added, no change in the equilibrium pattern would arise (stability would be maintained).

Finally, under b., high institutional awareness of the population ( $\varpi=\infty$ ) makes investments in Legal Barriers not an option. This means the third party is not myopic. Remember that agents value highly enough the future in the utility function (sufficiently high discount factor). Consider the situation where the population initiates insurrections at the end of the second period without receiving the favor (since next period, given insurrection function arguments, she may lose the initial advantage in terms of insurrection capacity on the average last-periods surplus side). This implies the favor will go to her at that time. This strategy by the population corresponds to the lowest payoff she has to be guaranteed every three periods (provided we assume a symmetric equilibrium, so that all agents behave in the same way when at the same position<sup>23</sup>). Note that given the insurrection option all bidders offer nothing at all periods (indifferently). This implies the best equilibrium for the initial auctioneer, under these assumptions, encompasses a rotation in power of the three agents with no insurrections initiated and

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<sup>21</sup> Note that, even in the periods where the second auctioneer is in power it is the first auctioneer who sees his payoff diminished by the cost of legal barriers.

<sup>22</sup> See the end of the proof for a precise meaning.

<sup>23</sup> Namely, the population as new auctioneer after a successful insurrection.

$A \equiv \sum_{t=0}^{\infty} [\delta^{3t} \frac{(1-s)a}{1-\delta}] + [w_{0,auc}^b (1-s) \sum_{i=0}^{\infty} (\delta s)^i]$  as the surplus going to the initial auctioneer: no corruption arises<sup>24</sup>.

If initial inequality is low enough (so that the fact that the leading pair gets the first productivities can be balanced in terms of inequality) and a rotation of the three agents is the equilibrium, then, inequality stays constant over time; this implies this is a stable equilibrium.

A final note regards defining the “not too high”  $\varpi$ . It is such that

$$p(a,0) + (1-\varpi)p(sa,2) + w_{0,auc}^b (1-s) \sum_{i=0}^{\infty} (\delta s)^i + (1-\varpi)w_{pop}^b (1-s) \sum_{i=0}^{\infty} (\delta s)^i > A.$$

### 3. Testable Implications

In the light of the model and in the view of its empirical counterpart, we interpret *Corruption without investments in Legal Barriers* as *Illegal Corruption*, and *Corruption together with investments in Legal Barriers* as *Legal Corruption*.<sup>25</sup> The above model aims primarily at fitting the empirical facts on legal, illegal and lack of corruption (as for the three types of equilibria we present) irrespectively of efficiency considerations<sup>26</sup>. It proposes three kinds of exogenous factors (Ability or Productivity, Inequality, and Accountability) in the determination of insurrections and of the levels of the above different kinds of corruption.

We summarize the testable implications of Proposition 1 in the following table (Table 1):

Table 1: Testable Implications.

Exogenous	Ability (Productivity) /Equality	Low		High	
	Accountability	Low	High	Low	High
Endogenous	Legal Corruption	No	No	Yes	No
	Illegal Corruption	Yes	Yes	No	No
	Insurrections	Yes	Yes	No	No

<sup>24</sup> Note that this is also the best equilibrium in terms of allocation of favors to the third party. This is necessary to happen because of the “high” payoff implied in the “defection” (insurrection) possibility.

<sup>25</sup> This correspondence stems from a possible economic distinction between these types of corruption: the idea that under legal corruption there is an extra burden the elite has to bear (due to the incentives it faces, posed by the population) - the investment in legal barriers to competition.

<sup>26</sup> However, in the light of a possible extension in a related model (Vicente, 2005), if we believe strong contract incompleteness is in place in the real world, we can interpret any empirical kind of corruption as being associated with inefficiency. We are well aware, however, that the different kinds of corruption may be associated with different degrees of inefficiency: this is a very interesting empirical question, not answered in the literature to date, that is beyond the scope of this paper.

## **4. Data and Empirical Testing**

### **4.1. Data Description**

As empirical counterpart for the referred types of corruption we mainly use data from several questions in the Executive Opinion Survey (EOS) of the Global Competitiveness Report 2004-2005 published by the World Economic Forum. This very recent mail-based survey – whose questionnaire is composed of 235 questions - includes a total sample of 8729 firms<sup>27</sup> (respondents) in 104 different countries<sup>28</sup> (an average of 84 questionnaires per country<sup>29</sup>).

We present questions on Financial Honesty of Politicians (EOS Q4.02), Frequency of Illegal Political Contributions (EOS Q4.14), Frequency of Diversion of Public Funds Due to Corruption (EOS Q5.11), Frequency of Bribery in Procurement (EOS Q5.12E), Frequency of Bribery as State Capture (EOS Q.12F), as well as the Control of Corruption Indicator from Kaufmann, Kraay, and Mastruzzi (2003) - KKM, as proxies for Illegal Corruption; and we present questions on Favoritism in Policy and Procurement (EOS Q4.12), Frequency of Legal Political Contributions (EOS Q4.14), Influence in Laws and Regulations (EOS Q5.14D) as fundamental proxies for Legal Corruption. A full description of the questions is presented in the Appendix, Part I<sup>30</sup>.

In the final part of the paper, additional data on Rule of Law will be used in order to adjust the above crude empirical measures of Legal Corruption: a question on Frequency of Bribery in Judicial Decisions (EOS Q5.12G) and the Rule of Law Indicator from KKM.

Regarding insurrections, we present seven indicators: data from a question in EOS concerning Common Crime (EOS Q5.09), the iJET indicator regarding risk of travel for 2004, four indicators from the Economist Intelligence Unit 2003 (concerning Armed Conflict – EIU 3001 -, Violent Demonstrations – EIU 3002, Violent Crime – EIU 3003, and Social Unrest – EIU 3005), and a Civil War dummy (for the period 1990-2001 constructed from the Gleditsch et al, 2001 classification of armed conflict).

As empirical counterparts for the parameters of the model we use:

- for Ability (Productivity): lagged logGDP per capita (1984);

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<sup>27</sup> However, whenever we use data from this survey, they concern country average responses.

<sup>28</sup> These countries are: Algeria, Angola, Argentina, Australia, Austria, Bahrain, Bangladesh, Belgium, Bolivia, Bosnia Herzegovina, Botswana, Brazil, Bulgaria, Canada, Chad, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Korea, Latvia, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritius, Mexico, Morocco, Mozambique, Namibia, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Serbia & Montenegro, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Trinidad & Tobago, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe.

<sup>29</sup> Only 5 countries have below 30 questionnaires; 25 countries have above 100 (with 4 countries having above 200 responded questionnaires).

<sup>30</sup> All these data were transformed to the scale 1 (low corruption) to 7 (high corruption).

- for Equality: Gini Coefficient (2002)<sup>31</sup> and data from a question in EOS regarding Equality in Healthcare (EOS Q7.10);
- for Accountability: data from a question in EOS concerning Freedom of Press (EOS Q5.06), Freedom House Indicators, Civil Liberties 2003 and Press Freedom 2004<sup>32</sup>, Voice and Accountability Indicator 2002 from KKM, and Government Fractionalization from the Database of Political Institutions – DPI (Beck et al, 2001).

All the referred variables and respective sources are described in detail in the Appendix, Part I.

#### **4.2. Simple Empirical Tests: Averages and Correlations**

We begin by presenting (Table 2<sup>33</sup> below) averages of the endogenous variables (corruption and insurrections) for the two basic parameters, Ability (Productivity) and Equality.

Two main types of conclusions can be derived from their observation (numbers in bold):

- the differences of lower to upper (in terms of GDP or equality, by looking at first quartile versus the other quartiles or by looking at first half versus the second) groups of countries are clearly lower for Legal Corruption, than for Illegal Corruption; this is consistent with the first two rows (concerning endogenous variables) of Table 1;
- insurrection proxies are higher in lower GDP or equality groups of countries (by looking at any of its proposed measures), which is consistent with the third row (concerning endogenous variables) in Table 2.

We can also see, from the observation of Table 2, that there seems to have a more significant difference in the variables in the ratios by first quartile/remaining quartiles than by halves (with the exception of equality by Gini, which anyway does not embody any notable divergence). We will focus on the first division (using quartiles).

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<sup>31</sup> The presented coefficient is given by 100-Gini in order to capture an equality scale.

<sup>32</sup> Data from these indicators were transformed to low accountability (low number) – high accountability (high number).

<sup>33</sup> Data on KKM in the table were transformed to the scale 1(good)-7(bad). Data on EOS Q5.09 go from 1(good) to 7(bad), on iJET go from 1(good) to 5(bad), on EIU go from 0(good) to 4(bad).

**Table 2: Averages of Endogenous Variables by Ability/Productivity and Equality**

			Illegal Corruption					Legal Corruption			Insurrections							
			Q4.02	Q4.13	Q5.11	Q5.12E	Q5.12F	KKM CC	Q4.12	Q4.14	Q5.14D	Q5.09	iJET	EIU 3001	EIU 3002	EIU 3003	EIU 3005	Civil Wars
by GDPpc	Averages	1st Quartile (a)	3.67	2.83	2.40	2.26	2.23	1.92	3.57	3.00	3.39	2.42	1.96	0.42	0.75	0.63	0.79	0.04
		2nd, 3rd, 4th Quartiles (b)	5.71	4.86	4.74	4.24	3.94	4.28	4.94	4.49	4.30	4.07	3.13	1.21	1.91	2.04	2.26	0.29
		1st Half (c)	4.67	3.92	3.40	3.05	2.92	2.83	4.21	3.81	3.75	3.20	2.35	0.50	0.94	1.08	1.38	0.13
		2nd Half (d)	5.73	4.78	4.91	4.44	4.11	4.55	4.99	4.43	4.40	4.11	3.32	1.54	2.33	2.30	2.41	0.33
		% Difference (b)-(a)	<b>0.44</b>	<b>0.53</b>	<b>0.66</b>	<b>0.61</b>	<b>0.55</b>	<b>0.76</b>	<b>0.32</b>	<b>0.40</b>	<b>0.24</b>	<b>0.51</b>	<b>0.46</b>	<b>0.98</b>	<b>0.87</b>	<b>1.06</b>	<b>0.96</b>	<b>1.54</b>
		% Difference (d)-(c)	<b>0.20</b>	<b>0.20</b>	<b>0.36</b>	<b>0.37</b>	<b>0.34</b>	<b>0.47</b>	<b>0.17</b>	<b>0.15</b>	<b>0.16</b>	<b>0.25</b>	<b>0.34</b>	<b>1.02</b>	<b>0.85</b>	<b>0.72</b>	<b>0.55</b>	<b>0.83</b>
by Equality (EOS Q7.10)	Averages	1st Quartile (a)	3.79	2.98	2.55	2.40	2.26	2.08	3.57	3.09	3.42	2.69	1.96	0.26	0.57	0.52	0.70	0.00
		2nd, 3rd, 4th Quartiles (b)	5.67	4.81	4.69	4.19	3.94	4.23	4.94	4.46	4.29	3.98	3.13	1.25	1.96	2.06	2.27	0.31
		1st Half (c)	4.43	3.67	3.18	2.97	2.80	2.80	4.02	3.63	3.66	2.98	2.37	0.70	1.02	0.89	1.23	0.06
		2nd Half (d)	5.97	5.04	5.13	4.52	4.24	4.58	5.18	4.60	4.49	4.34	3.27	1.32	2.21	2.47	2.53	0.40
		% Difference (b)-(a)	<b>0.40</b>	<b>0.47</b>	<b>0.59</b>	<b>0.55</b>	<b>0.54</b>	<b>0.68</b>	<b>0.32</b>	<b>0.36</b>	<b>0.23</b>	<b>0.38</b>	<b>0.46</b>	<b>1.31</b>	<b>1.10</b>	<b>1.19</b>	<b>1.06</b>	<b>2.00</b>
		% Difference (d)-(c)	<b>0.30</b>	<b>0.32</b>	<b>0.47</b>	<b>0.41</b>	<b>0.41</b>	<b>0.48</b>	<b>0.25</b>	<b>0.24</b>	<b>0.20</b>	<b>0.37</b>	<b>0.32</b>	<b>0.61</b>	<b>0.74</b>	<b>0.94</b>	<b>0.69</b>	<b>1.50</b>
by Equality (Gini)	Averages	1st Quartile (a)	4.91	3.95	3.61	3.25	3.05	2.88	4.40	3.91	3.87	3.13	2.41	0.24	0.95	0.90	1.19	0.09
		2nd, 3rd, 4th Quartiles (b)	5.42	4.61	4.43	3.94	3.72	3.99	4.73	4.29	4.21	3.77	3.03	1.29	1.93	2.02	2.14	0.30
		1st Half (c)	4.93	4.02	3.67	3.41	3.19	3.14	4.37	3.90	3.88	3.13	2.60	0.71	1.15	1.12	1.22	0.14
		2nd Half (d)	5.66	4.87	4.77	4.12	3.90	4.28	4.93	4.49	4.37	4.09	3.14	1.33	2.23	2.36	2.59	0.36
		% Difference (b)-(a)	<b>0.10</b>	<b>0.16</b>	<b>0.20</b>	<b>0.19</b>	<b>0.20</b>	<b>0.32</b>	<b>0.07</b>	<b>0.09</b>	<b>0.08</b>	<b>0.19</b>	<b>0.23</b>	<b>1.38</b>	<b>0.68</b>	<b>0.76</b>	<b>0.57</b>	<b>1.07</b>
		% Difference (d)-(c)	<b>0.14</b>	<b>0.19</b>	<b>0.26</b>	<b>0.19</b>	<b>0.20</b>	<b>0.31</b>	<b>0.12</b>	<b>0.14</b>	<b>0.12</b>	<b>0.27</b>	<b>0.19</b>	<b>0.61</b>	<b>0.64</b>	<b>0.71</b>	<b>0.72</b>	<b>0.88</b>

Note: Only a cautious comparison can be done between different EOS and KKM provided their different original scales.

We now focus on the two first rows (concerning endogenous variables) and the first three columns of Table 1. If we take the difference between Legal and Illegal Corruption, we should see a clear positive correlation with GDP or Equality. This is what we show graphically (where, for equality, we use EOS Q7.10<sup>34</sup>) for eight pairs of Legal and Illegal Corruption: Favoritism in Policy and Procurement versus Financial Honesty of Politicians (EOS Q4.12 - Q4.02), Favoritism in Policy and Procurement versus Frequency of Bribery in Procurement (EOS 4.12 - Q5.12E), Frequency of Legal versus Illegal Political Contributions (EOS Q4.14 - Q4.13), Influence in Laws and Regulations versus Frequency of Diversion of Public Funds Due to Corruption (EOS Q5.14D - Q5.11), Influence in Laws and Regulations versus Frequency of Bribery as State Capture (EOS Q5.14D - Q5.12F), Favoritism in Policy and Procurement versus KKM Control of Corruption (EOS Q4.12 – KKMCC), Frequency of Legal Political Contributions versus KKM Control of Corruption (EOS Q4.14 – KKMCC), Influence in Laws and Regulations versus KKM Control of Corruption (EOS Q5.14D – KKMCC). The last three pairs were made comparable by transforming both scales to the respective percentile ranks<sup>35</sup>. Note that the lowest Legal Corruption countries (as given by the respective Legal Corruption variable) were taken out of the sample for the correlations shown in the graphs<sup>36</sup>. We depict below, for illustration, the Procurement-related difference (in the Appendix, Part II, we show the other graphs).

