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An Experimental Study on Corrupt Actions

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Introduction

Every country must confront corruption. It is detrimental to economic, social and political development and violates the fundamental principles of democracy such as equality, fairness, transparency and accountability (Sandholtz and Koetzle 2000; Warren 2006).¹ The large negative impact of corruption on all areas of individuals' lives suggests that it is vital for the well-being of citizens to understand why people act corruptly and why corrupt actions are sometimes punished and sometimes not. This paper asks "What correlates with an individual's propensity to engage in and punish corrupt actions?"

Corruption is typically defined as "the abuse of entrusted power for private gain" (Transparency International 2014), and usually occurs where private wealth and public power overlap (Rose-Ackerman 1999; Banuri and Eckel 2012). A corrupt act typically requires three parties: a corrupter, a corruptee and a disadvantaged party. One party, often a public official, abuses a position of power, often by accepting or demanding a payoff. The second party, often a private party, a corporate body, a representative, or even another public official (e.g. judiciary executive, a police officer etc.) is either forced or to or seeks to make a payoff to the first party. The third party is external to the decisions made but adversely affected by them. For example, if a private party bribes a public official to receive a valuable government contract, then then the private party and the official both benefit from the transaction, but the third party, in this case the wider public, may suffer if the private party is not the best candidate for the contract. Our experiment will consider a setting with three such parties.²

Unfortunately, corruption is difficult to measure directly because it is secretive by nature and takes place in hidden and unofficial settings because all participants are highly interested in hiding their actions. It is common to study corruption indirectly with aggregated data on individual perceptions (e.g. the Corruption Perception Index of Transparency International and

the Control of Corruption Index by the World Bank). Studies using these measures have been criticized on several grounds (Tetlock 2005; Sampford et al. 2006; Olken 2009; Wroe et al. 2013). The measures are usually evaluations of corruption levels in a country and can be influenced by a wide range of different factors such as government delays and incompetence. The data can include a highly subjective evaluation as they often measure the perception of corruption itself rather than the actual level of corrupt activity. Finally, these indices measure corruption using aggregated data at the macro level, although the action itself takes place at an individual level, and the perceptions data cannot reveal within-nation variations between individuals.

We consider the laboratory experiment as a complementary method that identifies the factors that influence an individuals' propensity to engage and punish corrupt actions. Our laboratory experiment was conducted in the U.S. at the University of California, Irvine. The U.S. consistently ranks among the least corrupt countries in the world (19th out of 177 countries) – with a score of 73 out of 100 in 2013 (0 means highly corrupt and 100 means free of corruption, see the Corruption Perceptions Index 2014).

We hypothesize that in environments that are characterized by lower levels of corruption, there is both a lower propensity to engage in and a higher propensity to punish corrupt actions. We therefore focus on the correlations between an individual's propensity to engage in and punish corrupt acts, depending on the amount of bribe and punishment and certain socio-demographic characteristics such as gender, religion, field of study, income, work experience, time spent in other countries, and experience with corruption.

Our experiment follows the work of Alatas et al. (2009) and Cameron et al. (2009) in which people confront a common bribery problem. The sequential-move game consists of three persons in which two players can act corruptly to increase their own payoff at the expense of a third player. The third player, the victim, is also allowed to punish the first two players at a cost to herself. We consider punishment as an endogenous choice that occurs if the victim decides to incur the cost associated with punishment. Thus, we are able to examine both the incentives to engage in corruption and the incentives to punish corrupt behavior. Understanding the motives of actors to punish others is important since societal control of corruption often relies on an individual bringing the act to the attention of enforcement officers (Cameron et al. 2009). Similar corruption experiments have been run in India, Indonesia, Singapore and Australia. Aside from the study of Banuri and Eckel (2011), who conducted their laboratory experiments in the US (Texas), and Pakistan, there are no studies that analyze the propensity to engage and punish corrupt actions of U.S. citizens. Our study involves one-shot behavior and thus allows for more direct comparison with the findings of Alatas et al. (2009) and Cameron et al. (2009).

We draw theoretical predictions from the *homo reciprocans* depiction of human behavior in which actions are derived for motives for reciprocity (Rabin 1993; Bowles and Gintis 2002; Falk and Fischbacher 2006). By using the *homo reciprocans* perspective, we have the opportunity to understand an individuals' propensity to engage in corrupt actions and punish them. In this way, we get the possibility to move beyond the individual and consider how characteristics of the individual and its environment can be leveraged to promote ethical behavior.

We find that 66 percent of the people participating in our experiment bribed, and out of these bribes almost 70 percent accepted the bribes even with knowledge that their actions may be sanctioned by a third person. Males tend to give higher bribes compared to women, and the likelihood of offering a bribe decreases if the participant has work experience and spent time in

other countries. Only 51 percent of the corrupt acts were punished by the citizens. However, we find a relationship between punishment and an individual's field of study. Participants studying economics, engineering and psychology students punished less compared to other students, while students studying public health, computer science, or physical science punished most. However, even if citizens punished, 48 percent chose the lowest payout, although they had the opportunity to use a very effective punishment system for corrupt actions. Interestingly, we also found that a significant minority self-reported having experience with corruption at the university ("cheating on exams") or in the surrounding area such as the workplace of their family. Furthermore, our survey reveals that a lot of the participants are well informed about corruption in the US and all over the world by the media.

Experiments on Corruption and Punishment

Experimental research in political science has blossomed in the last 20 years. As in economics, political scientists have started to use experimentation to test formal models in controlled empirical settings such as in the research fields of voting and elections (Green and Gerber 2003; Kam 2005), media studies and political communication (Huddy and Terkildsen 1993; Ansolabehere et al. 1994), committee and jury decision-making (Ostrom 1998; Guarnaschelli et al. 2000), coordination and cooperation (Palfrey and Rosenthal 1994; Geva et al. 2000) and election fraud (Hyde 2007, 2010).

Experimental research on corruption, in particular, has grown in the last years, but is still in its infancy (Banuri and Eckel 2012). Prior experimental studies have focused on individual determinants of corruption and consider the influence of an individual's gender (Rivas 2012; Frank et al. 2011), religion (Armantier and Boly 2010), culture, amount of wages (Azfar and Nelson 2007; Van Veldhuizen 2013), the amount of bribe, level of monitoring and punishment (Schulze and Frank 2003; Banuri and Eckel 2011; Frank and Schulze 2000).

One of the most important studies analyzing individual decision making in an experimental corruption game was published by Abbink et al. (2006). Their experiment examines the influence of punishment and negative external effects on the incidence of corruption and has been replicated in subsequent work. They model corruption as a variant of the two-person trust and reciprocation game, where the participants play the role of a firm or a public official. The firm has the opportunity to propose a bribe to the public official and has to pay a relatively low transfer fee. If the public official rejects the bribe, both players get their initial endowment, less the transfer fee. If the public official accepts, both payoffs increase significantly. In the second stage of the game, the public official decides between two options: one option significantly increases the pay-off of the firm but has a lower pay-off for the public official. The other option is better for the public official but has a negative effect on the pay-off of other players. They find that the introduction of a negative external effect in the form of a reduced payoff of other players does not seem to significantly influence the amount and frequency of bribing, and that the average bribing amount and frequency of corruption both decrease after the introduction of a punishment mechanism.

