Intermediaries in Corruption: An Experiment*

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Abstract

Intermediaries facilitate exchanges between buyers and sellers. Intermediation activities are an important part of the formal economy. Anecdotal evidence suggests that intermediaries are ubiquitous in corrupt activities; however, empirical evidence on their role as facilitators of corrupt transactions is scarce. This paper asks whether, besides eliminating uncertainty, intermediaries facilitate corruption by reducing the moral or psychological costs of possible bribers and bribees. Indeed, intermediaries might create psychological distance between the briber and the corrupt transaction, and might institutionalize corruption. We address our research question using a specifically designed bribery lab experiment that simulates petty corruption transactions between private citizens and public officials. The experimental data confirm that intermediaries lower the moral costs of citizens and officials and, thus, increase corruption.

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1 Introduction

An intermediary is "an economic agent that purchases from suppliers for resale to buyers or that helps buyers and sellers meet and transact" (Spulber, 1996). Intermediaries specialize in facilitating the exchange between buyers and sellers by getting expertise in sellers' goods and buyers' needs, thus reducing search and bargaining costs while building a reputation for credibility and trustworthiness. Intermediation activities are an important part of the economy. Spulber (1996) computes that in the United States intermediation activities such as retail and wholesale trade, finance and insurance contribute about 28 percent of the GDP.

The present study represents the first step of a broader program of research aiming at investigating intermediation in illegal markets. Theoretically, we should expect more intermediation in illegal than in legal activities, due to the higher transaction costs generated by the need for secrecy and the lack of legal contract enforcement. Indeed, anecdotal evidence suggests that intermediaries are ubiquitous in corrupt activities. Bertrand et al. (2007) find that in India while most applicants pay bribes to get a drivers' license, "there is no evidence of direct bribes to bureaucrats... The extralegal payments are mainly fees to "agents," professionals who "assist" individuals in the process of obtaining their driver's licenses. ... multiple pieces of evidence suggest that agents institutionalize corruption" (p. 1641). Oldenburg (1987) reports that in the land consolidation process in India in the early 1980s intermediaries were necessary due to their "special knowledge of the procedures, access to officials, time to spend, and dirty hands" (p. 527). Fjeldstad (2003) explains the failure of the anti-corruption reform first implemented by the Tanzanian tax authority in 1996 as a result of the fact that many corrupt officers who had been fired either got employed by firms as "tax experts" or set up their own agencies, and, thus, became "facilitators" of corruption. In a similar study conducted in Uganda Fjeldstad (2006) reaches similar conclusions. In Latin America, "coyotes" or "tramitadores" are often found next to government buildings ready to "help" individuals applying for licenses, permits or documents (see Lambsdorff, 2002). In several recent cases of corruption involving large firms bribing public officials in foreign countries, such as the BAE and Chrysler cases, the use of intermediaries is routinely mentioned.[1]

The above studies suggest that middlemen are employed in corrupt transactions be-

[1] A recent survey of Norwegian exporting firms (Søreide, 2006) shows widespread use of intermediaries to by-pass anti-corruption regulations; when asked about the most important quality of an intermediary, 50% of the firms pointed at the intermediary's ties with relevant decision makers. For a legal perspective on the issue of intermediaries used by firms in foreign countries, and related case studies, see Bray (2004).

cause they eliminate uncertainty with respect to whom and how much to bribe, and guarantee the enforcement of the illegal "contract".[2] Note that these two tasks of the intermediary are not specific to illegal activities. Indeed, intermediaries reduce uncertainty and facilitate contract enforcement also in the context of legal transactions.