Concerning the third row (Insurrections) we present in the Appendix (Part III) the plots of Travel Risk iJET and of Common Crime with both GDP and Equality (as given by EOS Q7.10): clear negative correlations arise.

Finally some attention should be devoted to the third family of exogenous variables: Accountability. In the Appendix, Part IV, we plot Legal Corruption (as given by the three

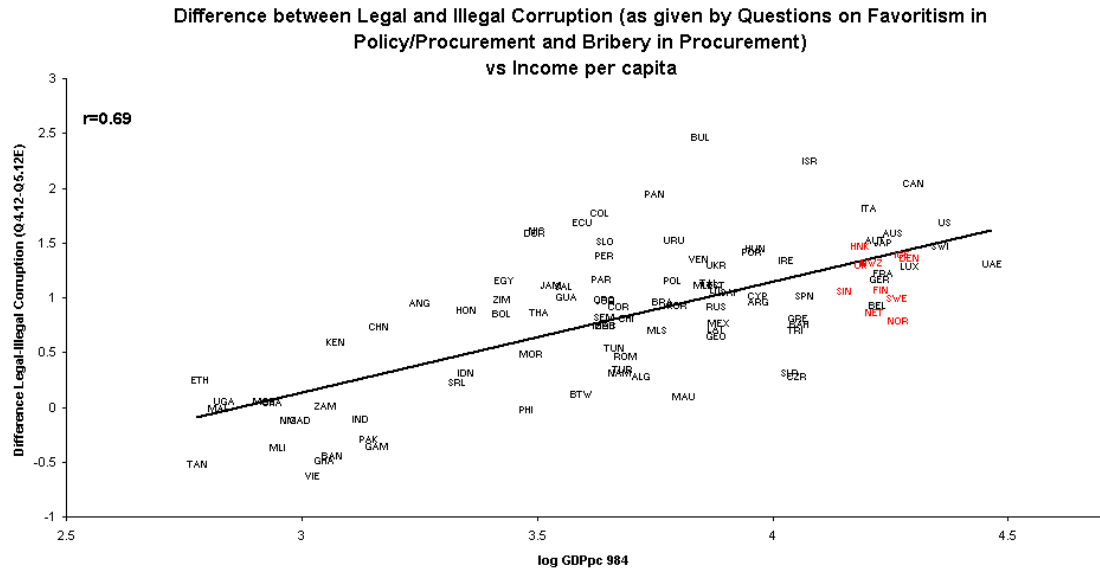
<sup>34</sup> Although in this sub-section, only EOS Q7.10 – Inequality in Healthcare is shown as a proxy for inequality, Gini was also tried with similar results.

<sup>35</sup> KKM Control of Corruption was transformed to the order “good” to “bad”.

<sup>36</sup> However, they are not very different from the full sample correlations – there is not a generalizable pattern of the difference between full and partial correlations.

variables already mentioned) against Accountability (represented by Press Freedom from EOS and Freedom House, and by Civil Liberties from Freedom House) – we present graphs for Favoritism in Procurement (EOS Q4.12) versus Press Freedom (EOS Q5.06) below as an illustration. Note that overall correlations are provided. In addition, for the Press Freedom from EOS, graphs identifying the first GDP and Equality quartiles are showed with respective correlations; with respect to the other Accountability proxies, only Equality is used; concerning Civil Liberties, the sub-sample correlations are not showed provided there is very low variation in this variable, which is discrete, for the referred quartiles). From the observation of these graphs we can conclude there are clearly higher correlations of Legal Corruption with lack of Accountability for the referred quartiles – in fact, with the exception of a small group of countries, we detect a negatively sloped overall pattern<sup>37</sup>: this is totally consistent with the first row in Table 1.

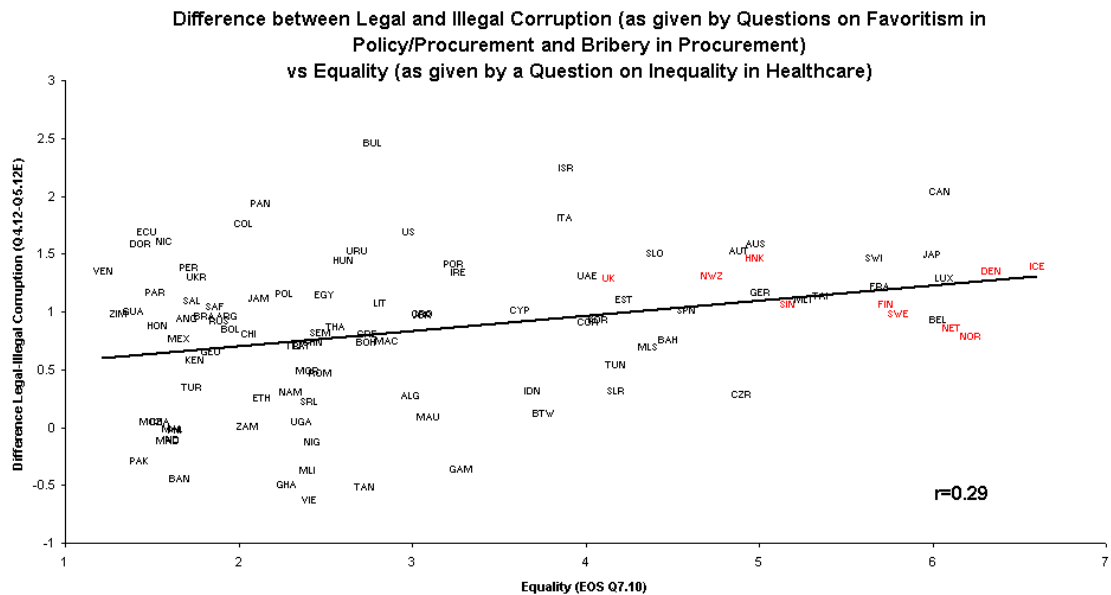
Figure 1: Difference between Legal and Illegal Corruption (as given by Questions on Favoritism in Policy/Procurement and Bribery in Procurement) versus Income.



Sources: Corruption data from EOS 2004 - see Appendix for precise description of variables (questions) used; GDP per capita from Penn World Tables, World Bank - SIMA, and CIA. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

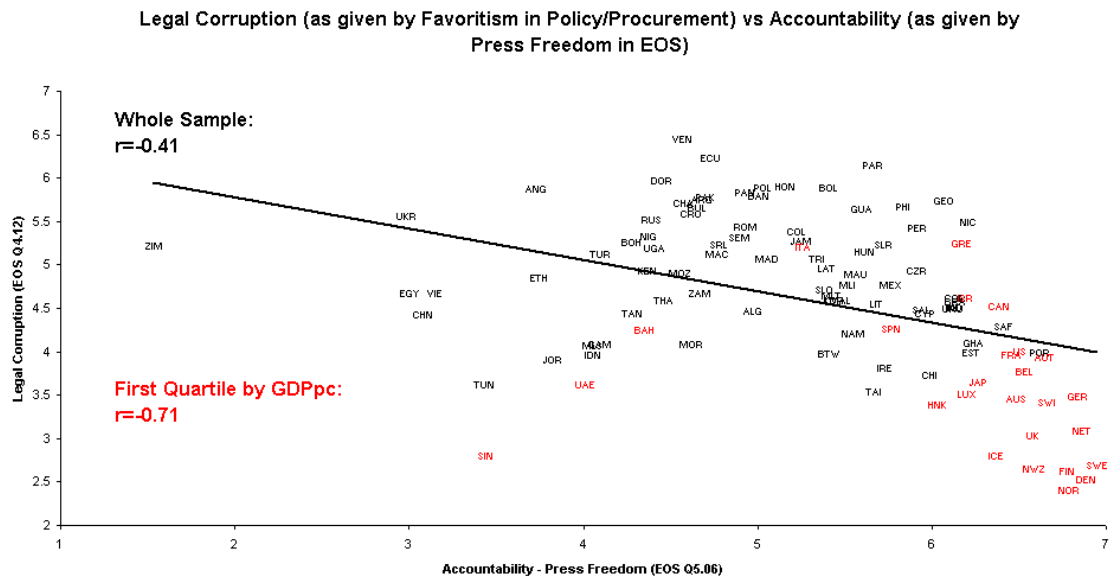
<sup>37</sup> The somewhat inverted u-shape is caused by the relatively small group of countries in the low-left side (Bahrain, China, Singapore, Tunisia, United Arab Emirates, Vietnam).

Figure 2: Difference between Legal and Illegal Corruption (as given by Questions on Favoritism in Policy/Procurement and Bribery in Procurement) versus Equality (as given by a Question on Inequality in Healthcare).



Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

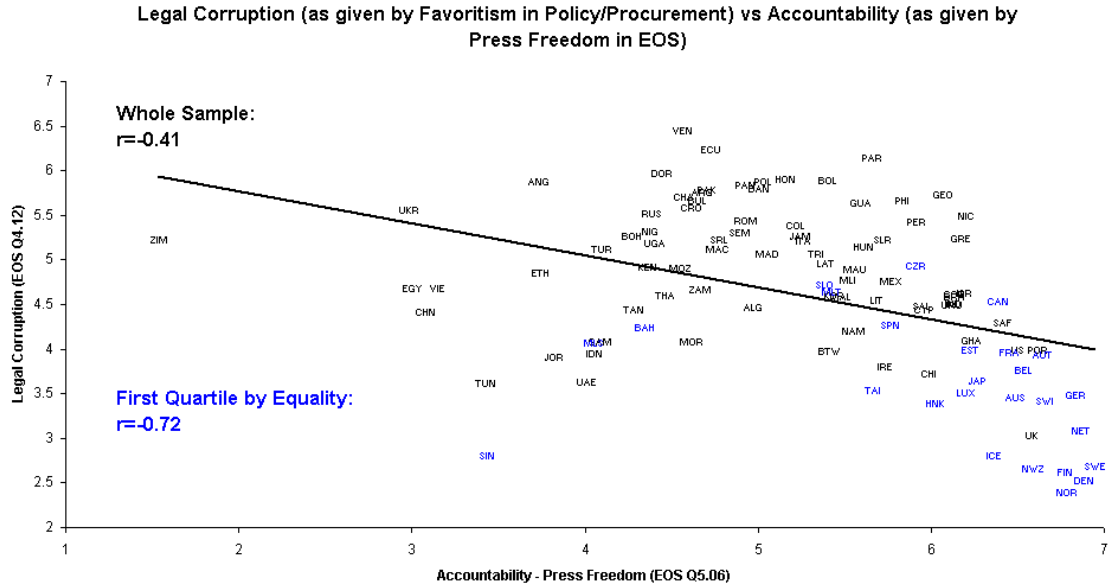
Figure 3: Legal Corruption (as given by Favoritism in Policy/Procurement) vs Accountability (as given by Press Freedom in EOS) – By Income.



Sources: Corruption and Accountability data from EOS 2004 - see Appendix for precise description of variables (questions) used; GDP per capita from Penn World Tables, World Bank - SIMA, and CIA. The partial correlation (for the first quartile by GDP pc) does not include clear outliers Bahrain, Singapore and United Arab Emirates.



Figure 4: Legal Corruption (as given by Favoritism in Policy/Procurement) vs Accountability (as given by Press Freedom in EOS) – By Equality.



Sources: Corruption, Accountability and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The partial correlation for the first quartile by Equality, which is given by EOS Q7.10) does not include clear outliers Bahrain, Malaysia, and Singapore.

### 4.3. An Econometric Model for an Integrated Test:

We now present a linear econometric (structural) model aimed at testing the above theoretical implications in an integrated manner. We take three equations for each of our main endogenous variables (Legal Corruption –  $LK$ ; Illegal Corruption –  $IK$ ; Insurrections –  $INSURR$ ):

$$LK = i_1 + aDGDP_0 + bDEQUAL + cDACC + dDACC * DGDP_0 + eDACC * DEQUAL + i_2 IK + i_3 INSURR \quad (1)$$

$$IK = i_4 + fDGDP_0 + gDEQUAL + hDACC + iDACC * DGDP_0 + jDACC * DEQUAL + i_5 LK + i_6 INSURR \quad (2)$$

$$INSURR = i_7 + kDGDP_0 + lDEQUAL + mDACC + nDACC * DGDP_0 + oDACC * DEQUAL + i_8 LK + i_9 IK \quad (3)$$

where  $DGDP$  is the dummy of GDP per capita (taking value one for GDP per capita in the first quartile of its distribution),  $DEQUAL$  is the dummy of the variable for Equality (taking value one for Equality in the first quartile of its distribution), and  $DACC$  is the dummy for Accountability (taking value one for Accountability in the first quartile of its distribution). Note that the exogenous variables concerning GDP refer to an earlier period (compared with the endogenous variables): this is an extra safeguard in order to guarantee exogeneity is not lost in data for Productivity.

The predictions of the model lead to the following restrictions on coefficients:

$$\text{Equation (1): } \begin{bmatrix} a \\ b \\ c \\ d \\ e \end{bmatrix} = \begin{bmatrix} + \\ + \\ 0 \\ - \\ - \end{bmatrix} \quad \text{Equation (2): } \begin{bmatrix} f \\ g \\ h \\ i \\ j \end{bmatrix} = \begin{bmatrix} - \\ - \\ 0 \\ 0 \\ 0 \end{bmatrix} \quad \text{Equation (3): } \begin{bmatrix} k \\ l \\ m \\ n \\ o \end{bmatrix} = \begin{bmatrix} - \\ - \\ 0 \\ 0 \\ 0 \end{bmatrix} .$$

However, since our focus is on testing and not on estimation of particular coefficients, we run the three regressions without any endogenous explanatory variables – as a reduced form of the above model. In doing so, we assume the endogenous channels are unimportant in defining the signs on the exogenous variables<sup>38</sup> so that we can test the model by testing for the emergence of the signs presented above (for each equation).

#### 4.4. Econometric Practice and Results

Provided a very close correlation of Legal and illegal Corruption proxies, a special procedure was pursued with respect to the equation regarding Legal Corruption. We use for estimation, as the proxies for Legal Corruption, difference of the crude Legal Corruption variables we presented above to Illegal Corruption variables (Frequency of Bribery in Procurement - EOS Q5.12E, and KKM Control of Corruption) and to Rule of Law variables (Frequency of Bribery in Judicial Decisions – EOS Q.5.12G, and KKM Rule of Law)<sup>39</sup>. By doing so, we try to isolate the relevant part (for the idea in the theoretical model) of Legal Corruption<sup>40</sup> - i.e. we try to have it free of its illegality-related measuring component.

The variables used in the regressions were, for the endogenous variables, the ones already mentioned with the following exceptions: Frequency of Bribery in Procurement (EOS Q5.12E) was only used to contrast Favoritism in Policy and Procurement (EOS 4.12) provided its very specific scope; the Civil War variable was not used provided its binary representation<sup>41</sup>. For the exogenous variables we show results for all variables presented above.

The results are presented in the tables below.

Note that for each different combination of empirical proxies, we choose the best (in terms of R Squared Adjusted) specification from three: with both crossing terms for GDP and Equality (i.e. both crossed with Accountability), only with the crossing term regarding GDP, and only with the crossing term concerning Equality<sup>42</sup>. We always try each of the crossing terms alone, provided the high (by construction) correlation between these two variables.