Alatas et al. (2009) used the set-up design of Abbink et al. (2006) for experiments run in Australia, India, Indonesia and Singapore. They investigate gender differences in behavior when three persons are confronted with a common bribery problem. The authors demonstrate that Australian women are less likely to offer bribes and more likely to punish corrupt behavior than

men in Australia. In India, Indonesia and Singapore, there are no significant gender differences. They conclude that the gender differences are rather more culture-specific than universal as reported in previous studies. In response, Cameron et al. (2009) find that there is a greater variation in the propensities to punish corrupt behavior than in the propensities to engage in corrupt behavior across cultures. Consistent with the existing corruption indices, the subjects in India exhibit a higher tolerance of corruption than the subjects in Australia. However, the subjects in Singapore have higher levels than the subjects in Indonesia. They also vary their experimental design to examine the impact of a more effective punishment system and the effect of the perceived cost of bribery.

Banuri and Eckel (2011) conduct laboratory experiments in the US and Pakistan, with different levels of corruption, to assess the use and effects of sanctions. They use a repeated three-person game design that varies the sanctioning institution (with and without a citizen option to punish) to study the long-term impacts of a short-term policy shock on bribing behavior. They find that punishment is effective in constraining favor provision, but has no independent effect on bribes. Rather, bribes are reduced as a response to lowered favor provision in the US, but no reduction in bribes is observed in Pakistan. They conclude, that bribery is unresponsive to the Punishment regime, while favors respond similarly to the US. Thus, in the US, the sanction mechanism is viewed as a reinforcement of low corruption norms, and US firms would reduce their level of bribe initiation. In Pakistan, however, since corruption norms are stronger, this would have a reduced impact.

Our experiment design incorporates features of Abbink et al. (2006) and Alatas et al. (2009). A contribution of our paper is that it provides additional data in a U.S. setting, which can allow for cross-country comparison of individuals' corrupt actions in future research. Furthermore, we show that in established democracies corruption is a problem as well. Democracy does not necessarily guarantee honest governments and corruption-free societies (Treisman 2000; Kubbe 2014). Corruption appears regardless of the regime type and scandals turn up frequently in young as well as well-established liberal democracies. In our study, we aim to find out the factors that cause corruption in matured democracies such as the U.S.

Methodology

Design

Similar to the experiments of Alatas et al. (2009) and Cameron et al. (2009), we consider a sequential-move game. Three persons are confronted with a common bribery problem. The included persons are a manager of a firm, a government official, and a citizen who start respectively with a fictitious endowment of 30, 60, and 80 experimental dollars. Figure 1 contains an extensive-form representation of the game, where all of the payoffs are denoted in experimental dollars.

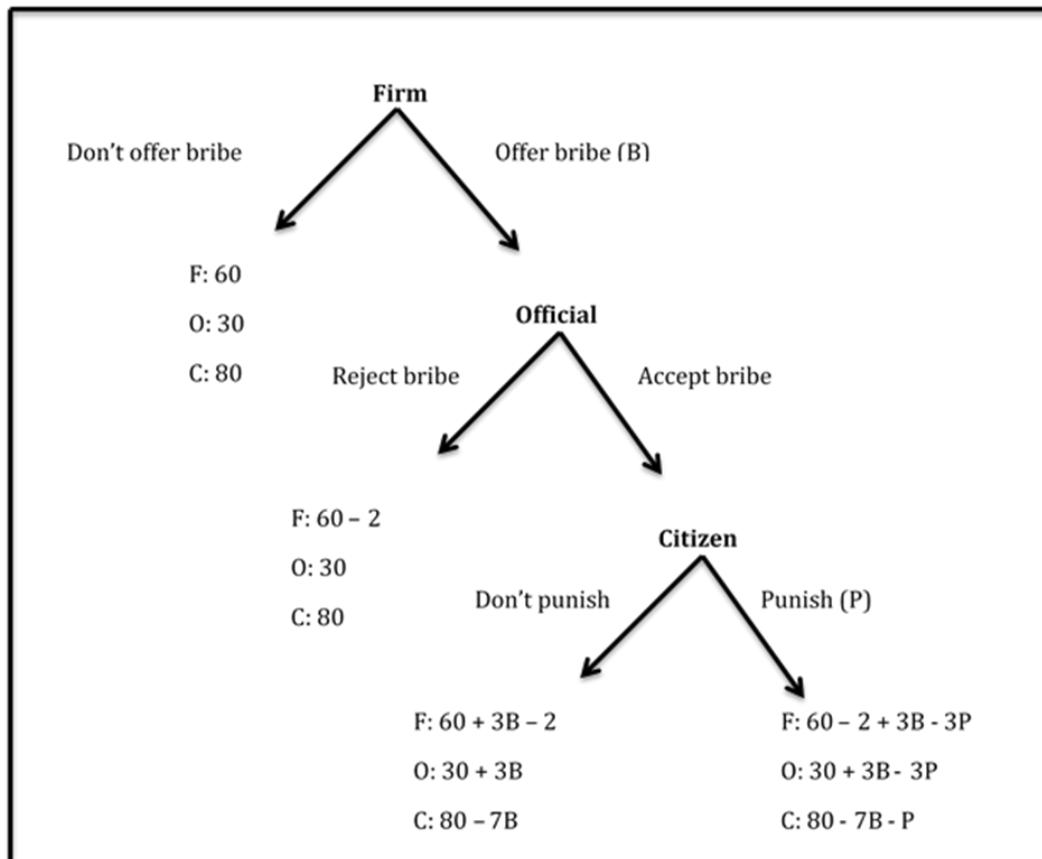
The interaction proceeds in three steps:

1. The firm decides whether to offer a bribe to the government official to avoid complying with an environmental regulation, and if so, how much to offer as the bribe. The bribe can

be either 4 or 8, but making a bribe incurs a transaction cost of 2 irregardless of whether the bribe is accepted.

2. If the bribe is offered, the official can either accept or reject it. Acceptance of the bribe implies favorable treatment of the firm and increases the payoffs of both the firm and the official by $3B$, but decreases the payoff of the citizen by $7B$. Bribery has a significant impact on society. This is captured by the large decrease in the citizen's payoff. The official's payoff also increases by $3B$ even though the amount of bribe paid by the firm is B due to a difference in the marginal utility of income. Because the income earned in the public service is likely to be lower than that earned in private firms, the same amount of money can be assumed to have a lower marginal utility value to the firm than to the official.³
3. The third player, called the citizen, moves last after observing the choices made by the firm and the official. The citizen can punish them for the act of bribery by choosing a penalty amount $P \in [2, 12]$. Punishment is costly to the citizen. It reduces the citizen's payoff by the amount of the punishment P , but it also imposes a monetary sanction on the firm and official by reducing their payoffs by $3P$. Hence, the net benefit to the firm and the official from the corrupt transaction is $3B - 2 - 3P$ and $3B - 3P$ respectively.

Figure 1: The Game Tree



Source: Cameron et al. (2009, p. 33)

To avoid any repeated game effects, the experiment is conducted as a one-shot game. The punishment has no economic benefit to the citizen and so the decision to punish is not affected by the anticipation of possible future economic gains. Hence, with a one-shot game, a comparison of the citizen's willingness to punish corrupt acts across different cultures reveals the differences in the tolerance levels for corruption. The citizen who chooses to punish in a one-shot game would have even stronger incentive to punish in a multi-period game if doing so can deter corruption and decrease the harm they suffer. The one-shot nature of the game also rules out other factors such as signaling, reputation formation and serial correlation in decisions. Each subject participated in the experiment only once and played only one role. The subjects playing the three roles were grouped anonymously in the experiment to avoid conscious or unconscious signaling.