There are two additional roles that intermediaries may play specifically in corrupt activities: they may reduce the risk of detection of both briber and bribee,[3] and they may lower the moral costs that potential bribers and bribees (might) suffer from engaging in corruption, and thus further facilitate corrupt transactions. Indeed, by acting as professionals with superior information and expertise, and by charging fees – rather than bribes – in exchange for their services, intermediaries might generate the belief that the services in question are neither illegal, nor socially condemned. Such belief may be reinforced by the fact that, by going through an intermediary, the client does not interact with the bureaucrat, and therefore at no time does he or she *actively* engage in bribery. As observed by Oldenburg (1987), the intermediary in corrupt transactions "...lets it be known that he is willing to dirty his hands: not only is he experienced (knows the subtle hints, knows the techniques of passing money), but making use of him also allows the briber to distance himself from the transaction" (p. 527). As a consequence, intermediaries may decrease the moral or psychological costs that potential bribers may suffer from engaging in corruption. Indeed, evidence from specially designed lab experiments (Hamman et al. 2010; Bartling and Fishbacher 2011; Coffman 2011) suggests that individuals behave significantly more selfishly and they are less likely to be reprimanded when they delegate others to carry on their decisions. Evidence from experiments in moral psychology (Paharia et al. 2009; Royzman and Baron, 2002) also show that unethical or harmful actions carried out indirectly rather than directly are judged less unethical than direct actions.[4]

If, as suggested by Bertrand et al. (2007), the presence of an intermediary is interpreted as a signal of institutionalized corruption, it may reduce the moral cost of potential bribers even further, and also reduce the moral cost of public officials.

[2] In economics, the commitment effect of delegation can be traced to Schelling (1960).Schotter et al. (2000) and Van Huyck et al. (1995) provide experimental evidence on the commitment effect of delegation. See also Fershtman and Gneezy (2001) for an investigation of delegation as a committment device in the context of an ultimatum game.

[3] This is due to the intermediary's expertise and knowledge of both the organization of the corrupt system and the people that ought to be involved in the process. The risk of detection of the client may be further lowered because, even if the intermediary is found guilty of bribery, the client could deny responsibility, arguing the intermediary bribed on his own initiative

[4] Section 2.2 provides a review of the experimental studies on this topic.

This paper focuses on this specific role that intermediaries may play in corrupt activities. In particular, we ask whether intermediaries lower the moral or psychological cost that potential bribers and bribees might suffer when engaging in corruption. We use data generated by a specifically designed laboratory experiment that simulates corrupt transactions between "private citizens" and "public officials". While the transaction benefits a citizen-official pair, it generates negative externalities on an "other member of society". By conducting different versions of the game, in which we alter the degree of uncertainty and/or the presence of the intermediary, we are able to isolate the moral cost-reducing role that intermediaries may play in corruption exchanges.

Our results confirm that the presence of the intermediary significantly increases corruption. While we find evidence that this increase is partly driven by the elimination of uncertainty, there is more to the role of the intermediary. In particular, our data suggest that the presence of the intermediary leads to a reduction in the moral or psychological costs of both private citizens and public officials, and thus further increases corruption.

The paper is organized as follows. Section 2 provides an overview of the existing theoretical investigations on the role of intermediaries in corruption, and review the experimental literature on delegation and bribery. Section 3 describes our bribery experiment, theoretical framework and predictions. Section 4 presents our results and Section 5 concludes.

2 A review of the literature

2.1 Theoretical studies of intermediaries in corruption

The economic literature on intermediaries in corruption is surprisingly small. The latest survey book on corruption by Rose-Ackerman (1999) does not cover the problem of intermediation in corrupt exchanges. The recent review of corruption research of Banerjee et al. (2009) highlight that while there exists evidence of the use of agents to intermediate bribe-taking, "the theory of how the use of agents alters the nature of corruption is yet to be developed..." (p.29). Bayar (2005) attempts to fill the gap in the literature by developing a theoretical model that assumes that intermediaries have information with respect to which bureaucrats are corruptible and what the "right" amount of the bribe should be. As expected, he finds that the incidence of corruption is higher and possible anti-corruption policies are less effective in the presence of intermediaries.[5]

[5] Drugov (2010) also briefly considers an informational role of intermediaries.

Bose and Gangopadhyay (2009) propose a model where both deserving and undeserving candidates have to queue in order to apply for and possibly obtain a given service. Undeserving candidates can receive the service only through corruption, and therefore need to be served by a corruptible official. However, individuals learn whether the bureaucrat is corruptible only after queuing and getting to the counter. On the other hand, intermediaries know which bureaucrats are corrupt and by directing each candidate either to a honest or a corruptible bureaucrat, depending on the candidate's type, save the candidates' waiting time. As a result, the number of undeserving candidates who are able to get the service increases and social welfare decreases.