Looking at these results, and using a classification where “EXACT” corresponds to an exact fit of the predictions of the model and “OK” corresponds to a fit of the signs only (where significance fails to fit the model<sup>43</sup>), we can conclude that:

<sup>38</sup> This is the most reasonable assumption given the fact that the model is silent with respect to causality within endogenous variables.

<sup>39</sup> Note that we have chosen one variable from the same EOS database and one from an external source (KKM).

<sup>40</sup> Note that in the model, when we have Legal Corruption we do not have Illegal Corruption and vice versa.

<sup>41</sup> This representation does not yield (using Probit) useful results in the dummy specification used – collinearity is too strong.

<sup>42</sup> For completion, whenever we show a second regression for the same combination of variables, this was a regression for which an exact fit arises (of the signs predicted by the model), but with an inferior R2 Adjusted.

<sup>43</sup> Note that the criterion used for “OK” is more stringent for Equation (1) - where four out of five coefficients have clear signs associated from the model - than for the other equations – where only two out of five have clear signs from the model.

- Equations (2) and (3) seem to fit the model quite well - Equation (2) has 17 “EXACT” and 19 “OK” out of 50, and Equation (3) has 22 “EXACT” and 38 “OK” out of 60 (these correspond, together, to the whole set of regressions performed); Equation (1) using the referred differences also fits the data, though with more apparent limitations: it has 14 “EXACT” and 51 “OK” out of 100 regressions.
- For Equation (1), the questions on Frequency of Favoritism in Policy and Procurement (EOS Q4.12) and Frequency of Legal Political Contributions (EOS Q4.14) seem to adapt better than the question on Influence in Laws and Regulations (EOS Q5.14D) to the predictions of the model; the same happens with Gini when compared with Inequality in Healthcare (EOS Q7.10), and to the Freedom of Press proxies compared with the other variables for Accountability.
- For Equation (2), all Illegal Corruption questions except Frequency of Diversion of Public Funds Due to Corruption (EOS Q5.11) do quite well in terms of fit; Gini and the EOS proxy are quite similar; DPI Fractionalization of Government works specially well in this equation.
- For Equation (3), Common Crime (EOS Q5.09) performs slightly better than the other proxies in terms of yielding the signs predicted by the model; Gini and the EOS measure achieve akin results; as for the last equation, DPI Fractionalization of Government performs specially well with almost all exact fits.



Tables 3: Equation (1) - Legal Corruption (using differences) - continued

Choice of Empirical Measures	Dependent Variable ----->		Legal Corruption																			
	Accountability		EKM Voice and Accountability																			
	Equality		Gini									EOS Q7.10										
	Legal Corruption (Difference)	EOS Legal Corruption	EOS Q4.12				EOS Q4.14			EOS Q5.14D			EOS Q4.12				EOS Q4.14			EOS Q5.14D		
Adjustment			EOS Q5.12E	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12E	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC
Explanatory Variables	DGDP	coef.	<b>0.79**</b>	<b>0.80**</b>	<b>0.14</b>	<b>0.13</b>	<b>0.73*</b>	<b>0.19</b>	<b>0.19</b>	<b>1.11***</b>	<b>0.06</b>	<b>0.06</b>	<b>0.48**</b>	<b>0.62</b>	<b>0.10</b>	<b>0.13</b>	<b>0.22</b>	<b>-0.01</b>	<b>0.02</b>	<b>0.63</b>	<b>0.00</b>	<b>0.02</b>
		std. err.	0.31	0.38	0.10	0.10	0.43	0.13	0.13	0.36	0.12	0.12	0.20	0.47	0.08	0.09	0.45	0.09	0.09	0.45	0.08	0.08
	DEQUAL	coef.	<b>0.15</b>	<b>0.88**</b>	<b>0.19***</b>	<b>0.17***</b>	<b>1.00***</b>	<b>0.23***</b>	<b>0.21**</b>	<b>0.62*</b>	<b>0.10</b>	<b>0.09</b>	<b>0.19</b>	<b>-0.13</b>	<b>-0.01</b>	<b>-0.03</b>	<b>0.00</b>	<b>0.09</b>	<b>0.08</b>	<b>0.16</b>	<b>0.09</b>	<b>0.08</b>
		std. err.	0.16	0.37	0.05	0.05	0.42	0.08	0.09	0.36	0.06	0.06	0.22	0.35	0.06	0.07	0.48	0.10	0.10	0.34	0.09	0.09
	DACC	coef.	<b>0.45*</b>	<b>-0.31</b>	<b>0.18**</b>	<b>0.20**</b>	<b>0.02</b>	<b>0.32***</b>	<b>0.34***</b>	<b>-0.09</b>	<b>0.16</b>	<b>0.17*</b>	<b>0.50**</b>	<b>0.05</b>	<b>0.24***</b>	<b>0.24***</b>	<b>0.41</b>	<b>0.30***</b>	<b>0.30***</b>	<b>-0.05</b>	<b>0.18**</b>	<b>0.19**</b>
		std. err.	0.26	0.42	0.08	0.09	0.47	0.11	0.12	0.40	0.10	0.10	0.21	0.44	0.08	0.08	0.47	0.09	0.10	0.42	0.08	0.09
	DGDPDACC	coef.	<b>-0.71*</b>		<b>-0.30**</b>	<b>-0.31**</b>		<b>-0.34**</b>	<b>-0.35*</b>		<b>-0.12</b>	<b>-0.13</b>		<b>-0.08</b>	<b>-0.22*</b>	<b>-0.25**</b>						<b>0.36</b>
		std. err.	0.42		0.13	0.14		0.17	0.18		0.16	0.17		0.66	0.12	0.12						0.62
	DEQUALDACC	coef.		<b>-0.48</b>			<b>-0.95</b>	<b>-0.22</b>	<b>-0.22</b>	<b>-0.35</b>			<b>-0.56*</b>				<b>-0.14</b>	<b>-0.23*</b>	<b>-0.26*</b>		<b>-0.14</b>	<b>-0.17</b>
		std. err.		0.58			0.66	0.13	0.14	0.56			0.32				0.70	0.14	0.14		0.12	0.13
Number of Observations			<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>104</b>
R2Adjusted			<b>0.16</b>	<b>0.10</b>	<b>0.19</b>	<b>0.16</b>	<b>0.07</b>	<b>0.15</b>	<b>0.13</b>	<b>0.18</b>	<b>0.07</b>	<b>0.05</b>	<b>0.18</b>	<b>0.00</b>	<b>0.08</b>	<b>0.07</b>	<b>-0.01</b>	<b>0.08</b>	<b>0.08</b>	<b>0.12</b>	<b>0.05</b>	<b>0.04</b>
Fit (Testable Implications)			+ OK	+ OK	+ OK	+ OK	+ OK	+ OK	+ OK	+ OK	+ OK	+ OK					+ OK		+ OK			

Choice of Empirical Measures	Dependent Variable ----->		Legal Corruption																			
	Accountability		DPI Fractionalization of Government																			
	Equality		Gini									EOS Q7.10										
	Legal Corruption (Difference)	EOS Legal Corruption	EOS Q4.12				EOS Q4.14			EOS Q5.14D			EOS Q4.12				EOS Q4.14			EOS Q5.14D		
Adjustment			EOS Q5.12E	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12E	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC	EOS Q5.12G	KKMRL	KKMCC
Explanatory Variables	DGDP	coef.	<b>0.56***</b>	<b>0.54*</b>	<b>0.04**</b>	<b>0.04</b>	<b>0.59*</b>	<b>0.14</b>	<b>0.14</b>	<b>0.98***</b>	<b>0.07</b>	<b>0.08</b>	<b>0.62***</b>	<b>0.55</b>	<b>0.10</b>	<b>0.11</b>	<b>0.72</b>	<b>0.15</b>	<b>0.18*</b>	<b>0.83**</b>	<b>0.07</b>	<b>0.08</b>
		std. err.	0.21	0.30	0.05	0.06	0.34	0.09	0.09	0.28	0.06	0.08	0.22	0.41	0.07	0.07	0.46	0.10	0.10	0.34	0.08	0.08
	DEQUAL	coef.	<b>0.17</b>	<b>1.01***</b>	<b>0.20***</b>	<b>0.19***</b>	<b>0.95**</b>	<b>0.15**</b>	<b>0.14*</b>	<b>0.89***</b>	<b>0.13*</b>	<b>0.12*</b>	<b>0.04</b>	<b>0.03</b>	<b>-0.02</b>	<b>-0.03</b>	<b>0.08</b>	<b>0.02</b>	<b>0.00</b>	<b>0.35</b>	<b>0.03</b>	<b>0.03</b>
		std. err.	0.17	0.34	0.06	0.07	0.39	0.07	0.07	0.32	0.07	0.07	0.20	0.37	0.08	0.08	0.41	0.09	0.09	0.39	0.09	0.09
	DACC	coef.	<b>-0.04</b>	<b>-0.10</b>	<b>-0.07</b>	<b>-0.08</b>	<b>0.07</b>	<b>0.03</b>	<b>0.02</b>	<b>0.03</b>	<b>-0.05</b>	<b>-0.06</b>	<b>0.02</b>	<b>-0.37</b>	<b>-0.08</b>	<b>-0.08</b>	<b>-0.05</b>	<b>0.04</b>	<b>0.04</b>	<b>-0.35</b>	<b>-0.09</b>	<b>-0.08</b>
		std. err.	0.19	0.32	0.06	0.06	0.36	0.08	0.08	0.30	0.07	0.07	0.17	0.31	0.06	0.06	0.35	0.07	0.08	0.30	0.07	0.07
	DGDPDACC	coef.	<b>-0.08</b>					<b>-0.13</b>	<b>-0.15</b>				<b>-0.04</b>	<b>-0.10</b>	<b>0.19</b>				<b>-0.41</b>	<b>-0.10</b>	<b>-0.13</b>	
		std. err.	0.34					0.14	0.15				0.13	0.31	0.57				0.65	0.14	0.14	
	DEQUALDACC	coef.		<b>-1.07*</b>	<b>-0.03</b>	<b>-0.03</b>	<b>-1.15*</b>			<b>-1.15**</b>	<b>-0.03</b>			<b>0.08</b>	<b>0.06</b>					<b>0.05</b>	<b>0.07</b>	<b>0.04</b>
		std. err.		0.57	0.10	0.11	0.65			0.54	0.12			0.10	0.11					0.52	0.12	0.12
Number of Observations			<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>
R2Adjusted			<b>0.11</b>	<b>0.14</b>	<b>0.16</b>	<b>0.12</b>	<b>0.09</b>	<b>0.07</b>	<b>0.05</b>	<b>0.22</b>	<b>0.05</b>	<b>0.03</b>	<b>0.13</b>	<b>0.03</b>	<b>0.02</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.15</b>	<b>0.01</b>	<b>0.01</b>
Fit (Testable Implications)			+ OK	EXACT	+ OK	+ OK	EXACT	+ OK	+ OK	EXACT	+ OK	+ OK	+ OK				+ OK	+ OK	+ OK			

Notes: All regressions have GDP as GDP pc 1984; dummies take value 1 for the first quartile of the corresponding variable. \*, \*\*, \*\*\* correspond to the level of statistical significance 10%, 5%, and 1%, respectively; at each crossing of choice of empirical measures the best regression in terms of R2 Adjusted was chosen (from the alternatives: full specification - with both crossing terms; partial specification with the crossing term on equality only; partial specification with the crossing term on gdp only); whenever a second regression is presented at each crossing of choice of empirical measures, it is because another regression showed exact fit (with lower R2 Adjusted).

Tables 4: Equation (2) - Illegal Corruption

Choice of Empirical Measures		Dependent Variable ----->		Illegal Corruption																					
				Freedom of Press EOS Q5.06										Freedom of Press (Freedom House)											
		Accountability		Gini					EOS Q7.10					Gini					EOS Q7.10						
Equality		Illegal Corruption		EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F		
Explanatory Variables	DGDP	coef.	-1.22***	-1.24**	-1.26***	-1.00*	-1.44***	-1.23***	-0.96***	-1.49***	-1.41***	-1.24***	-1.17***	-0.76***	-0.85**	-0.58	-1.22***	-1.58***	-1.21***	-1.05***	-1.22***	-1.16***	-1.44***	-1.20***	-0.93***
		std. err.	0.34	0.51	0.39	0.59	0.34	0.32	0.28	0.41	0.35	0.30	0.35	0.25	0.39	0.45	0.34	0.28	0.26	0.24	0.35	0.38	0.26	0.24	0.21
	DEQUAL	coef.	0.42	0.14	0.25	-0.02	0.05	0.08	-0.04	0.87***	-0.67*	-1.11***	0.76***	1.04***	0.21	0.01	0.19	0.04	0.07	-0.02	-0.74**	-0.67**	-0.95***	-0.74**	-0.96***
		std. err.	0.27	0.23	0.32	0.27	0.27	0.26	0.23	0.28	0.37	0.32	0.24	0.26	0.22	0.25	0.31	0.26	0.24	0.23	0.30	0.32	0.34	0.31	0.28
	DACC	coef.	-0.52	-0.60	-0.33	-0.26	-0.97***	-0.69**	-0.69**	-0.49	0.06	-0.92***	-0.76**	-0.66**	-0.32	-0.21	-0.54	-1.11***	0.97***	0.76***	-0.24	-0.06	-1.22***	-1.05***	-0.74***
		std. err.	0.31	0.37	0.37	0.43	0.31	0.29	0.26	0.37	0.37	0.32	0.32	0.26	0.33	0.38	0.35	0.29	0.27	0.25	0.32	0.35	0.30	0.28	0.25
DGDPDACC	coef.		-0.27		-0.75				0.51			0.31		-1.17**	-1.46**						-0.24	-0.53			
	std. err.		0.66		0.76				0.55			0.48		0.55	0.62						0.49	0.53			
DEQUALDACC	coef.	-0.86*		-0.91*		-0.33	-0.40	-0.31		-0.32	0.50		0.37			-0.71	-0.09	-0.22	-0.21			0.77*	0.60	0.53	
	std. err.	0.46		0.54		0.46	0.44	0.39		0.52	0.45		0.36			0.53	0.44	0.41	0.38			0.46	0.42	0.38	
Number of Observations		85	85	85	85	85	85	85	104	104	104	104	104	84	84	84	84	84	84	103	103	103	103	103	
R2Adjusted		0.50	0.48	0.40	0.39	0.61	0.53	0.52	0.53	0.47	0.64	0.59	0.60	0.51	0.43	0.41	0.63	0.57	0.53	0.47	0.66	0.61	0.60	0.60	
Fit (Testable Implications)			EXACT		EXACT			- OK	EXACT	EXACT	- OK	- OK	- OK							- OK	EXACT	EXACT	- OK	- OK	- OK