Similar to Alatas et al. (2009) and Cameron et al. (2009), we decided to use emotive terms such as “bribe” and “punishment” in the instructions presenting a deviation from the standard practice of using neutral language in economics experiments. However, since the aim was to simulate a real-life corrupt transaction, loaded language is used. As indicated in Harrison and List (2004, p. 1022), “it is not the case that abstract, context-free experiments provide more general findings if the context itself is relevant to the performance of subjects.”⁴

Sample and Procedure

The experiment was conducted at the Experimental Social Science Laboratory at the University of California, Irvine. From the questionnaire at the end of the experiment (see below), we obtain socio-demographic information about the subjects. Subjects were largely bachelor and master students from different fields of study. 366 subjects took part once in the experiment. The sample consisted of 63 percent females ($n = 229$) and 37 percent males ($n = 1$ for 37), the average age was 20.3 years (std. dev. = 1.87). The participants were mainly students from economics (18%), biology (13%), engineering (12%), public health (8%), psychology (7%) and pharmacy (6%). Of this group, 33% are non-religious, 25% Catholic, 11% Protestants, 9% Buddhist, 7% Atheists and 15% other. The average monthly income is \$642 (std. dev. = 1958.74). 61% of the participants ($n = 224$) have had a job on an average of 17 months (std. dev. = 20.42). The average participant spent 24 months (std. dev. = 55.56; median = 2 months; mode = 1 month) living in other countries. 17% are experienced in corruption, this means that they have been in contact with corruption personally in their workplace or at university. In contrast to this, 65% of the students are well informed about corruption including that they have heard about corruption via friends / family or mass media such as TV, newspaper or radio. 28% have never been in contact with corruption that means they have never been involved or heard about corruption. 24% of the participants attempt to work in the private sector, 22% in public sector, however, 55% do not know at the time of the experiment (see appendix).

Each session lasted approximately 30 minutes and consisted of at least 15 subjects who, on entering the room, were randomly assigned to the roles of firms, officials or citizens. Each group was located far apart from the others in a recognizable cluster. Thus, each group could see the members of the other groups, but individual subjects were unaware of which three specific subjects constituted a particular firm-official-citizen trio. At the beginning of each session, each

subject received a copy of the instruction of the game and was told that payoffs are converted into candies. Then, the subjects playing the role of a firm were asked to decide whether or not to offer a bribe. If they chose to offer a bribe, they also had to choose an amount (4 or 8 experimental dollars). The envelopes with the bribe amounts were then collected and distributed by the experimenter to the corresponding officials. After the officials made their decisions, the corresponding citizens were informed by the envelope about whether a bribe was offered and whether it was accepted. The game ended after the citizens decided whether to punish by choosing a punishment amount (2 or 12 experimental dollars).

All the subjects filled out the questionnaire (see appendix). At the end of session, every participant received some sweets as compensation in addition to a fixed \$7 show-up payment. They were told that they can take as much as they want, regardless of their performance.

Hypotheses and Measurement

Our reading of past literature suggests four hypotheses to test. The first two are:

Hypothesis 1: The first two participants of the game acting as firm and official will not engage in corrupt actions.

Hypothesis 2: The third person of the game acting as citizen will punish the firm and official when they behaved corruptly even though such punishment is costly.

We find support for these hypotheses from existing literature. A growing literature shows how social norms and reciprocal relationships constrain money-maximizing behavior (Elster 1989; Green and Shapiro 1994; Bowles and Gintis 2011), and a number of heuristics and biases are found to drive ethical decision-making and behavior (Gigerenzer and Goldstein 1996; Frank 1988; Kluever et al. 2014). An important alternative to the standard *homo economicus* depiction is that of *homo reciprocans*, which portrays the human actor as reciprocal in her interpersonal interactions because she receives non-monetary utility for rewarding fair behavior and punishing unfair behavior (Falk and Fischbacher 2006).⁵ A wide body of evidence suggests that this depiction closely matches behavior in laboratory settings (Fehr and Gächter 2002; Bowles and Gintis 2002). Humans are often willing to punish norm violators even when such punishment is costly and they do not benefit personally (Bowles and Gintis 2002; Carpenter and Seki 2011). Such “altruistic punishment” (Fehr and Gächter 2002, p. 137) can be the primary driving force behind sustaining cooperative norms in a variety of institutional settings. In our experiment, reciprocal actors may punish unfair behavior and the violation of norms of cooperation or fairness. If the firms and officials anticipate this punishment, then they may be deterred from engaging in the corruption altogether.

We also suspect that in environments that are characterized by lower levels of corruption, such as the environment from which our American participants are drawn, individuals are less likely to act corruptly. We expect that individuals’ propensity to engage in corrupt actions are shaped by their everyday general experiences of corruption determined by the social, political, legal and economic systems of the countries they live in. As a result, lower levels of exposure to corruption in daily life may reduce a tolerance of corruption. For a low corrupt ranked country such as the USA, this implies that the firms do not have a high propensity to offer a bribe and in

the case they bribe, the officials will not have a high propensity to accept. Moreover, we expect that if the firms bribe, they will choose the lowest amount of bribe.

Though we cannot directly study the motivations for engaging in corruption in our current experiment design, we do ask the participants at the end of the experiment to select which possible explanation best matches the reasons behind their choices. The firms can select between the following answers if they have bribed: “payoff maximization”, “for the social / economic good of the country (e.g. reduce unemployment etc.)”, “to see the response of the official / citizen” or “other reasons”. If they have not bribed they can choose between “morality,” “to reduce corruption (social cost)”, “profit-maximization (in the long run it is bad for the firm)”, it is “not necessary for firms to bribe”, “equity” or “other reasons”.

If the officials accepted the bribe, then they can decide between the options “necessary for firms to bribe / will be able to help the firm”, “necessary because salaries are low”, “payoff maximization”, “equity”, “game will continue” or “other reasons”. If they refused the bribe, then they can select between the reasons “morality”, “to reduce corruption (social cost)”, “scared of implications / risk”, “payoff maximization”, “fairness”, “bribe too small” or “other reasons”. Responses to these questions may lend additional insights.

We also measured various socio-demographic characteristics of the participants, and we conjecture that certain traits may help predict behavior.

Hypothesis 3:

- (a) The propensity to engage in corrupt actions does not differ across genders, but the propensity to punish does, with women punishing at higher rates than men.
- (b) The first two participants of the game acting as firm and official will engage in corrupt actions if their religious affiliation is Catholicism, Orthodoxy or Islam.
- (c) Economics students will be more likely to engage in corruption than other students.
- (d) Subjects with lower income will engage in and punish corrupt actions.
- (e) Willingness to punish is unrelated to income.
- (f) If the individual has experienced more corruption while working, then she or he will be more likely to engage in corrupt action and not punish.
- (g) If the individual has spent more time outside the U.S., then she or he will be more likely to engage in corrupt action and not punish.