Bjorvatn et al. (2005), inspired by the proliferation of intermediaries which followed a tax agency anti-corruption reform in Tanzania (Fjeldstad, 2003, mentioned above) build a model in which an anti-corruption reform, such as staff rotation in public offices or an increase in punishment of corrupt bureaucrats, increases the uncertainty with respect to whom and how much to bribe. This raises the demand for intermediaries and, if intermediation has some fixed costs (such as loss of an alternative income), may lead to the emergence of intermediaries when none existed before. Therefore, since intermediaries are more efficient in conducting corrupt transactions, an anti-corruption reform may actually cause corruption to increase.

While the above studies focus on the uncertainty-reduction role of intermediaries in corruption, Hasker and Okten (2008) look at two additional tasks of intermediaries: the enforcement of corrupt deals and the reduction of the risk of detection of both briber and bribee. They find that intermediaries decrease the amount of regulation (which is welfare detrimental in the model) and, again, reduce the effectiveness of possible anti-corruption policies. Similarly to Bjorvatn et al. (2005), one implication of their study is that, in the presence of intermediaries, some anti-corruption interventions, such as an increase in the sanctions associated with corruption and the introduction of staff-rotation in public offices, may paradoxically increase corruption. The intuition is that while these policies decrease the number of clients bribing the bureaucrats directly, they increase the number of those who bribe through intermediaries, and the latter effect may overweight the former, leading to an overall increase in corruption.

2.2 Experimental studies of delegation

There are no theoretical studies, to the best of our knowledge, investigating whether, in addition to eliminating uncertainty, enforcing corrupt contracts and reducing the probabil-

ity of detection, intermediaries may lower the moral or psychological costs that potential bribers and bribees may suffer when engaging in corruption. However, recent experimental work in economics highlights the psychological effect of delegation in non-strategic situations. Hamman et al. (2010) find that delegating decisions that involve fairness concerns leads to significant reductions in fair behavior. They conduct several conditions of a repeated dictator game in which dictators had the option to choose an agent from a pool of available agents to make the allocation decision on their behalf. The amounts given to recipients was significantly less when an agent was used (in some cases, giving was reduced to zero). Hamman et al. also find that principals who delegate these decisions do not feel responsible for the outcome. This holds true even if principals know with very high probability that their intermediary will choose an unfair action in the principal's favor.

Bartling and Fischbacher (2011) study responsibility and punishment employing a one-shot dictator game played by a dictator, a delegee and two recipients. The dictator had to choose between a fair outcome, which would give the 4 players equal payoffs, or an unfair outcome, which would give a high payoff to the dictator and the delegee and a low payoff to the recipients. The dictator could make this binary decision himself/herself or delegate the decision to the delegee. Bartling and Fischbacher find that delegating unfair actions leads to less responsibility attribution by recipients towards principals and, therefore, recipients punish principals less often when they delegate, even when this delegation directly leads to an unfair outcome. Coffman (2010) finds similar results using a standard (i.e. non-binary choice) dictator game, where the dictator could choose how much to allocate to the recipient or "sell" the decision right to a delegee. Here, delegation reduces the total amount available for sharing with the recipient, and responsibility attribution is investigated by looking at a third party's willingness to punish the dictator when he/she delegates, as compared to the case when delegation is not allowed. Coffman finds that the third party punishes the dictator significantly less when allocation happens through delegation, even if delegation naturally reduces the amount that could be (and that is) allocated to the recipient.