Choice of Empirical Measures		Dependent Variable ----->		Illegal Corruption																			
				Civil Liberties (Freedom House)										KEM Voice and Accountability									
		Accountability		Gini					EOS Q7.10					Gini					EOS Q7.10				
Equality		Illegal Corruption		EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F
Explanatory Variables	DGDP	coef.	-1.14***	-0.57	-1.56***	-1.37***	-1.09***	-1.53***	-1.34***	-1.57***	-1.03***	-0.99***	-1.29***	-1.13**	-1.58***	-1.62***	-1.17***	-1.49***	-1.49***	-1.59***	-1.14***	-0.84***	
		std. err.	0.34	0.58	0.46	0.44	0.40	0.39	0.33	0.35	0.25	0.30	0.45	0.52	0.29	0.41	0.25	0.37	0.41	0.34	0.26	0.23	
	DEQUAL	coef.	0.32	0.00	0.03	0.00	-0.08	-0.80***	-0.86**	0.93***	-1.02***	-1.02***	0.25	0.05	-0.07	0.08	-0.15	-0.88***	0.81***	-0.89***	-1.02***	-1.08***	
		std. err.	0.28	0.26	0.21	0.20	0.18	0.29	0.40	0.33	0.30	0.28	0.23	0.27	0.28	0.21	0.25	0.28	0.31	0.25	0.28	0.25	
	DACC	coef.	-0.84**	-0.59	-1.76***	-1.53***	-1.29***	-0.65**	-0.40	-1.68***	-1.30***	-1.11***	-0.54	-0.20	-1.31***	-1.00***	0.79***	-0.49	-0.11	-1.24***	-0.96***	0.75***	
		std. err.	0.35	0.45	0.36	0.35	0.32	0.35	0.37	0.32	0.28	0.27	0.37	0.43	0.32	0.34	0.28	0.35	0.38	0.31	0.27	0.24	
DGDPDACC	coef.		-0.91	0.70	0.77	0.56	0.63		0.87		0.49	-0.35	-0.74		0.47		0.50	0.11	0.89*				
	std. err.		0.76	0.61	0.58	0.53	0.53		0.53		0.45	0.61	0.70		0.56		0.52	0.57	0.47				
DEQUALDACC	coef.	-0.38						0.32	0.54	1.04**	0.58			0.51		0.33				0.82**	0.60*		
	std. err.	0.46						0.56	0.51	0.41	0.42			0.44		0.39				0.41	0.36		
Number of Observations		84	84	84	84	84	103	103	103	103	103	85	85	85	85	104	104	104	104	104	104		
R2Adjusted		0.49	0.41	0.65	0.59	0.56	0.53	0.46	0.68	0.63	0.63	0.48	0.39	0.63	0.54	0.51	0.53	0.47	0.66	0.61	0.61		
Fit (Testable Implications)			- OK		- OK	- OK	EXACT	- OK	- OK	- OK	EXACT	EXACT	- OK	- OK	EXACT	EXACT	- OK	- OK	- OK	- OK			

Choice of Empirical Measures		Dependent Variable ----->		Illegal Corruption									
				DPI Fractionalization of Government									
		Accountability		Gini					EOS Q7.10				
Equality		Illegal Corruption		EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F	EOS Q4.02	EOS Q4.13	EOS Q5.11	EOS Q5.12E	EOS Q5.12F
Explanatory Variables	DGDP	coef.	-1.62***	-1.52	-2.18***	-1.83***	-1.55***	-1.28***	-1.27***	-1.61***	-1.44***	-1.02***	
		std. err.	0.28	0.34	0.29	0.23	0.21	0.29	0.32	0.28	0.29	0.25	
	DEQUAL	coef.	0.19	-0.03	0.01	-0.04	-0.14	-0.89***	-0.71*	-1.00***	-0.86***	-1.03***	
		std. err.	0.23	0.27	0.24	0.26	0.24	0.33	0.36	0.32	0.26	0.23	
	DACC	coef.	-0.50**	-0.16	-0.56**	-0.39	-0.35	-0.18	0.14	-0.22	-0.19	-0.09	
		std. err.	0.25	0.30	0.26	0.25	0.22	0.25	0.28	0.25	0.22	0.19	
DGDPDACC	coef.	-0.55	-0.58	-0.09						0.19	0.13		
	std. err.	0.46	0.55	0.48						0.41	0.36		
DEQUALDACC	coef.				0.09	0.14	-0.29	-0.59	-0.13				
	std. err.				0.45	0.40	0.44	0.48	0.43				
Number of Observations		82	82	82	82	82	98	98	98	98	98		
R2Adjusted		0.50	0.37	0.57	0.49	0.46	0.53	0.44	0.61	0.56	0.57		
Fit (Testable Implications)			EXACT		EXACT	EXACT	EXACT	EXACT	EXACT	EXACT			

Notes: All regressions have GDP as GDP pc 1984; dummies take value 1 for the first quartile of the corresponding variable. \*, \*\*, \*\*\*, correspond to the levels of statistical significance 10%, 5%, and 1%, respectively, at each crossing of choice of empirical measures the best regression in terms of R2 Adjusted was chosen (from the alternatives: full specification - with both crossing terms; partial specification with the crossing term on equality only; partial specification with the crossing term on gdp only); whenever a second regression is presented at each crossing of choice of empirical measures, it is because another regression showed exact fit (with lower R2 Adjusted).



## 5. Concluding Remarks

This paper has suggested a set of simple hypothesis to explain the pattern of Legal and Illegal Corruption across the world. These assumptions were tested and some convincing results of their validity arose. However, we are aware that this is the beginning of a long journey, and that more structured answers to our research question should be pursued.

We mainly added the following to the literature:

- A political economy model where corruption is endogeneized, making use of the idea that the population has available a threat of insurrection; in the model, legal corruption arises in the context of investments in legal barriers aimed to undermine collective action on the part of the population.
- A new corruption concept not constrained by public-sector, illegality restrictions; corruption is seen as a deal between people for the exchange of favors over time (in the most appealing example two agents, one from the private sector, the other from the public sector, trade favors over time, with the public sector agent making use of her public office investment).
- An empirical focus on Legal Corruption is embraced, using a newly available database (Executive Opinion Survey 2004 for the Global Competitiveness Report), with precise questions on this kind of practice.

In terms of policy implications of this work, we would like to stress some messages that follow from our exercise.

First we are convinced that the policy focus when analyzing the prevalence of corruption (both conceptually and empirically) should not overlook the private sector as a key player in the determination of corruption outcomes.

Second, it is clear from the analysis of the data that many rich countries (G7 and OECD members) seem to be challenged cases in what legal corruption is concerned. We have tried to argue that conceptually legal corruption may be quite close to its illegal counterpart (though there is work to do in terms of determining its relative impact on the economy).

We have also found that fundamental accountability may a clear role in development. This may be a key variable in the determination of corruption in richer societies - policies oriented to its reinforcement may be very fruitful.

Finally, we would like to underline that under the equilibria with corruption, it is clear that the lack of internal (to the economy or, broadly speaking, to a given country) incentives on the political elite is the force causing the emergence of corruption. In that sense, we would like to convey the message that exogenous interventions may be necessary on the referred incentives if one wants to diminish the prevalence of corruption. In other words, although we argue the main determinants of the situation are fundamental (initial productivity, equality, underlying political accountability), we think we have presented a framework that is compatible with direct intervention in incentives of politicians by external agents. A very interesting possible extension of the model presented is surely one where external aid is endogeneized – and that may improve the fit of the model to the data.



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## *Appendix*

### **Part I - Data Specifications**

#### *Illegal Corruption:*

From the Executive Opinion Survey (EOS) – Global Competitiveness Report 2004-2005 (World Economic Forum):

- EOS Q4.02: *Public trust in the financial honesty of politicians is... low(1)-high(7)*
- EOS Q4.13: *How common are illegal donations to political parties in your country? common(1)-never occur(7)*
- EOS Q5.11: *In your country, diversion of public funds to companies, individuals, or groups due to corruption is... common(1)-never occurs(7)*
- EOS Q5.12E: *In your industry, how commonly would you estimate that firms make undocumented extra payments or bribes connected with awarding of public contracts (investment projects)? common(1)-never occur(7)*
- EOS Q5.12F: *In your industry, how commonly would you estimate that firms make undocumented extra payments or bribes connected with influencing of laws and policies, regulations or decrees to favor selected business interests? common(1)-never occur(7)*

From Kaufmann, Kraay, and Mastruzzi (2003)

(<http://www.worldbank.org/wbi/governance/govdata2002/index.html>):

Control of Corruption: low(-2.5)-high(2.5)

#### *Legal Corruption:*

From the Executive Opinion Survey (EOS) – Global Competitiveness Report 2004-2005 (World Economic Forum):

- EOS Q4.12: *When deciding upon policies and contracts, government officials... usually favor well-connected firms and individuals(1)-are neutral among firms and individuals(7)*
- EOS Q4.14: *To what extent do legal contributions to political parties have a direct influence on specific public policy outcomes? very close link between donations and policy(1)-little direct influence on policy(7)*
- EOS Q5.14D: *How much influence do you think the following groups actually had on recently enacted national laws and regulations that have a substantial impact in your business? Individuals or firms with close personal ties to political leaders. enormous influence(1)-no influence at all(7)*

#### *Rule of Law:*

From the Executive Opinion Survey (EOS) – Global Competitiveness Report 2004-2005 (World Economic Forum):

- EOS Q5.12G: *In your industry, how commonly would you estimate that firms make undocumented extra payments or bribes connected with getting favorable judicial decisions? common(1)-never occur(7)*

From Kaufmann, Kraay, and Mastruzzi (2003)

(<http://www.worldbank.org/wbi/governance/govdata2002/index.html>):

Rule of Law: low(-2.5)-high(2.5)

*Gross Domestic Product Per Capita 1984*: Penn World Tables, World Bank – SIMA, CIA, World Factbook 2002; data used is from Penn World Tables (Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 6.1, Center for International Comparisons at the University of Pennsylvania - CICUP, October 2002) Real GDP Per Capita, Chain Series, \$ in 1996 Constant Prices with the following exceptions: Bahrain, Bosnia Herzegovina, Bulgaria, Czech Republic, Malta, Serbia Montenegro, Slovak Republic, United Arab Emirates, Vietnam; for all these countries except UAE, extrapolations were made using World Bank – SIMA GDP Per Capita Annual Growth Rates (from the earliest year available from the Penn World Tables); for UAE, a direct extrapolation was done using GDP Per Capita PPP in 1984 from World Bank – SIMA; for Bosnia Herzegovina and Serbia Montenegro values comparable with the ones for the World Bank – SIMA were got from CIA.

*Inequality:*

Gini Coefficient 2002: World Development Indicators 2002, World Bank;

From the Executive Opinion Survey (EOS) – Global Competitiveness Report 2004-2005 (World Economic Forum):

EOS Q7.10: *The difference in the quality of the healthcare available to rich and poor people in your country is... large(1)-small(7)*

*Political Accountability:*

From the Executive Opinion Survey (EOS) – Global Competitiveness Report 2004-2005 (World Economic Forum):

EOS Q5.06: *In your country, can newspapers publish stories of their choosing without fear of censorship or retaliation? no(1)-yes(7)*

From Freedom House 2002 (<http://www.freedomhouse.org/>):

Civil Liberties Indicator: low(1)-high(7)

Press Freedom Indicator: low(0)-high(100)

From Kaufmann, Kraay, and Mastruzzi (2003)

(<http://www.worldbank.org/wbi/governance/govdata2002/index.html>):

Voice and Accountability: low(-2.5)-high(2.5)

From DPI - Database of Political Institutions 2000

(<http://econ.worldbank.org/view.php?type=18&id=25467>):

Government Fractionalization: low(0)-high(1); this variable corresponds to the probability that two deputies picked at random from among the government parties will be of different parties.

*Insurrections:*

From the Executive Opinion Survey (EOS) – Global Competitiveness Report 2004-2005 (World Economic Forum):

EOS Q5.09: *The incidence of common crime and violence (e.g. street muggings, firms being looted)... imposes significant costs on businesses(1)-does not impose significant costs on businesses(7)*

From iJET – Travel Risk Management 2004 (<http://www.ijet.com/ijet>):

iJET Indicator: low risk(1)-high risk(5)

From the Economist Intelligence Unit 2003:

EIU 3001 - Armed conflict: good(0)-bad(4)

EIU 3002 - Violent demonstrations: good(0)-bad(4)

EIU 3003 - Violent crime: good(0)-bad(4)

EIU 3005 - Social Unrest: good(0)-bad(4)

Civil War Dummy: Constructed from Gleditsch et al. (2001) taking value 1 for countries reported to have faced any *intrastate conflict* in the period 1990-2001 with *government as the main motive of incompatibility* (according to source - i.e., no territorial motives), and with *at least 25 battle-related deaths*.

## Part II - Correlations (Differences Legal-Illegal Corruption versus Income and Equality)

Figure A1: Difference between Legal and Illegal Corruption (as given by Questions on Legal and Illegal Political Contributions) versus Income.

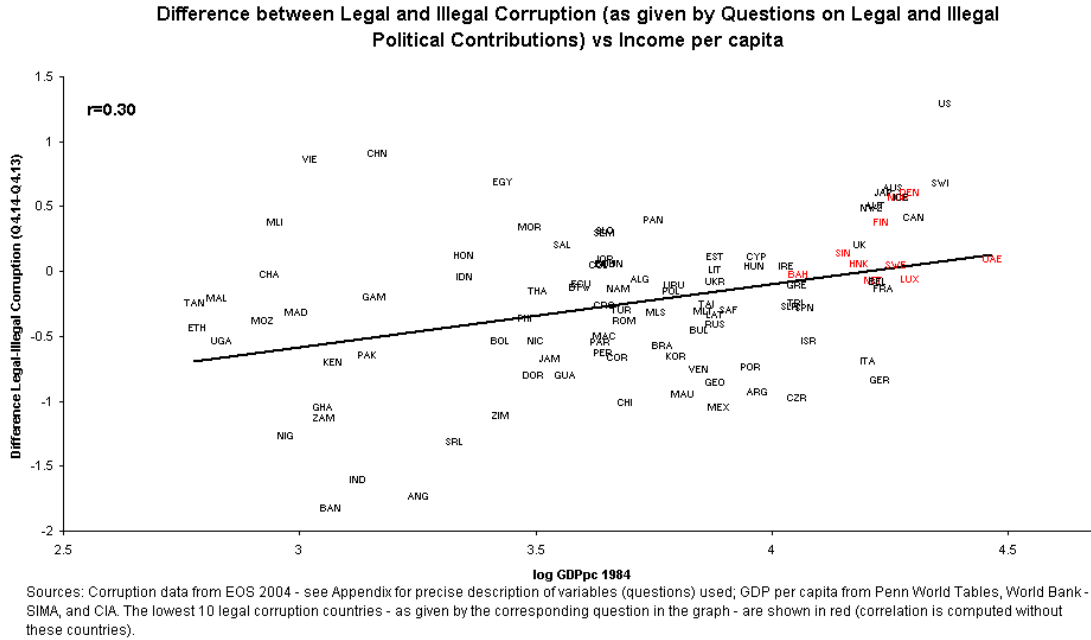


Figure A2: Difference between Legal and Illegal Corruption (as given by Questions on Favoritism in Policy/Procurement and Financial Honesty of Politicians) versus Income.