Abbink et al. (2006)⁶ did not find a significant relationship between gender and the likelihoods of offering or accepting bribes, and given that our design is similar, we expect a similar finding. However, there are other studies who find different effects, e.g., Rivas (2012) who finds that women are less corrupt than men. One interpretation, following Gottfredson and Hirschi (1990) is that women are more risk-averse and self-controlled and therefore remain from engaging in corrupt behavior. Another explanation he offers is that women are more sensitive to others’ losses and that is why they choose the corrupt alternative with negative externalities over all the other participants less frequently. Evidence does suggest that women dispense punishment at higher rates (Armantier and Boly 2010). Our (a) prediction follows.

For (b), we also check if there is a relationship between an individual’s religious affiliation and the propensity to offer or accept the bribe (Armantier and Boly 2010; Treisman 2000). For instance, Dreher et al. (2007, p. 448) theorizes that “religion may shape social attitudes towards social hierarchy and family values and thus determine the acceptability, or otherwise, of corrupt practices. In more hierarchical systems (for example, Catholicism,

Orthodoxy and Islam), challenges to the status quo are less frequent than in more egalitarian or individualistic religions.” Religion is measured by seven dimensions (Catholic, Protestant, Islam, Hindu, Atheist, none, other).

Our prediction for (c) is inspired by Frank and Schulze (2000) and Schulze and Frank (2003) who found that economics students are significantly more corrupt than others, not because of their exposure to economic theory but rather because more selfish students self-select into the economics major.

For (d), having low incomes creates a strong incentive to take some extra money in form of bribery (Abbink 2005). Van Veldhuizen (2013) found that increasing the wage of public officials significantly reduces their corruptibility. Experienced low wage public officials accept 91% of bribes on average. In contrast to this, high wage public officials accept 38% and are less likely to choose the corrupt option.

For (e), we suppose that punishing, when it occurs, is done for non-monetary motives that should be unrelated to the subject's income (Bowles and Gintis 2002; Carpenter and Seki 2011). We suspect that an individual's work experience (two dimensions: 0= no; 1=yes) has an influence on her propensity to engage in and punish corrupt actions because she may be more experienced with corruption in the workplace. Similarly, time outside the U.S. may have led to more exposure to corruption. Our (f) and (g) predictions follow.

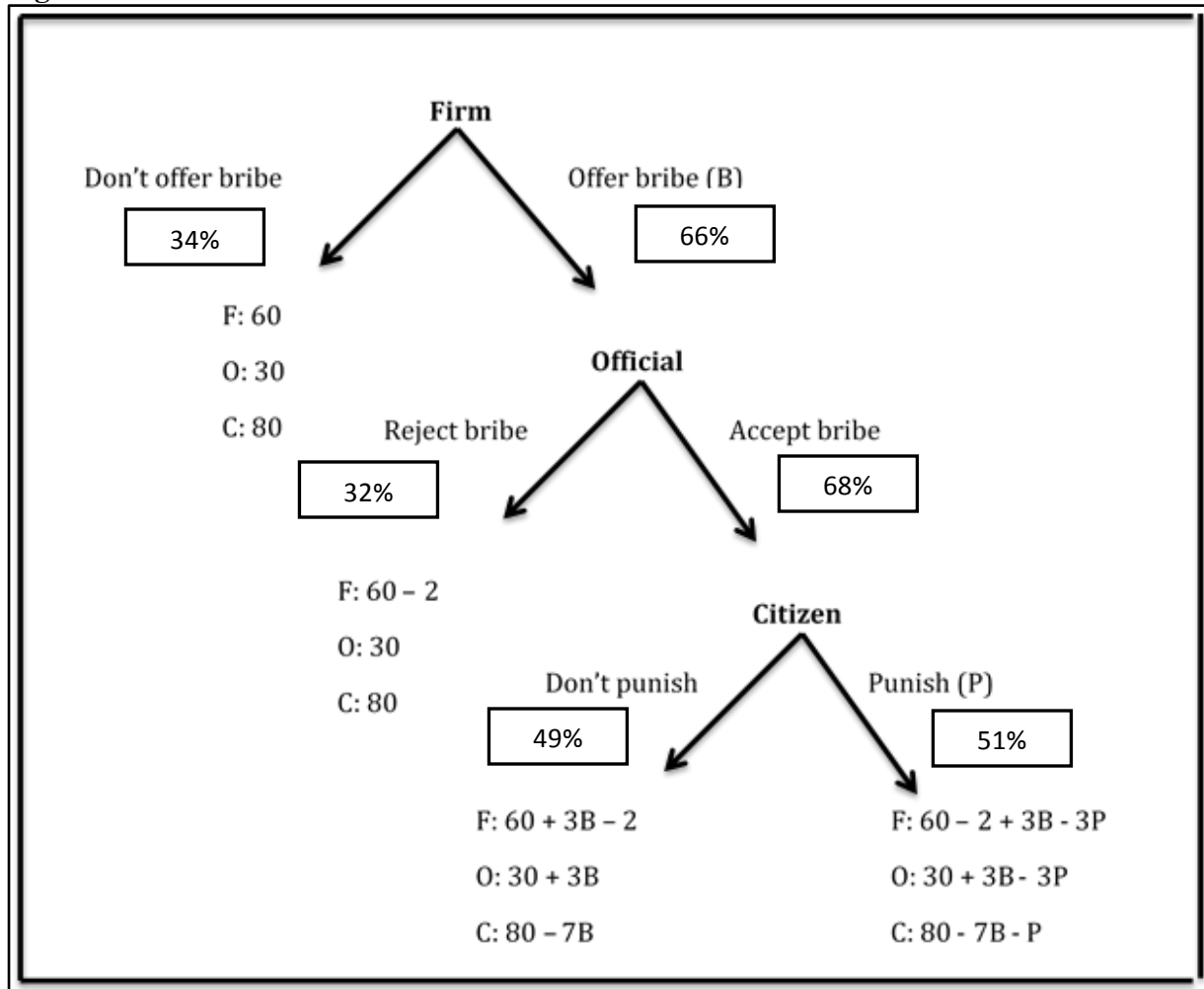
We also ask, if they have heard about or have come in contact with corruption and look for correlations. For this question, we have five dimensions (personally in your workplace, personally at university, via friends / family, via mass media, no contact). We ask them to provide us relevant examples. Additionally, we ask them if they want to work in the private or public sector after graduating to see trends in which positions the participants may work in the future.

Results

Out of 122 participating firms, 80 participants bribed (66%). Out of these were offered bribes, 54 (68%) officials accepted the bribe (see Figure 2 below). This result counters our first hypothesis that the first two participants of the game acting as firm and official will not engage in corrupt actions. More than half of the firms and officials offer or accept a bribe. Thereby, they seem to have a high individual propensity to engage in corrupt actions. Comparing our results with the findings of Banuri and Eckel (2011), at the University of Texas, where bribes were sent in 60 percent of decisions in the No-Punishment treatment and 42 percent of decisions with punishment, we find the propensity to engage in corrupt actions is even higher in California with the punishment treatment. However, we suggest caution in interpreting and comparing these results – especially with regard to representation and generalization of our findings.

To control for an individual's socio-demographic characteristics and an individuals' propensity to engage in and punish corrupt actions, we conduct a logistic regression analysis (see appendix). We find a weak negative significant relationship with an individual's work experience. This implies that the probability to bribe decreases if the participant has work experience. Additionally, there is a weak negative correlation relationship between the propensity to offer a bribe and time spent in other countries. This result illustrates that the probability of offering a bribe decreases if the participant has spent time in other countries, but the result is not significant in the regression model.