The above experimental studies have identified "responsibility diffusion" and/or shifting of responsibility as the main channel through which delegation induces more selfish behavior on the part of the delegator, and less punishment by both the victim of the selfish action or a third party. The moral psychology literature has identified an additional channel: delegation leads to *indirect* rather than *direct* harm or unethical behavior, and therefore creates psychological distance between the delegator and the action itself,

and/or the subject harmed by the action, if any. Paharia et al. (2009) investigate moral judgment of unethical acts carried out directly or indirectly by presenting subjects with hypothetical scenarios involving direct and indirect unethical behavior on the part of a another subject/firm and asking them to state how unethical (on an eleven point scale) they deemed each behavior. The authors found that even when the delegee or agent "was a transparent instrument of the primary agent, acting under contract such that the primary agent had full knowledge and control" actions carried out indirectly were judged less unethical than direct actions.[6]

In line with the insights provided by the moral psychology literature, we suspect that the presence of an intermediary may reduce the moral or psychological costs of a potential briber, say a private citizen, as it may create psychological distance between himself/herself and the illegal activity that could potentially damage other people. Contrary to the act of offering a bribe, the act of accepting a bribe is always a direct act, regardless of the presence of the intermediary. Therefore, we do not expect the presence of the intermediary to lower the moral or psychological cost of public officials by creating psychological distance between the official and the illegal activity. However, if the existence of agents who provide intermediation for acts of corruption is seen as a signal that corruption is institutionalized, and therefore not illegal after all, the moral or psychological costs of potential bribees, i.e. the public officials, may also go down.[7]

2.3 Experimental studies of bribery

Experimental studies of corruption represent a growing field of study.[8] Given our main research question, here we provide a brief overview of the experimental evidence on the

[6] Paharia et al. (2009) report results from one of Milgram (1974)'s experiments on obedience. The experiment, involved delegating the act of administering a shock to a victim (a confederate of the experimenter) Milgram found that subjects were more likely to administer the shock when another person could be directed to implement the action from a remote location. Roysman and Baron (2002) presented subjects with pairs of scenarios that involved actions that would harm some people, either directly or indirectly. Subjects were then asked to choose between three options: engaging in the act involving direct harm, engaging in the action involving indirect harm or no preference. The results provides evidence of strong individual preferences for indirect versus direct action harming others. The authors show that such preferences "could not be fully explained in terms of differences in judgments about which action was more active, more intentional, more likely to cause harm, or more subject to the disapproval of others" (p.. 165).

[7] The perceived institutionalization of corruption may also lower further the moral or psychological costs of potential bribers.

[8] See aso Abbink (2006) for the latest survey of experimental studies on corruption.

role that moral costs, or more generally intrinsic, non-monetary motivations, may play in individuals' decision to engage in or abstain from bribery.[9]

Abbink et al. (2002) conducted the first lab experiment designed to investigate people's willingness to engage in bribery. In their repeated game, a briber had to decide whether and how much to offer as a bribe without knowing whether the bribee would be willing to grant him a higher payoff (simulating the provision of the corrupt service) in return and the bribee was free to reject the bribe, accept and grant the higher payoff, or accept but not grant the higher payoff. Under one of the treatments, whenever a bribe was offered and a corrupt service provided by a briber-bribee pair all the other briber-bribee pairs in the same experimental session incurred a loss. If less bribery was observed under this treatment as compared to a treatment where corruption did not generate negative externalities on others, it could be taken as evidence that individuals take account of the harm corrupt exchanges cause to others when deciding how to act. The authors found no evidence of externality effects on individuals' decision to engage in bribery, suggesting that possible moral costs associated with harming others while engaging in bribery do not prevent individuals to act corruptly.

Abbink and Hennig-Schmidt (2006) conducted a variant of the bribery game introduced by Abbink et al. (2002). They asked whether presenting the game as a specific bribery situation rather than using abstract terms would affect individuals' willingness to engage in corruption. In real life, the act of offering or accepting a bribe denotes both the breaking of a formal rule and the violation of a social norm; therefore, if less bribery was observed when the game was presented as bribery rather than in abstract terms, it could be taken as evidence that the intrinsic motivations associated with rule-breaking behavior have a significant effect on corruption decision-making. Abbink and Hennig-Schmidt (2006) found no evidence of framing effects in their bribery game.