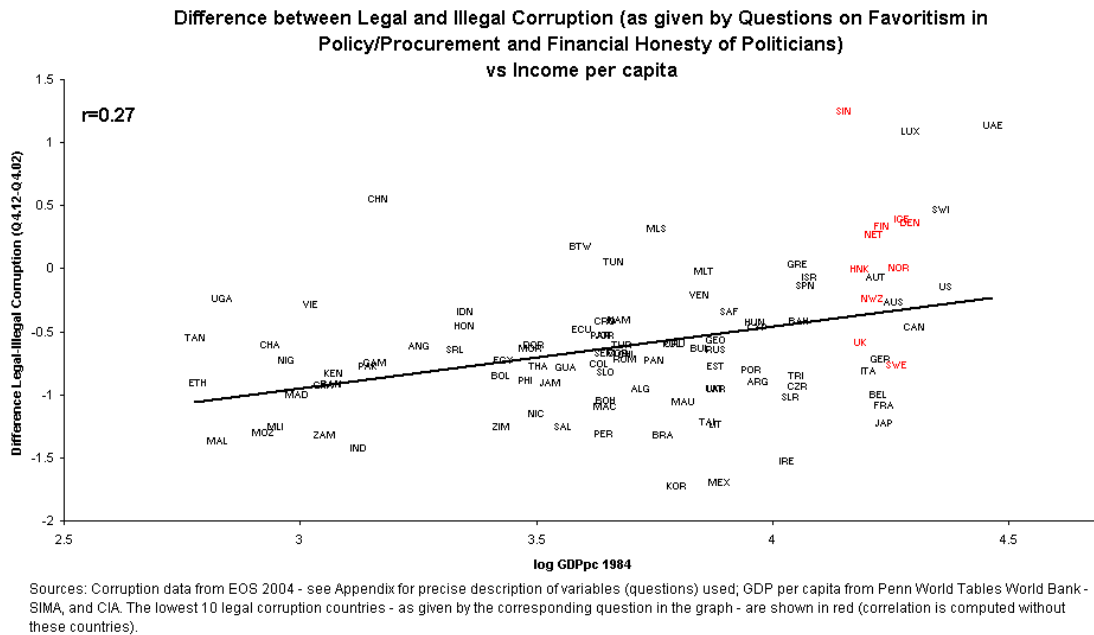


Figure A3: Difference between Legal and Illegal Corruption (as given by Questions on Influence and Diversion of Public Funds) versus Income.

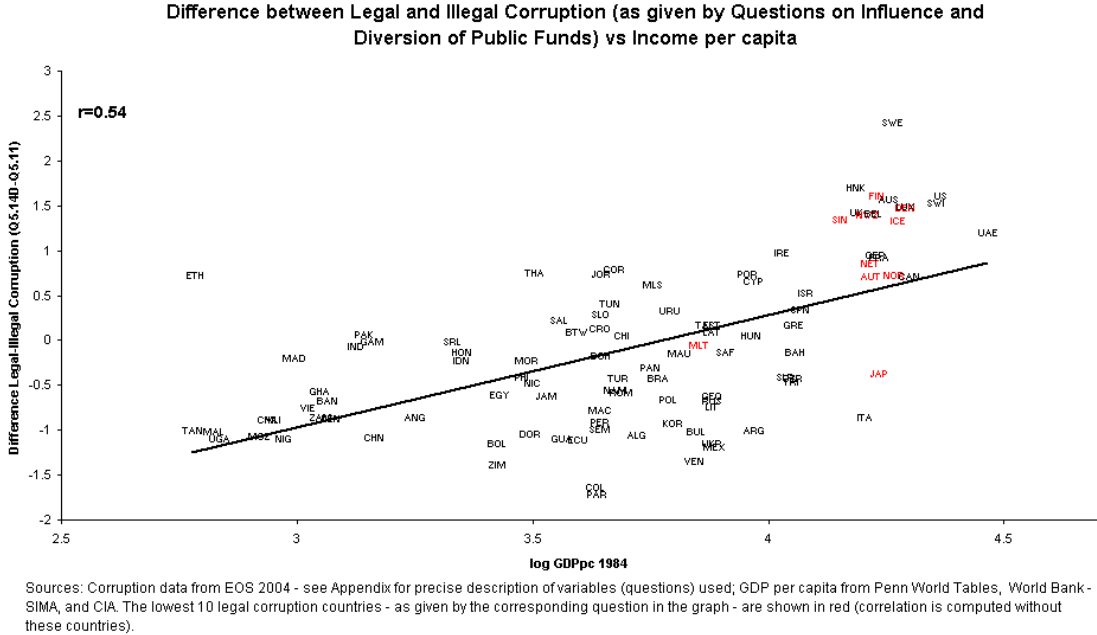


Figure A4: Difference between Legal and Illegal Corruption (as given by Questions on Influence and Bribery as State Capture) versus Income.

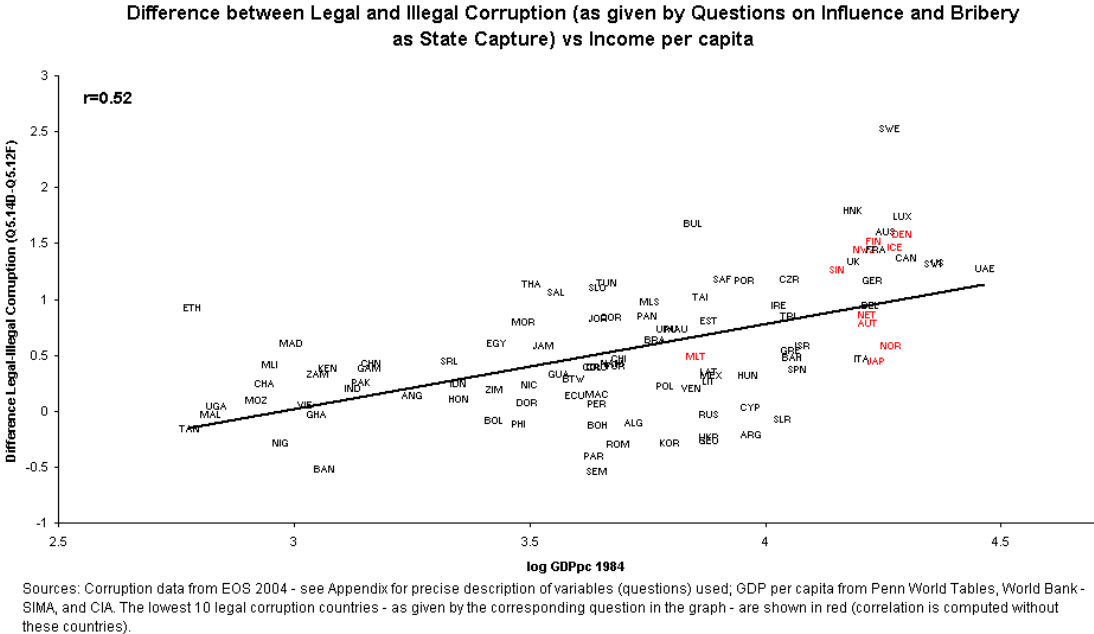


Figure A5: Difference between Legal and Illegal Corruption (as given by a Question on Favoritism in Policy/Procurement and KKM Control of Corruption) versus Income.

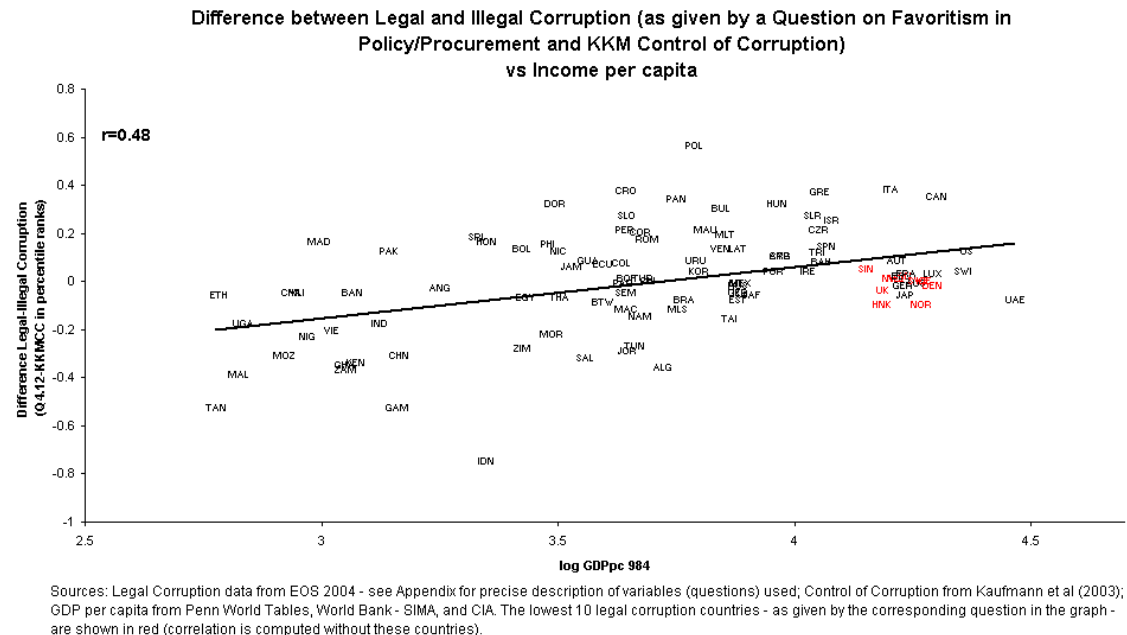


Figure A6: Difference between Legal and Illegal Corruption (as given by a Question on Legal Political Contributions and KKM Control of Corruption) versus Income.

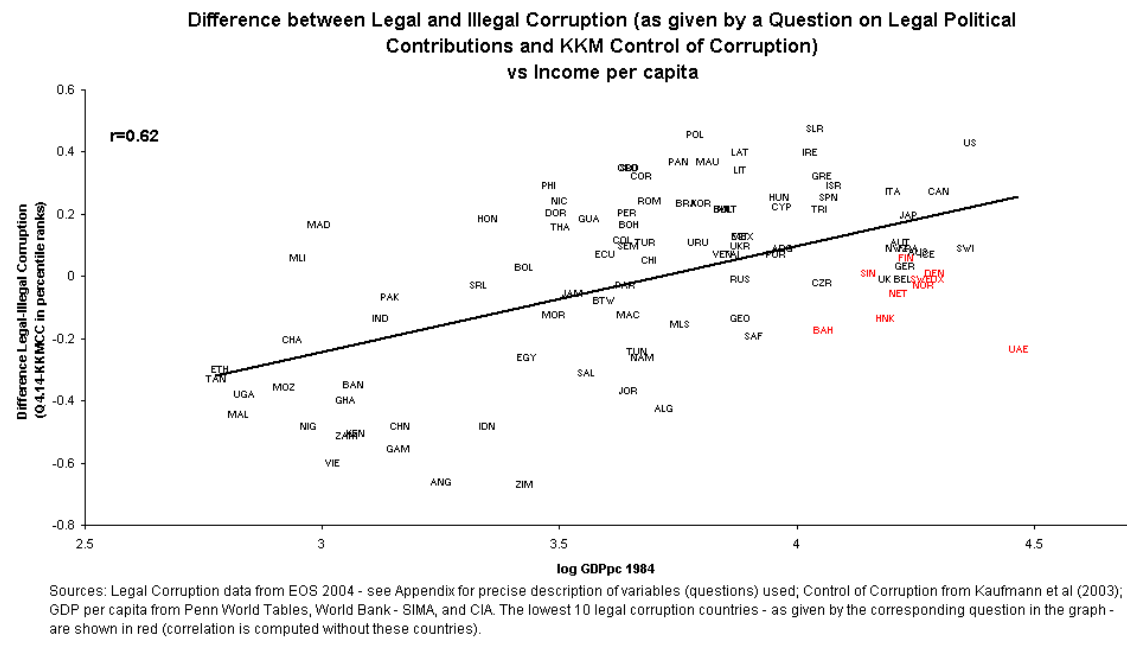
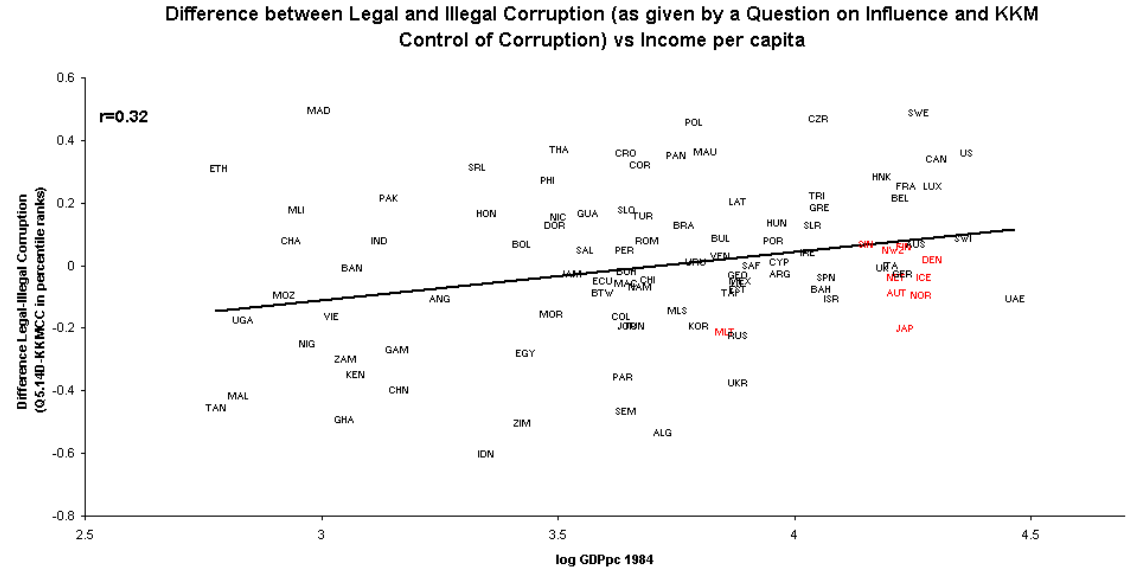


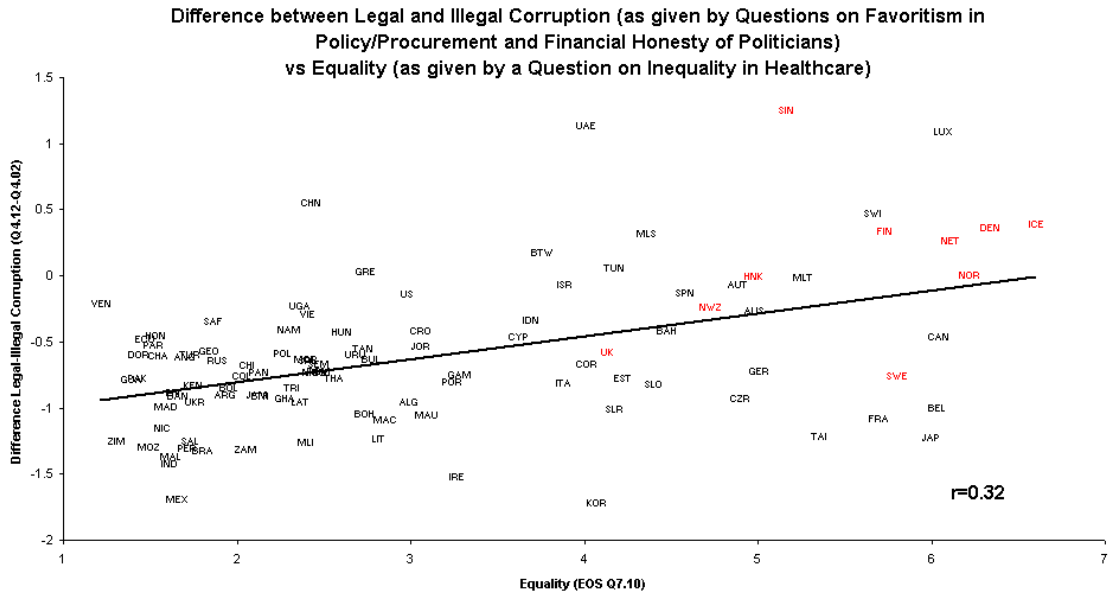


Figure A7: Difference between Legal and Illegal Corruption (as given by a Question on Influence and KKM Control of Corruption) versus Income.