Figure 2: The Game Tree with results

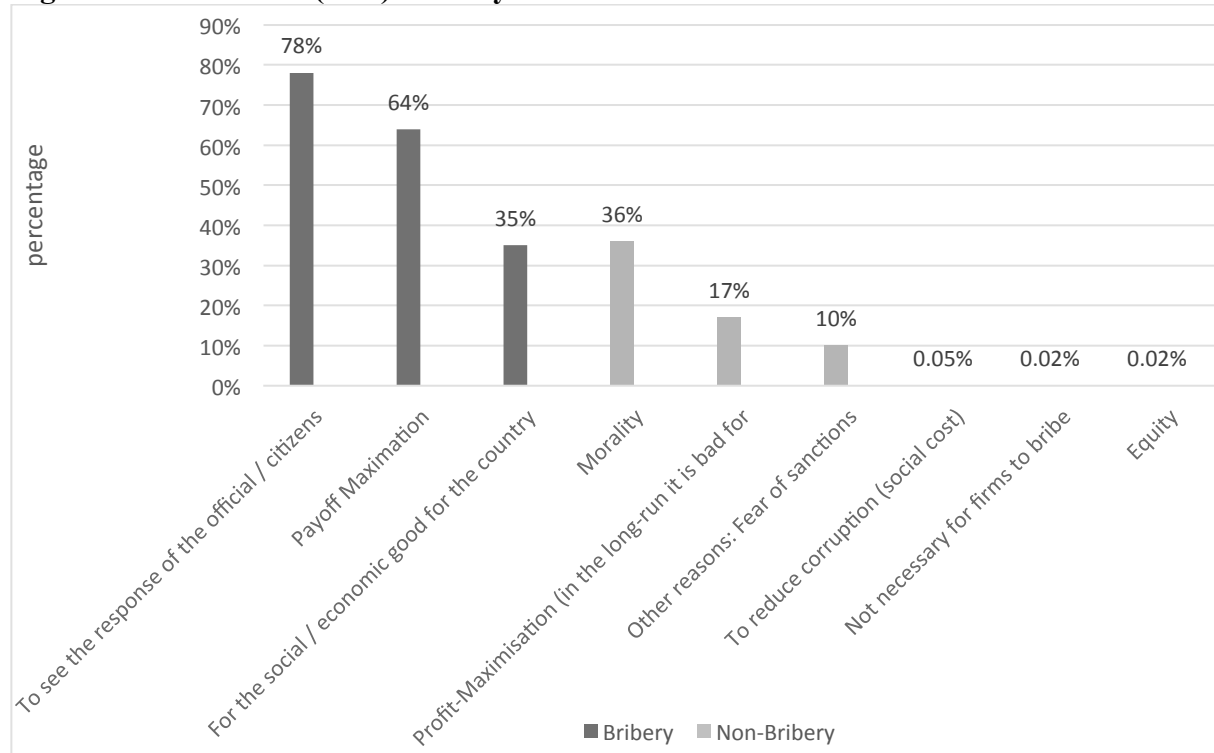


With regard to the amount of bribe, 47% of the bribers (n=37) chose the lowest amount of bribe (4 experimental dollars), while 53% (n=42) chose the highest amount (8 experimental dollars). This finding does not confirm our expectation that the firms will choose the highest amount of bribe. However, the results reveal that males tend to give higher bribes compared to women. While 22 out of 31 men (71%) offered 8 experimental dollars, only 42% of the female offered the highest amount. A regression analysis confirms this finding and previous studies such as of Rivas (2012) and Esarey and Schwindt-Bayer (2014) indicating that women tend to be less risk-averse than men are. All other control variables are not significant in our model (appendix).

Figure 3 (below) indicates that most participants, almost 80%, claimed that they bribed because they were interested in seeing the response of the official and citizens (62 people stated this). We interpret these answers as justifications or rationalizations because people claim that they were not corrupt but merely wanted to see whether the other person is. That might be a typical example of self-serving behavior with a post-hoc rationalization (Bersoff 1999; Mazar et

al. 2008). At least, 51 bribes were justified with profit-maximization (64%), while 28 firms did it for the social / economic good for the country to reduce unemployment, for instance (35%).

Figure 3: Reasons for (Non)-Bribery⁷

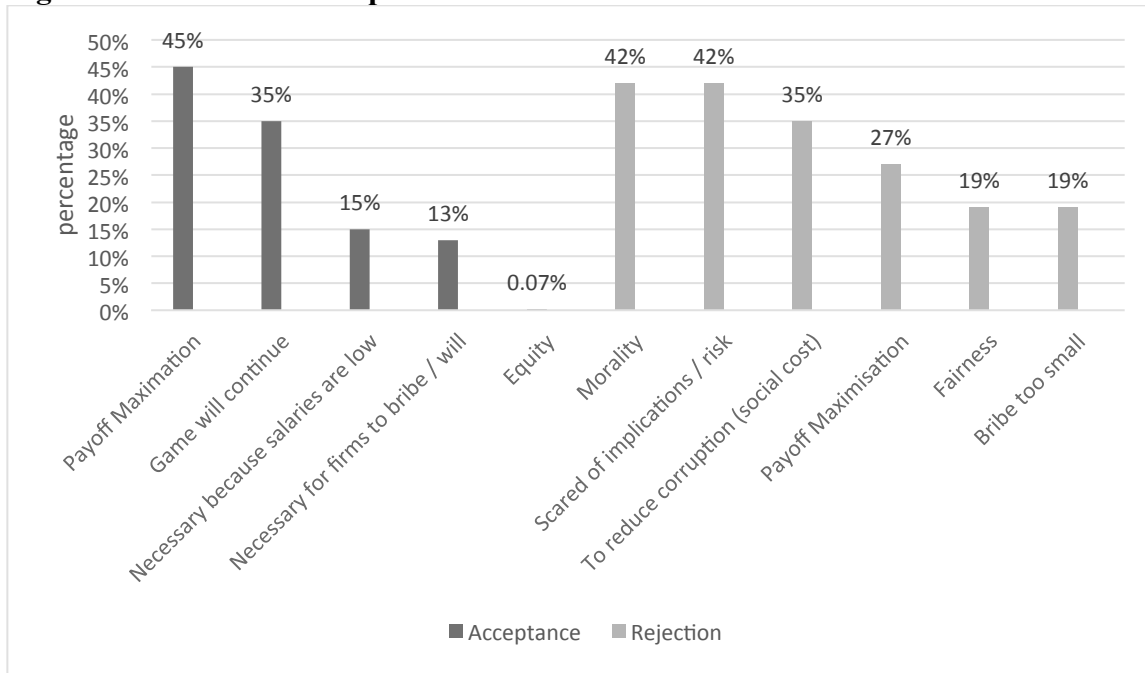


The majority of the non-bribers attributed their decision to ethical reasoning (morality, 15 times). Seven times participants refused to bribe because of profit-maximization and the assumption that in the long-run bribery is bad for the firm, 10% mentioned that they were afraid of sanctions.

When we asked the officials for the reasons for the acceptance of the bribe, the majority, 24 people (45%), stated that they did it because of payoff maximization. However, 35% (n=19) were interested only in continuing the game, while 15% (n=8) mentioned that the salaries were too low. 13% (n=7) accepted the bribe because they believed that it is necessary for the firm to survive.