Barr and Serra (2009) designed a simpler bribery game aimed to simulate one-shot petty corruption transactions, where "private citizens" - the potential bribers - and "public officials" - the potential bribees - interacted for the provision of a corrupt service that would benefit the briber-bribee pair but would harm *passive* "other members of societies". The new design had the objective to isolate moral costs associated with harming others or with doing something framed as rule-breaking, from other motives, such as individuals'

[9] Recent experimental studies of corruption whose main research question is not the investigation of moral costs in corruption, are: Alatas et al. (2009a, 2009b), Armantier and Boly (2010), Banuri and Eckel (2010), Barr and Serra (2010), Cameron et al. (2009), Lambsdorff and Frank (2010), Rivas (2008) and Serra (2010).

desire to build trust in repeated interactions and negative reciprocity. Barr and Serra (2009) found evidence of both externality effects and framing effects, suggesting that moral or psychological costs from harming others and/or breaking a rule/social norm do have a significant effect on bribery decision-making, at least in the context of every-day life petty corruption transactions between citizens and officials, which may harm innocent others (rather than one's competitors) and where trust and reciprocity do not play a role. It is these transactions that we investigate in the present study. Indeed, the functions of the intermediaries appear to be especially desirable when the relationships between potential bribers and public officials are sporadic and fragmentary.

3 The bribery experiment

Our bribery experiment builds on the design of Barr and Serra (2009). The game simulates a petty corruption exchange in which a private citizen must decide whether and how much to offer a public official as a bribe in exchange for a corrupt service, such as a reduction in tax, preferential treatment in a court hearing, or speedier admission to hospital. In turn, the public official has to decide whether, and how much, to accept as a bribe. If a bribe is offered and accepted, the briber-bribee pair benefits, while an "other members of society" (OMS) incurs a cost. The game therefore involves citizen-official-OMS triples.[10] Roles and group-matching are randomly assigned and play is anonymous and one-shot.

As mentioned above, the experiment is designed to simulate a petty corruption scenario in which both sides of a petty corruption exchange tend to be executed more or less simultaneously, rendering trust, reciprocity and repetition unimportant and excludable from the design. Although repeated corrupt exchanges relying on trust and reciprocation, and usually taking place between public officials and businesses, are certainly important, many corrupt transactions take place only once between public officials and ordinary citizens.[11] These exchanges, while referred to as 'petty', are nevertheless a cause for concern

[10] The design by Barr and Serra (2009), instead of citizen-official-OMS triples, had 5 citizen-official pairs, and 5 passive OMS. Each OMS would suffer a monetary loss for every bribe that was offered by a citizen and accepted by the matched public official. In other words, the loss would be zero if no citizen-official pair engaged in corruption, and largest if all citizen-official pairs engaged in corruption. Although this design might better represents the social costs of corruption, it also introduces possible inter-dependency across individuals' bribery decisions, and therefore requires a larger sample size for accurate statistical analysis. Sampling considerations and budget constraints led us to follow Cameron et al. (2009), and design a game where there is only one passive victim of corruption per briber-bribee pair.

[11] For an example of experimental studies of repeated corrupt transaction relying on trust and reciprocity see Abbink, Irlenbush and Renner (2002).

as they harm others who are unable to engage in bribery themselves. This motivates the decision to have a passive other member of society in the game, i.e., a subject who suffers a monetary loss when corruption takes place between a citizen and a public official but cannot engage himself in bribery and does not have means to punish those who act corruptly.[12] Moreover, given our primary objective to investigate non-monetary costs associated with corruption, we do not introduce any risk of external detection and punishment in the game.[13]

In order to investigate the role that intermediaries may play in reducing uncertainty and the moral costs of possible bribers and bribees, we designed and conducted three versions, or treatments, of the game: 1) a baseline treatment; 2) an intermediary treatment; and 3) a treatment with no uncertainty (and no intermediary). In the baseline treatment, the private citizen has to decide whether and how much to offer as a bribe to the matched public official without knowing the minimum bribe that the matched public official is willing to accept. Therefore, it is possible that a citizen is willing to engage in bribery but the bribe offered ends up being too low for the matched official. It is also possible that a corruptible official is matched with a citizen who is unwilling to engage in corruption, or vice versa. As a result, corruption may not take place, despite the willingness to engage in corruption of either one or both the parties involved in the exchange.