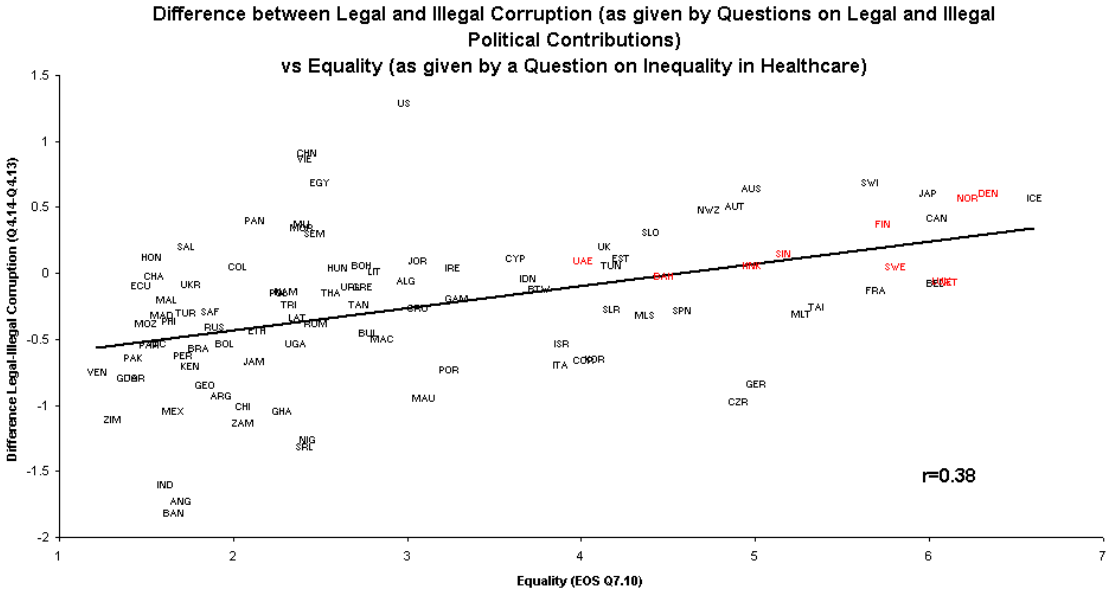
Sources: Legal Corruption data from EOS 2004 - see Appendix for precise description of variables (questions) used; Control of Corruption from Kaufmann et al (2003); GDP per capita from Penn World Tables, World Bank - SIMA, and CIA. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A8: Difference between Legal and Illegal Corruption (as given by Questions on Favoritism in Policy/Procurement and Financial Honesty of Politicians) versus Equality (as given by a Question on Inequality in Healthcare).



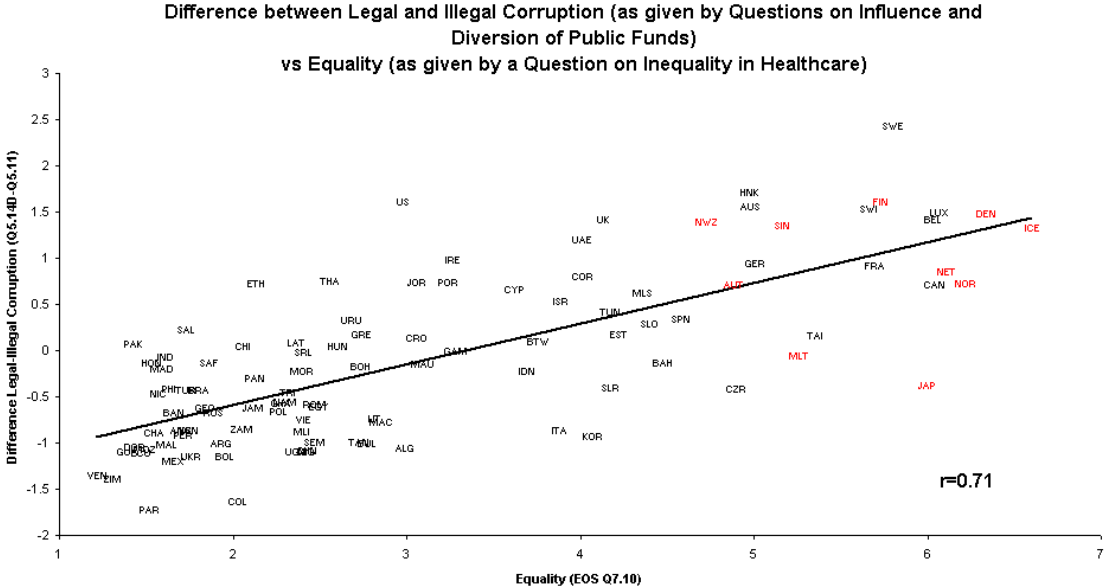
Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A9: Difference between Legal and Illegal Corruption (as given by Questions on Legal and Illegal Political Contributions) versus Equality (as given by a Question on Inequality in Healthcare).



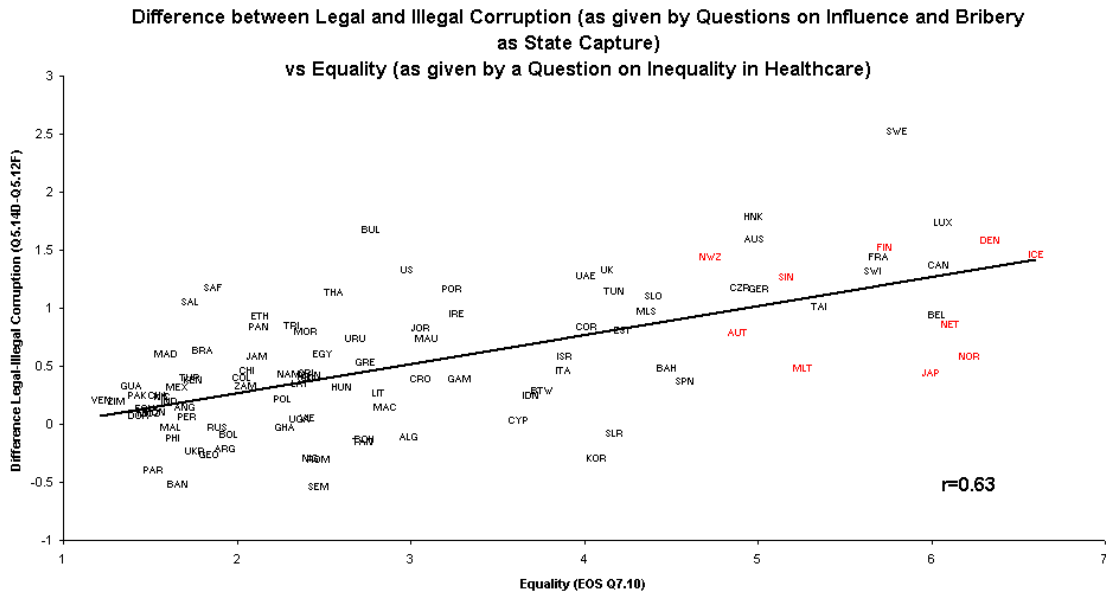
Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A10: Difference between Legal and Illegal Corruption (as given by Questions on Influence and Diversion of Public Funds) versus Equality (as given by a Question on Inequality in Healthcare).



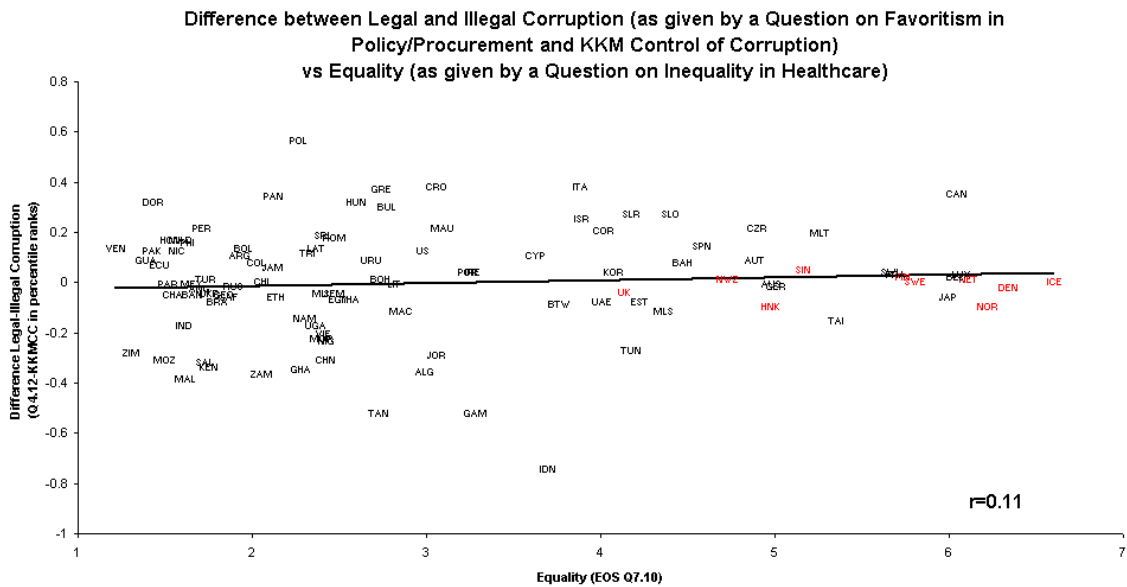
Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A11: Difference between Legal and Illegal Corruption (as given by Questions on Influence and Bribery as State Capture) versus Equality (as given by a Question on Inequality in Healthcare).



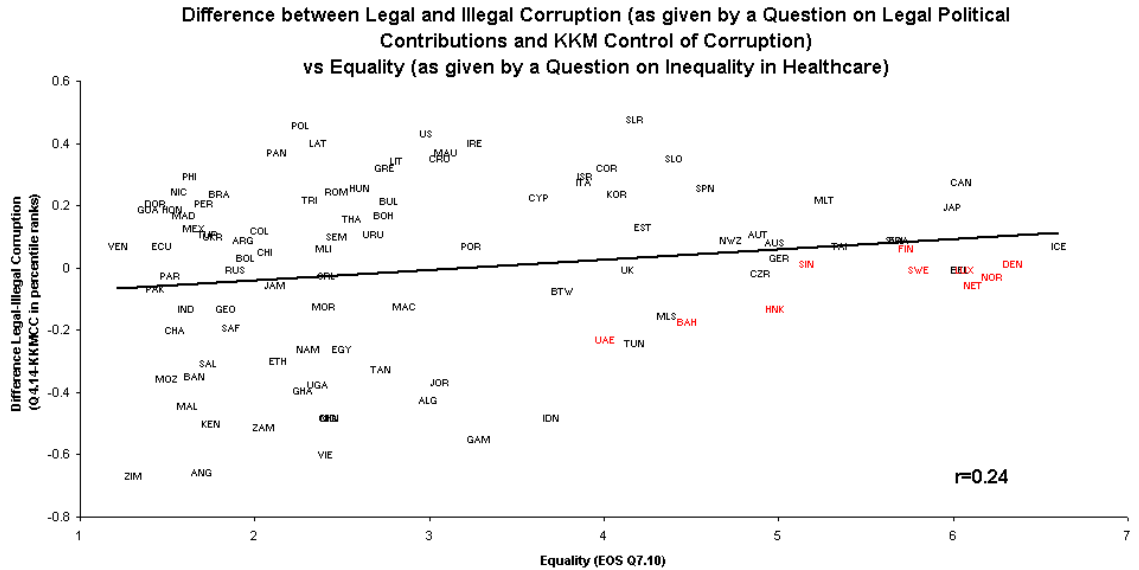
Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A12: Difference between Legal and Illegal Corruption (as given by a Question on Favoritism in Policy/Procurement and KKM Control of Corruption) versus Equality (as given by a Question on Inequality in Healthcare).



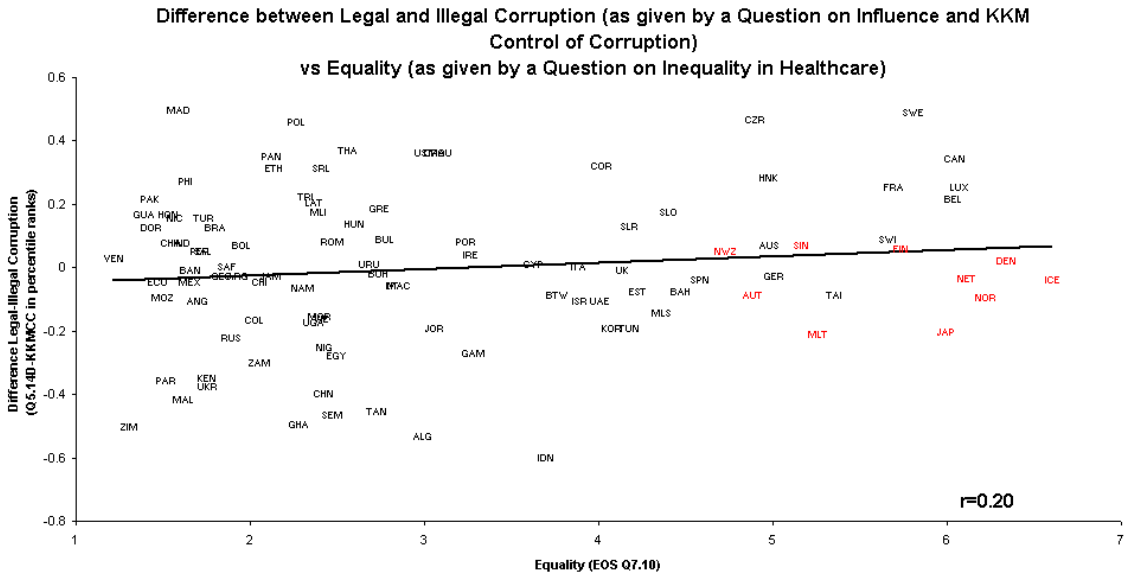
Sources: Legal Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. Control of Corruption from Kaufmann et al (2003). The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A13: Difference between Legal and Illegal Corruption (as given by a Question on Legal Political Contributions and KKM Control of Corruption) versus Equality (as given by a Question on Inequality in Healthcare).



Sources: Legal Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. Control of Corruption from Kaufmann et al (2003). The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

Figure A14: Difference between Legal and Illegal Corruption (as given by a Question on Influence and KKM Control of Corruption) versus Equality (as given by a Question on Inequality in Healthcare).



Sources: Legal Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. Control of Corruption from Kaufmann et al (2003). The lowest 10 legal corruption countries - as given by the corresponding question in the graph - are shown in red (correlation is computed without these countries).

### Part III - Correlations (Travel Risk and Common Crime versus Income and Equality)

Figure A15: Common Crime (as given by a Question in EOS) versus Income.