Asked about the rejection of the bribery, 42% of participants either stated it was because of moral reasons or they were scared of potential consequences and risks (respectively 11 times). However, 9 times the officers (35%) rejected the bribe to reduce corruption and 5 times (19%) because of fairness. Nevertheless, 19% stated that the bribe was too small. A logistic regression analysis indicates that there are no significant relationships between the acceptance of bribes and our control variables (appendix).

Figure 4: Reasons for acceptance

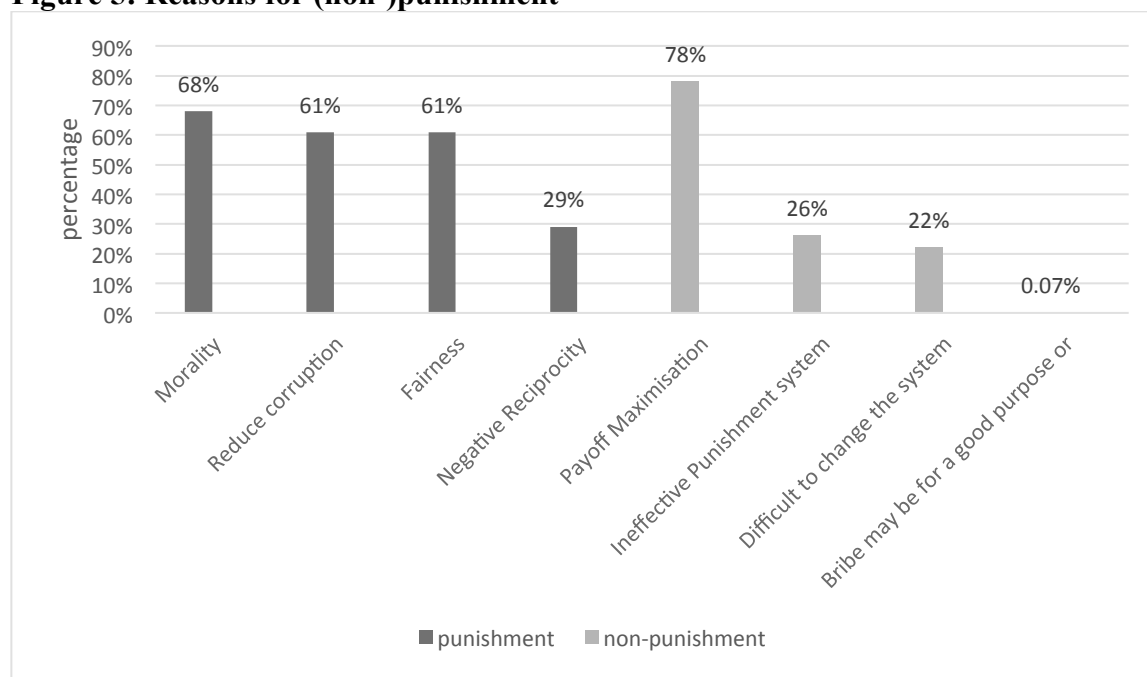


Out of the 55 corrupt acts, 28 were punished by the citizens (51%). This result does not confirm our second hypothesis that the third person of the game acting as citizen is willing to punish the firm and official when they behaved corruptly even though such punishment is costly. Moreover, three-quarter of the punisher were females. 67% of the women did not punish, while out of the men only 34% did not punish. Yet, there is no correlation between punishment and gender, and the other control variables. However, we found a relationship between punishment and an individual's field of study. Participants studying economics (7 out of 11 didn't punish), engineering (5 out of 7) and psychology students (4 out of 4 didn't punish) punished less compared to other students. In contrast to this, 4 out of 5 public health students, 4 out of 6 pharmacy students, 3 out of 4 computer science and 3 out of 3 physical science students did not punish.

However, 48% of the citizens (n=14) who punished, chose the lowest amount of 2 experimental dollars, although they had the opportunity to use a very effective punishment system for corrupt actions.⁸ We could not find any significant relationship between the amount of bribery and the control variables (appendix). Asking for the reasons for punishment, almost 70% stated that they did it because of moral (19 times), 61% (n=17) because of fairness reasons and to reduce corruption. 29% of the participants acting as punishing citizens did it because of negative reciprocity.

Asking the non-punishers for their reasons, 78% said that they did not punish because of pay-off maximization. Seven times (26%) people stated it is because of the ineffective punishment system and six times (22%) because it is difficult to change the system. Even two times people said that bribery may be for a good purpose or may be even necessary.

Figure 5: Reasons for (non-)punishment



Asking the participants for some examples of corruption that they have heard from or been involved, 25% associated corruption with politics and government (“officials take bribes”) – either with the Californian (“California state senator selling weapons”; “Arms Deals with San Francisco state senator”; “California Senators, government officials recently”), Mexican (“In Mexico, law enforcement can be easily bribed”), Chinese, North Korean (“North Korea and its propaganda to its citizens, the mass killings”) or Venezuelan governments. A few respondents just mentioned countries such as Mexico and China. People also mentioned the police several times (“Police asks for bribes to let people go sooner”), the bank system and media in general, nepotism at the workplace and the educational system (high school, university). 15 participants even mentioned that they already cheated on exams and homework to get better grades at the university (“other people cheating on homework”; “buying fake diplomas”; “cheating classmates on exams”; “cheating on tests”; “people have paid for essays”, “bribing teachers to get higher grades”). They also give examples such as “on campus organization, student government”, “it’s hard not to encounter; sharing online pdfs of books” or “messed up how university trips to take so much money from students”. Two persons mentioned to bribe the doctor such as the dentist.

Overall, we find that despite the low corruption score by Transparency International for the United States, American students are quite willing to engage in corruption within the confines of the experiment. We note, however, that there is divergent understanding among the students as to exactly what constitutes corruption. Some students interpret the term broadly, including such actions as “friends talking behind other’s back” or “people losing jobs because of personal feelings”, “most global affairs are driven by resources, but usually humanitarian / “democratic” motives are presented”, “False documentation, volunteer experiences”, “Reduction by winterbreak by 1 week to favor a specific ethnic/cultural group at the expense or ignorance of the other ethnic/cultural groups on campus”, “how some races are unjustly trialed for their crimes while others do not get the same level of punishment,” “government has too much power,

is the power really of the people/ Obama care? not optional,” “Malaysian ‘missing plane,’” “my brother is a lawyer property corruption underhand dealings,” “NSA,” “my father bribes a lot of people to “look away” from his immoral doings,” “friends arguing with roommates about living situations” or “hook-ups at food places.”

Concluding Remarks

Our study has analyzed the propensity to engage in and to punish corrupt behavior in a three-person sequential move-game played by university students in California. We find that almost 70% of the participants took the opportunity to offer and accept the bribe. 78% claimed that they bribed because they were interested in seeing the response of the official and citizens. This answer rather suggests that the participants are reciprocal actors who like playing games and might indicate that the majority of the students bribed because they were curious about the further procedure of the game. However, this believability of what people indicate as their motivations has to be viewed with caution as we as humans typically are very good at coming up with self-serving justifications for our behavior (Epley and Caruso 2004; Haidt 2001; Shu et al. 2011). They participants may have acted selfishly and then later offered an alternative explanation. After all, 64% bribes were justified with profit-maximization, while 35% firms did it for the social or economic good for the country. We have also found that the probability to bribe decreases if the participants have work experiences and increases with the time the participants spent in other countries. Looking at the reasons for non-bribery, the majority of the non-bribers, 36%, explained their decision by ethical reasons. This corresponds with the concept of the homo reciprocans and our assumptions that people are motivated by improving their environment and avoid violating norms of fairness and morality. Males tend to give higher bribes compared to women, with matches prior findings (Gottfredson and Hirschi, 1990; Rivas, 2012).