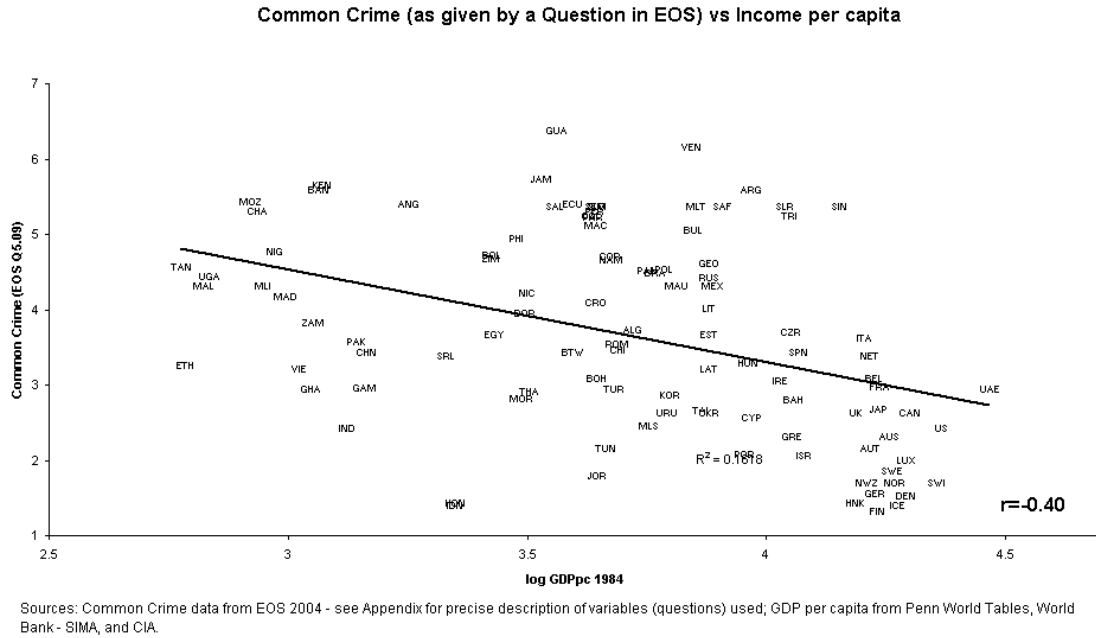


Figure A16: Common Crime (as given by a Question in EOS) versus Equality (as given by a Question on Inequality in Healthcare).

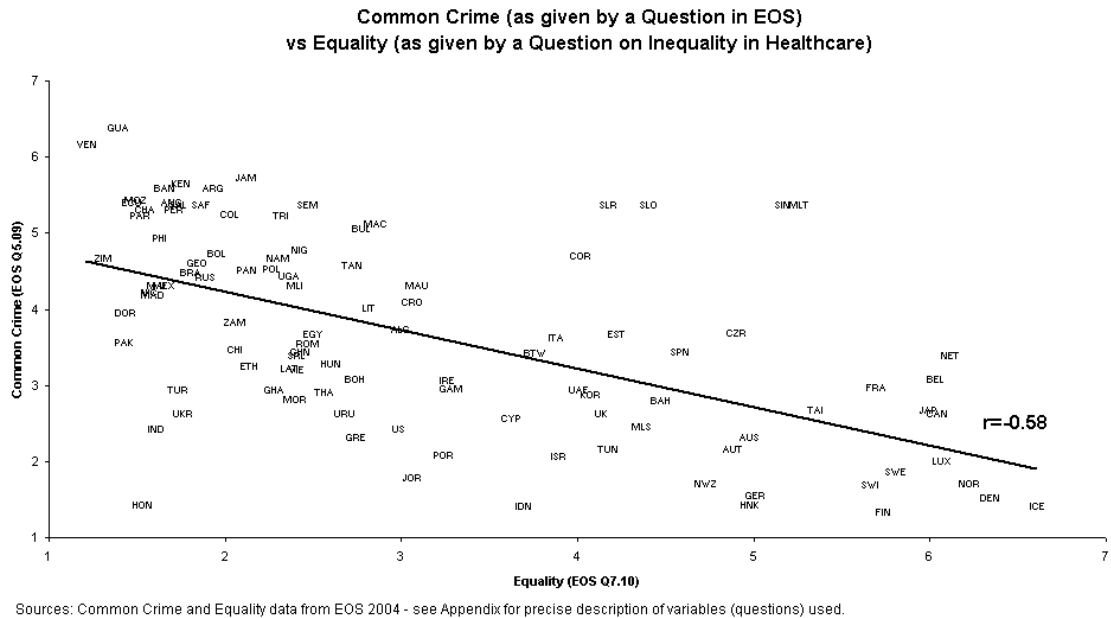


Figure A17: Travel Risk (as given by i-JET) versus Income.

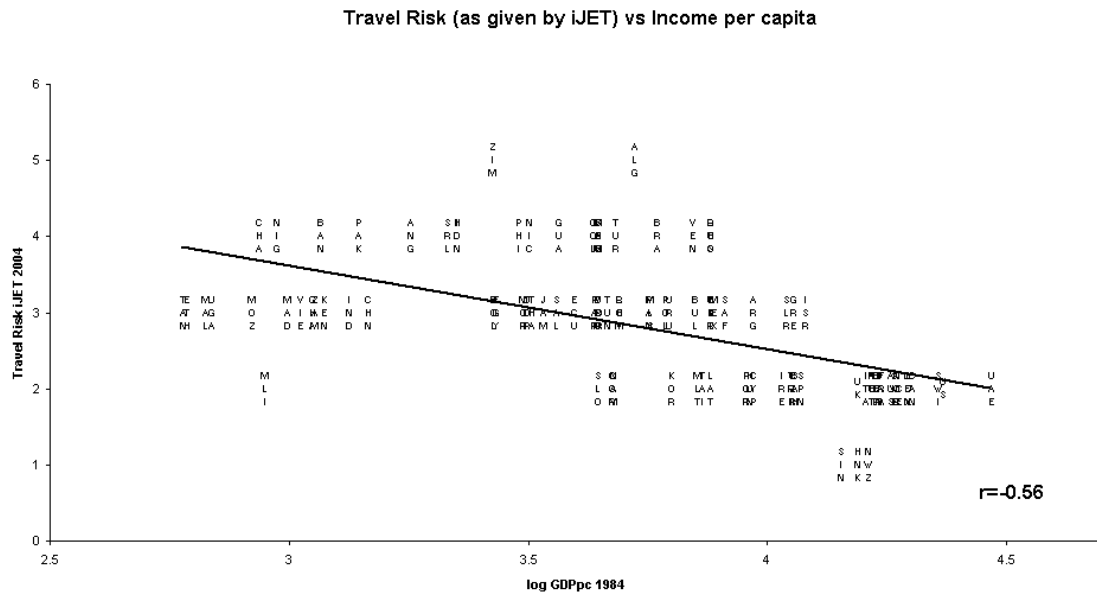
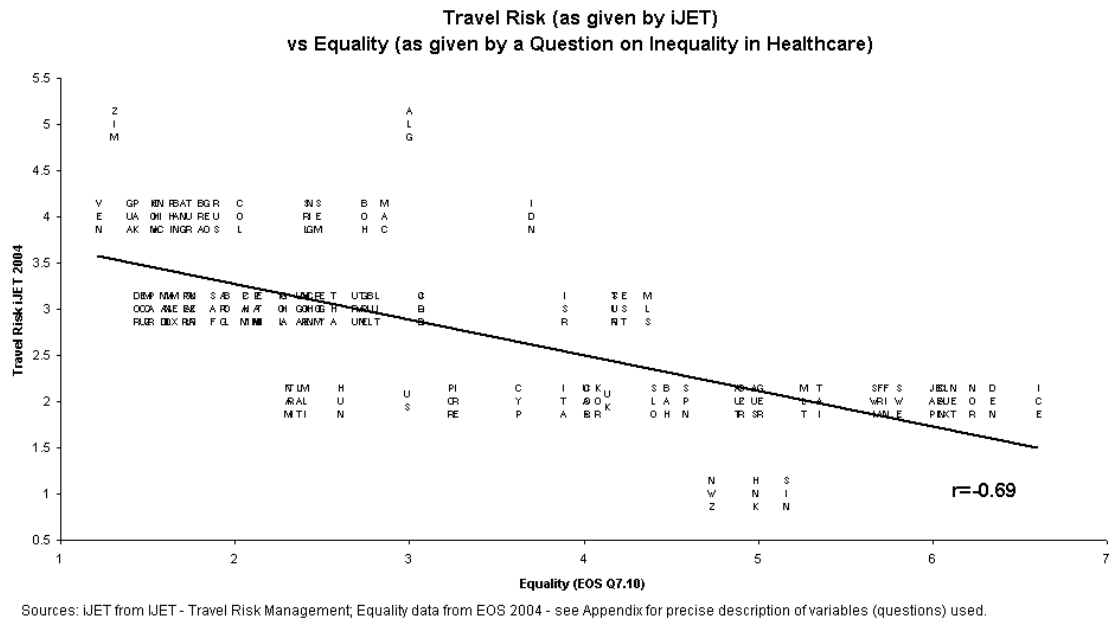
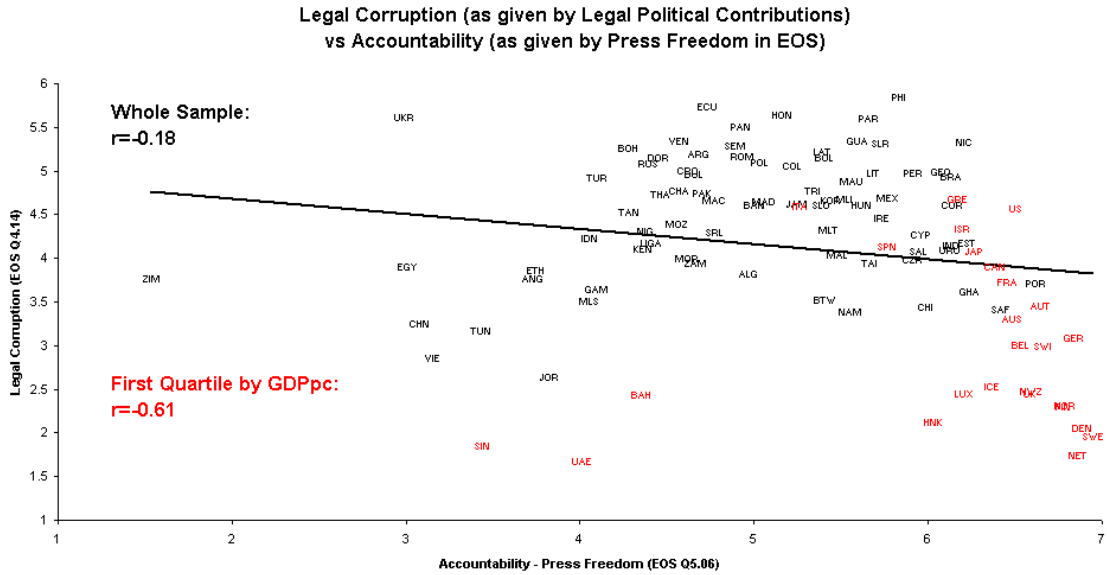


Figure A18: Travel Risk (as given by i-JET) versus Equality (as given by a Question on Inequality in Healthcare).



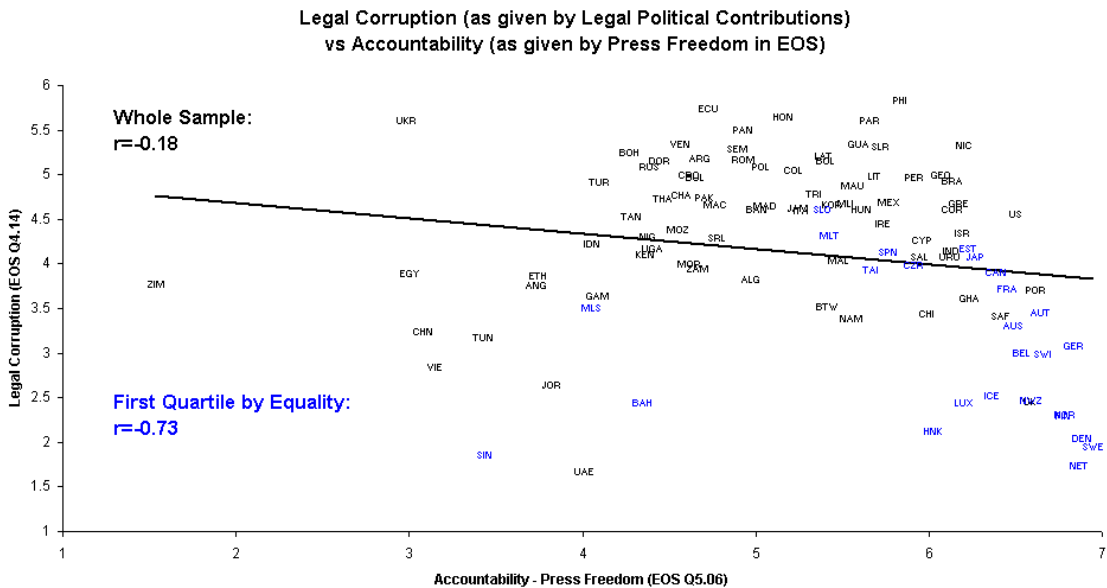
## Part IV - Correlations (Legal Corruption versus Accountability)

Figure A19: Legal Corruption (as given by Legal Political Contributions) vs Accountability (as given by Press Freedom in EOS) – By Income.



Sources: Corruption and Accountability data from EOS 2004 - see Appendix for precise description of variables (questions) used; GDP per capita from Penn World Tables, World Bank - SIMA, and CIA. The partial correlation (for the first quartile by GDP pc) does not include clear outliers Bahrain, Singapore and United Arab Emirates.

Figure A20: Legal Corruption (as given by Legal Political Contributions) vs Accountability (as given by Press Freedom in EOS) – By Equality.



Sources: Corruption, Accountability and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used. The partial correlation (for the first quartile by Equality, which is given by EOS Q7.10) does not include clear outliers Bahrain, Malaysia, and Singapore.

Figure A21: Legal Corruption (as given by Influence) vs Accountability (as given by Press Freedom in EOS) – By Income.

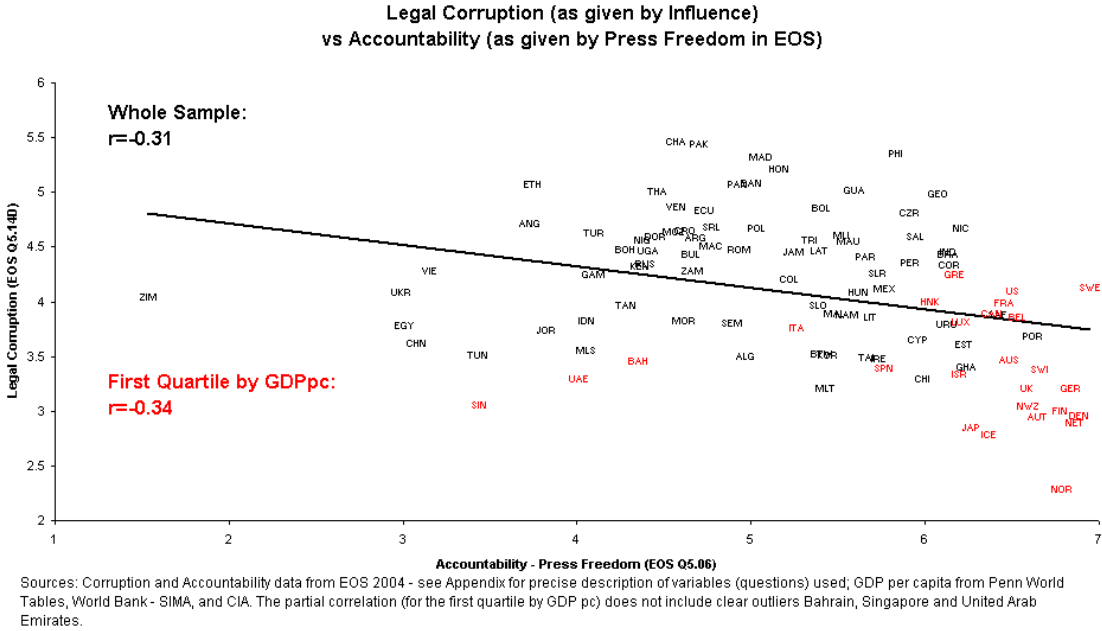


Figure A22: Legal Corruption (as given by Influence) vs Accountability (as given by Press Freedom in EOS) – By Equality.