Officials that rejected bribes reported that their decision was made for moral reasons and fairness or they were scared of potential consequences and risks. They also want to reduce corruption. This is in line with our assumption that people are willing to punish unfair behavior (negative reciprocity), even when such punishment is costly and they do not benefit personally. Among officials that accepted bribes, the plurality, 45%, stated that they did it because of payoff maximization. However, 19 times, 35%, people were only interested in continuing the game, while 8 times it was mentioned that the salaries are so low.

Only half of the corrupt actions were punished by the citizens, revealing that there is variation in willingness to punishment. This is in line with arguments made in previous studies that the extent to which individuals care about others regarding preferences like fairness or morality may depend on whether they are predators or potential victims (Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999).

We found a relationship between punishment and an individual’s field of study. Students of economics, engineering and psychology punished less than students of public health, pharmacy, computer and physical science. Only 48% of the citizens who punished chose the lowest amount of 2 experimental dollars, although they had the opportunity to use a very effective punishment system for corrupt actions. Asking for the reasons for punishment, the majority stated that they did it because of moral and fairness reasons. Some participants punished to reduce corruption and because of negative reciprocity. Asking the non-punishers for their reasons, most of them said that they did not punish because of pay-off maximization. This means

that it is costly for them to punish because of high transactions costs such as going to the police etc. Some people stated it is because of the ineffective punishment system and because it is difficult to change the system.

Our Californian results are in line with the outcome of a survey done by Transparency International on how pessimistic people are that corruption will fall in their country. According to a survey from 2012/ 2013, 60 percent of U.S. people said that corruption has increased over the last two years, while only 10 percent said it has decreased by any amount. While this is an issue worthy of additional research, for a number of reasons we believe that our results reflect attitudes towards corruption rather than corrupt actions or punishment *per se*. Furthermore, the U.S., namely California, is a functioning democracy with a free press and the majority of the participants were very well informed about corruption scandals in their country. Corruption receives, compared to countries with high levels of corruption such as India or Indonesia, more attention in media and was a major issue at that time when the experiments were conducted. The respondents have been sensitized to this issue and were influenced in their attitudes and behavior towards corruption. They mentioned, for example, “the news”, “I see corruption in the news on TV”, “The U.S. government and other countries governments are corrupted” or “we live in a corrupted nation. It will always be that way.” This would be in line with the study of Brunetti and Weder (2003) who find evidence of a significant negative relationship between press freedom and corruption. Moreover, based on the results of Brazil’s anti-corruption program, Ferraz and Finan (2008) show that the media can enable voters to hold corrupt politicians accountable and to reward non-corrupt politicians by reducing informational asymmetries. Gentzkow et al. (2004) also discuss how the rise of the informative press may have been one of the reasons why corruption declined in the US. That is why, the role of media should be included in further research on the propensity to engage in and punish corrupt actions.

Future research on corruption in other countries would also be valuable, particularly since our results suggest that the existing corruption indices might not be fully capturing how individuals behave in corrupt environments. The differences between our results and what one would expect to observe in these countries based on the existing corruption indices suggest that experiments can be used as an alternative methodology for eliciting attitudes towards corruption. Policymakers value more forward-looking measures that assess individuals’ propensity to support anti-corruption policies in the future. Our study suggests that experimental methodology can provide such information. Future research can also compare our results with findings of Alatas et al. (2009) and Cameron et al. (2009) who have already run experiments in countries with high scores of corruption such as India and Indonesia. Subsequent studies can also look at how behavioral ethicists can increase the degree to which behavior in institutions conforms to generally accepted norms and promote ethical behavior and moral capital in societies to prevent corruption in the future.

Appendix

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	365	20.30137	1.871452	17	34

Field of Study	Freq.	Perc.
Economics	66	18.03
Biology	49	13.39
Engineering	43	11.75
Public Health	30	8.20
Psychology	26	7.10
Pharmacy	23	6.28
Computer Science	14	3.83
Political Science	13	3.55
Criminology	13	3.55
English	9	2.46
Sociology	8	2.19
Mathematics	7	1.91
Informatics	7	1.91
Nursing Science	7	1.91
Physical Science	7	1.91
International Studies	5	1.37
Chemistry	4	1.09
Anthropology	3	0.82
Ecology	2	0.55
East Asian Studies	2	0.55
Spanish	2	0.55
Humanities	2	0.55
Art	2	0.55
Comparative Literature	1	0.27
Latino Studies	1	0.27
Visual Studies	1	0.27
Urban Studies	1	0.27
Chinese Studies	1	0.27
Women's Studies	1	0.27
Material Science	1	0.27
Neurobiology and Behavior	1	0.27

Film and Media	1	0.27
Earth System Science	1	0.27
Journalism	1	0.27
African American Studies	1	0.27
Political Science PhD	1	0.27
Undeclared	9	2.46
Total	366	100

Religion	Freq.	Perc.
None	120	32.79
Catholic	90	24.59
Protestant	39	10.66
Buddhist	33	9.02
Atheist	24	6.56
Christian	22	6.01
Other	14	3.83
Hindu	11	3.01
Agnostiker	8	2.19
Islam	5	1.37
Total	366	100

Work Experience	Freq.	Perc.
Yes	224	61.20
No	142	38.80
Total	366	100

Variable	Obs	Mean	Std. Dev.	Min	Max
Income	249	642.8112	1958.747	0	25000

Variable	Obs	Mean	Std. Dev.	Min	Max
Time spent in other countries	325	24.19646	55.56157	0	300

Corruption Experienced	Freq.	Perc.
Yes	57	15.57
No	309	84.43
Total	366	100

Informed about Corruption	Freq.	Perc.
Yes	238	65.03
No	128	34.97
Total	366	100

Contact with corruption	Freq.	Perc.
Yes	264	72.13
No	102	27.87
Total	366	100

Appendix Table 1: Bribe as a Firm

Variables	Dependent Variable: Bribe as a Firm	
	(1)	(2)
Gender	-0.318 (0.418)	
Religion	-0.003 (0.065)	
Field of Study	-0.015 (0.020)	
Work Experience	-0.779* (0.449)	
Time spent in other countries		0.008* (0.005)
Corruption Experience		0.103 (0.541)
Wish to work in private or public sector		0.286 (0.243)
Constant	1.635*** (0.630)	-0.236 (0.611)
Observations	122	108
Pseudo R2	0.030	0.036
Prob > chi2	0.451	0.166

*Note: Coefficients are from a logistic regression model; standard errors in parentheses***
p<0.01, ** p<0.05, * p<0.1*