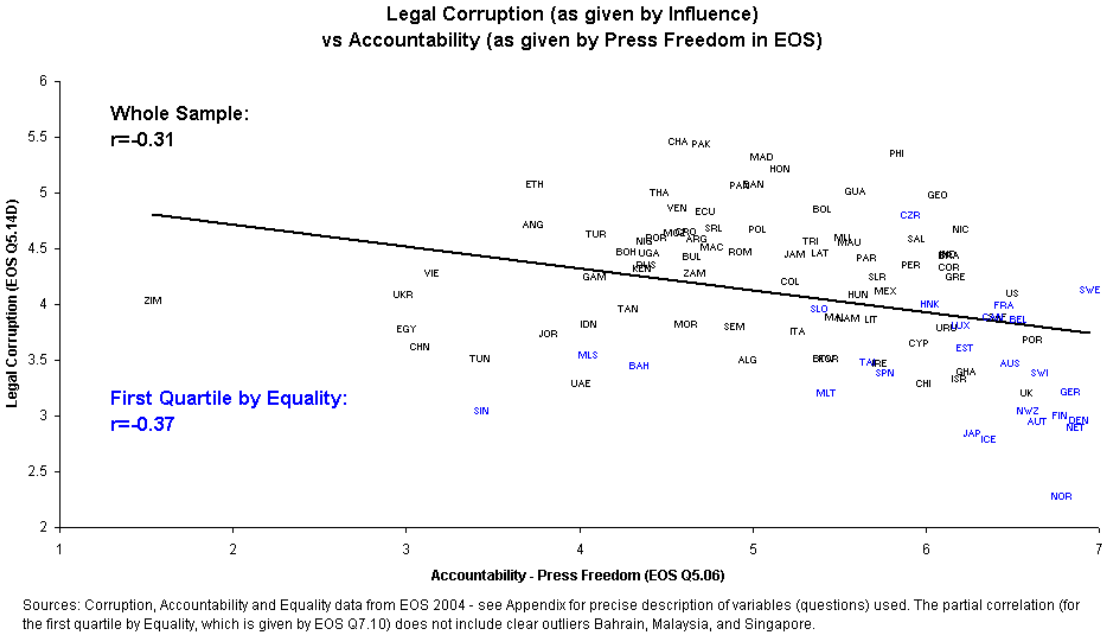
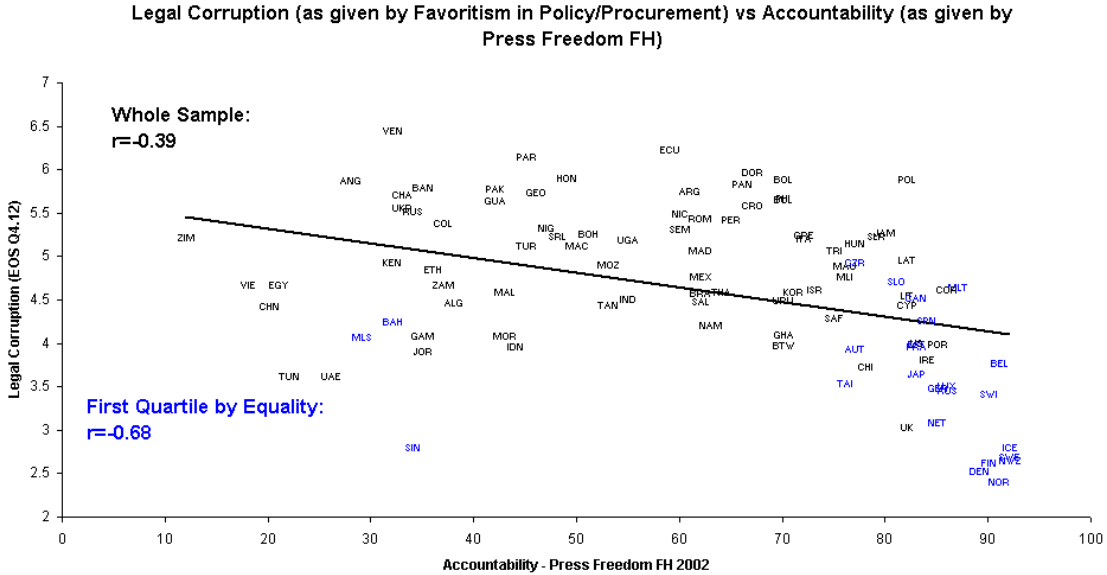


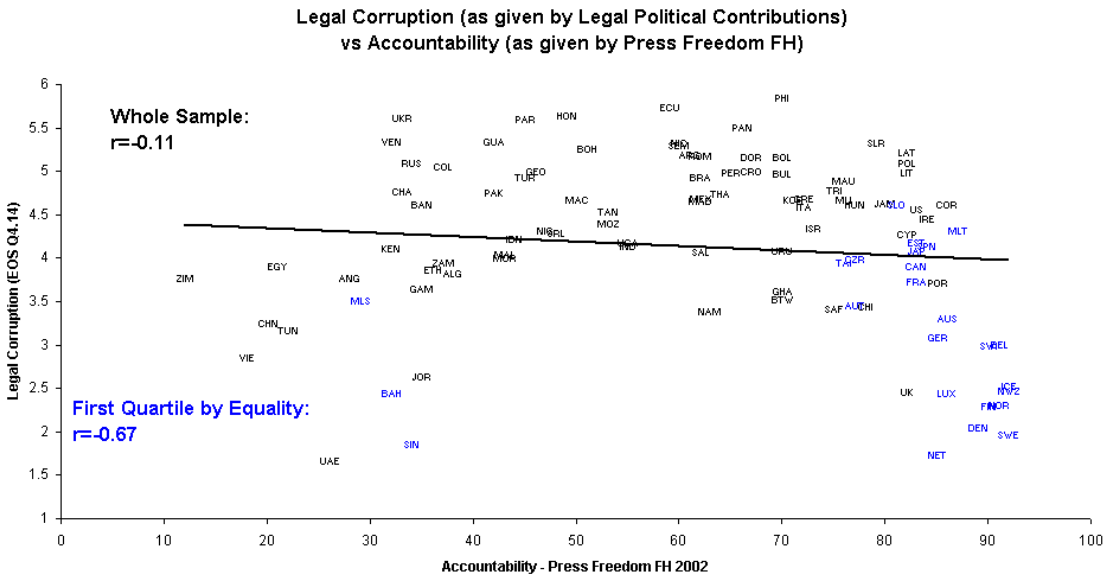


Figure A23: Legal Corruption (as given by Favoritism in Policy/Procurement) vs Accountability (as given by Press Freedom FH) – By Equality.



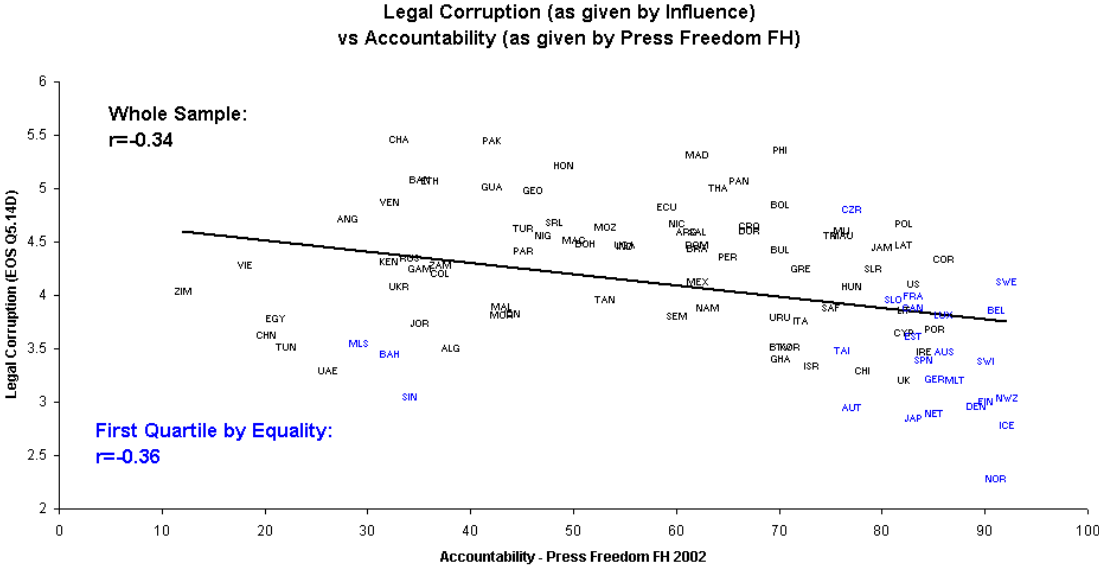
Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used; Accountability data from Freedom House. The partial correlation (for the first quartile by Equality, which is given by EOS Q7.10) does not include clear outliers Bahrain, Malaysia, and Singapore.

Figure A24: Legal Corruption (as given by Legal Political Contributions) vs Accountability (as given by Press Freedom FH) – By Equality.



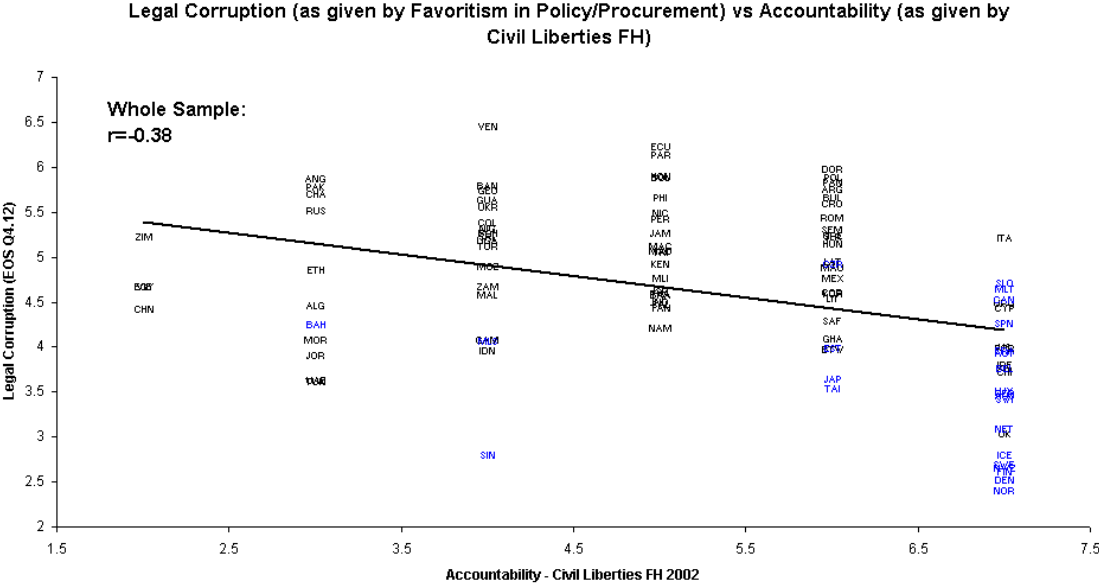
Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used; Accountability data from Freedom House. The partial correlation (for the first quartile by Equality, which is given by EOS Q7.10) does not include clear outliers Bahrain, Malaysia, and Singapore.

Figure A25: Legal Corruption (as given by Influence) vs Accountability (as given by Press Freedom FH) – By Equality.



Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used; Accountability data from Freedom House. The partial correlation (for the first quartile by Equality, which is given by EOS Q7.10) does not include clear outliers Bahrain, Malaysia, and Singapore.

Figure A26: Legal Corruption (as given by Favoritism in Policy/Procurement) vs Accountability (as given by Civil Liberties FH) – By Equality.



Sources: Corruption and Equality data from EOS 2004 - see Appendix for precise description of variables (questions) used; Accountability data from Freedom House.

Figure A27: Legal Corruption (as given by Legal Political Contributions) vs Accountability (as given by Civil Liberties FH) – By Equality.

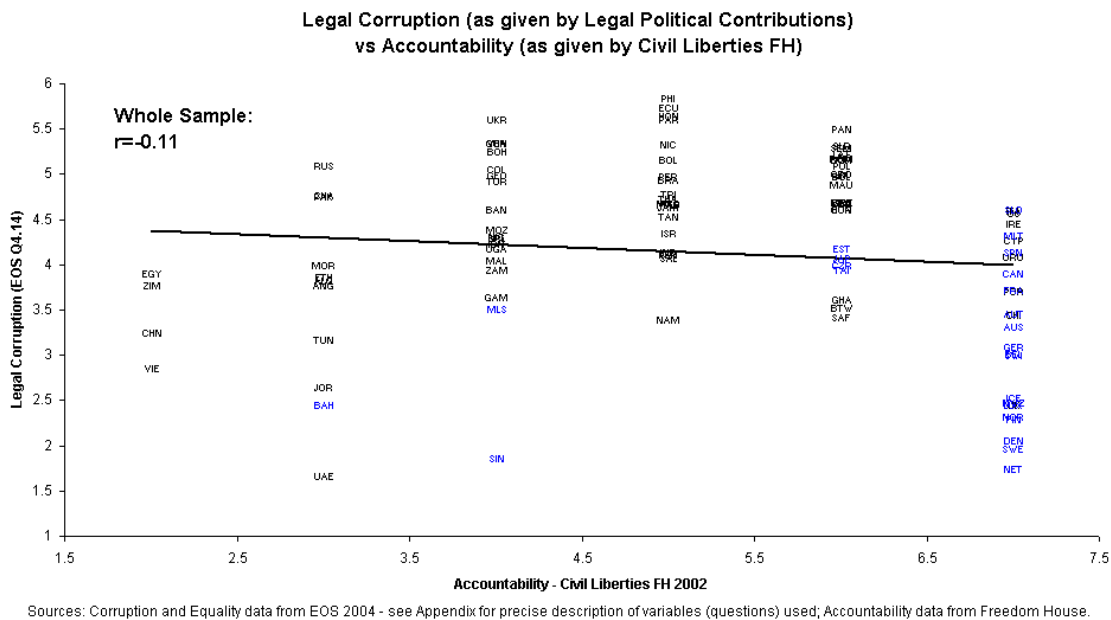


Figure A28: Legal Corruption (as given by Influence) vs Accountability (as given by Civil Liberties FH) – By Equality.