Appendix Table 2: Amount of Bribe

Variables	Dependent Variable: Amount of Bribe	
	(1)	(2)
Gender	-1.073** (0.477)	
Religion	0.0157 (0.0762)	
Field of Study	-0.0170 (0.0277)	
Work Experience	0.544 (0.464)	
Time spent in other countries		0.002 (0.003)
Corruption Experience		0.278 (0.652)
Wish to work in private or public sector		0.319 (0.294)
Constant	6.577*** (0.648)	5.332*** (0.772)
Observations	79	69
Prob > F	0.090	0.677
R-squared	0.101	0.023

*Note: Coefficients are from a logistic regression model; standard errors in parentheses***
p<0.01, ** p<0.05, * p<0.1*

Appendix Table 3: Acceptance of Bribe

Variables	Dependent Variable: Acceptance of Bribe	
	(1)	(2)
Gender	-0.062 (0.521)	
Religion	0.126 (0.086)	
Field of Study	-0.011 (0.020)	
Work Experience	0.207 (0.494)	
Time spent in other countries		-0.000 (0.004)
Corruption Experience		-0.226 (0.603)
Wish to work in private or public sector		-0.158 (0.320)
Constant	0.245 (0.592)	1.124 (0.812)
Observations	80	72
Pseudo R2	0.025	0.004
Prob > chi2	0.625	0.937

*Note: Coefficients are from a logistic regression model; standard errors in parentheses***
p<0.01, ** p<0.05, * p<0.1*

Appendix Table 4: Punishment of Bribe

Variables	Dependent Variable: Punishment of Bribe	
	(1)	(2)
Gender	0.264 (0.676)	
Religion	0.107 (0.104)	
Field of Study	0.101** (0.0422)	
Work Experience	0.314 (0.597)	
Time spent in other countries		-0.005 (0.004)
Corruption Experience		-0.726 (0.806)
Wish to work in private or public sector		-0.057 (0.357)
Constant	-2.179** (1.038)	0.503 (0.904)
Observations	55	50
Pseudo R2	0.125	0.034
Prob > chi2	0.048	0.500

*Note: Coefficients are from a logistic regression model; standard errors in parentheses***
p<0.01, ** p<0.05, * p<0.1*

Appendix Table 5: Amount of Punishment

Variables	Dependent Variable: Punishment of Bribe	
	(1)	(2)
Gender	-2.791 (2.576)	
Religion	-0.233 (0.405)	
Field of Study	-0.007 (0.100)	
Work Experience	-0.228 (2.227)	
Time spent in other countries		-0.015 (0.020)
Corruption Experience		1.622 (3.241)
Wish to work in private or public sector		-0.904 (1.261)
Constant	10.92*** (3.371)	9.045*** (3.139)
Observations	29	27
Prob > F	0.779	0.673
R-squared	0.068	0.063

*Note: Coefficients are from a logistic regression model; standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*

Appendix Experiments:

Please fill out the following document:

Code Number: _____

FIRM OFFICIAL CITIZEN

1. Age: ___ years
2. Gender: FEMALE MALE
3. Field of Study: _____
4. Semester: _____
5. Work Experience: YES NO
If yes, where and how long (in months): _____
6. Religion: CATHOLIC PROTESTANT ISLAM HINDU ATHEIST
Other _____ None
7. Income: _____
8. Time spent in other countries (months): _____
9. Reasons for your behavior:

FIRM

Bribe?

IF, YES: PAYOFF MAXIMATION FOR THE SOCIAL / ECONOMIC GOOD OF THE COUNTRY (e.g. reduce unemployment etc.)

TO SEE THE RESPONSE OF THE OFFICIAL / CITIZEN

OTHER REASONS _____

IF, NO: MORALITY TO REDUCE CORRUPTION (SOCIAL COST) PROFIT-MAXIMISATION (IN THE LONG RUN IT IS BAD FOR THE FIRM) NOT NECESSARY FOR FIRMS TO BRIBE EQUITY

OTHER REASONS _____

OFFICIAL

ACCEPT?

IF, YES: NECESSARY FOR FIRMS TO BRIBE / WILL BE ABLE TO HELP THE FIRM NECESSARY BECAUSE SALARIES ARE LOW PAYOFF MAXIMATION EQUITY GAME WILL CONTINUE

OTHER REASONS _____

IF, NO: MORALITY TO REDUCE CORRUPTION (SOCIAL COST) SCARED OF IMPLICATIONS / RISK

PAYOFF MAXIMISATION FAIRNESS BRIBE TOO SMALL

OTHER REASONS _____

CITIZEN

PUNISH?

IF, YES: MORALITY REDUCE CORRUPTION FAIRNESS NEGATIVE RECIPROCITY

OTHER REASONS _____

IF, NO: PAYOFF MAXIMISATION DIFFICULT TO CHANGE THE SYSTEM

INEFFECTIVE PUNISHMENT SYSTEM

BRIBE MAY BE FOR A GOOD PURPOSE OR MAY BE NECESSARY OTHER REASONS _____

10. After graduating do you wish to work in the private or public sector?

PRIVATE SECTOR PUBLIC SECTOR DON'T KNOW

11. Hear about or come in contact with corruption?

PERSONALLY IN YOUR WORKPLACE PERSONALLY AT UNIVERSITY
 VIA FRIENDS / FAMILY VIA MASS MEDIA (TV, NEWSPAPER, RADIO) NO CONTACT

If, Yes:

Example: _____

Thank you very much!!!

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Endnotes

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² This situation describes one form of corruption. There are also individual forms of corruption where a power holder individually abuses power (e.g. see Abbink and Ellman 2005; Azfar and Nelson 2007; Barr et al. 2009).

³ Abbink et al. (2006) make a similar assumption in their study. As in their paper, this multiplier also has the additional advantage of helping us prevent negative total payoffs.

⁴ Cooper and Kagel (2003) consider the role of loaded language in signaling games and suggest that the use of a meaningful context might better capture behavior in field settings than the use of neutral language. However, Abbink and Hennig-Schmidt (2006) suggest that neutrally framed experiments are not necessarily less interpretable in terms of a real-life situation than those presented in a context. They find that the use of words like “bribe” do not make a difference in corruption games they have conducted.

⁵ Positive reciprocity describes the degree to which an individual rewards kind actions. It has been demonstrated in experimental settings where contracts are incomplete and workers reciprocate generous wages with high effort, even though there is no way to enforce contracts (Fehr et al. 1993). It also explains why individuals reward trust in the well-known trust game (Falk and Zehnder 2007). Contrary to positive reciprocity, negative reciprocity describes the extent to which the individual punishes unkind actions. It is relevant in bargaining games, for example in terms of willingness to reject unfair offers even at a personal cost (Camerer and Thaler 1995), and for willingness to punish others who violate norms of cooperation or fairness in public goods games (Fehr and Gächter 2000; Carpenter and Seki 2011).

⁶ Alatas *et al.* (2009, p. 17) assume that “In the context of corruption, one possible explanation for the different gender effects that are observed in our data is the differing social roles of women across cultures. In relatively more patriarchal societies where women do not play as active a role in the public domain, women’s views on social issues may be influenced to a greater extent by men’s views. Hence, in such societies, one would expect to see less of a gender difference in behavior towards corruption in comparison to societies where women feel more comfortable in voicing their own opinions.”

⁷ The respondents could give several answers. That is why, the the sum of percentages is over 100%.

⁸ An alternative way of designing a more effective punishment system would be to increase the multiplier on the punishment level chosen by the citizen. However, we chose to increase the punishment options available to the citizens since we are also interested in examining “choice set” effects.