In the intermediary treatment, we introduce a fourth player: the intermediary. Therefore the game is played by four players: a private citizen, a public official, an intermediary and an OMS. The intermediary has information about the lowest bribe that the official is willing to accept, if any, and communicates this information to the matched citizen. Therefore, in this case, the citizen has to decide not if and how much to offer as a bribe,

[12] As discussed in Section 2.3., the decision to have a passive player rather than other briber-bribee pairs suffer the costs of corruption also excludes negative reciprocity from the possible motivations of individuals' deciding to engage in corruption.

[13] While proving the external validity of our design is virtually impossible, some conclusions can be drawn from the study of Barr and Serra (2010), which relies on a bribery game similar to the one used in this paper and on a sample of students coming from over 40 countries characterized by markedly different levels of corruption. Barr and Serra (2010) show that behavior of the undergraduate students in the game could be predicted by the level of corruption in the students' home countries, as proxied by Transparency International's Corruption Perception Index. This suggests that the way participants played the bribery game reflected the anti-corruption social norms and values that they internalized in the countries where they grew up. Indeed, the level of corruption is the only country characteristic that significantly predicts students' bribery behavior in the game. The fact that corruption in the game correlates with corruption in the participants' home countries can be interpreted as an indication that the setting reproduced in the lab is indeed measuring individuals' propensities to engage in corruption in "real life."

but whether or not to pay a fee that would allow the intermediary to offer the lowest bribe that the official would be willing to accept. We do not allow the intermediary to participate in the determination of the bribe or the fee, or to refuse to participate in the transaction. Moreover, we provide the citizen with complete information with respect to how the fee paid to the intermediary is determined and how it would be used to bribe the official. Therefore, similarly to Paharia et al. (2009) we render the intermediary a "transparent instrument" of the public official, and, contrary to Hamman et al. (2010), Bartling and Fishbacher (2011) and Coffman (2011) we exclude diffusion of responsibility from the possible reasons why the presence of the intermediary may lower individuals' psychological costs. It could be argued that in reality the intermediary has an active role in determining the fee demanded from private citizens, and therefore "diffusion of responsibility" may further lower the moral or psychological costs of potential bribees. These observations make our design and results conservative.

In order to isolate the effect that the intermediary may have in reducing moral costs of citizen and official from the effects of no uncertainty, in the third treatment we do not have an intermediary but we eliminate uncertainty by providing each citizen with information about the minimum acceptable bribe (MAB) of the matched official. Therefore, in this case, similarly to the case with intermediary, the citizen has to decide not whether and how much to offer as a bribe, but whether to pay or not the official's MAB.

Note that in the intermediary and in the no uncertainty treatments, if the official knew that his MAB would determine the exact bribe that would be paid by a (compliant) citizen, the official would probably overstate his MAB, affecting in this way the probability that corrupt exchange takes place. In order to eliminate the resulting confounds from the experiment – since our aim is to identify the uncertainty-reducing and the moral cost-reducing roles of the intermediary only – we do not inform the official of the fact that his stated MAB will be communicated to the citizen. In this way, the officials' MABs are perfectly comparable across treatments, and serve as proxies of the officials' moral costs associated with corruption. We believe that our design complies with the norm of experimenter honesty, since at no point did we lie to our experimental subjects.[14] Moreover, by preventing participants in the role of public officials from behaving strategically by reporting a false MAB, our design induced truthful rather untruthful play.[15]

[14] This design element is similar in purpose to a block design seen in other experimental research. In these, subjects play several multi-period stages and learn the instructions for each stage only when the stage is reached. Examples include, but are not limited to, Brandts and Cooper (2006), and Hamman, Weber, and Woon (2010).

[15] In this aspect, our design is similar to that of Ellingsen et al. (2010), which elicit recipient beliefs in

3.1 Theoretical framework

In this section we present a theoretical framework that allows us to formally investigate the impact that the presence of the intermediary might have on individuals' propensities to engage in bribery, as well as the size of the bribe, if we assume that the intermediary decreases the moral costs of those involved in corruption. Note that here we do not aim to build a general model of intermediaries in corruption, but rather provide a simple illustrative theoretical framework that is as close as possible to the experimental treatments that we run, and therefore allows us to generate clear predictions on individuals' behavior in the game.

Citizens and officials play in pairs. Each private citizen receives an initial endowment, Y_c, and may offer to pay a bribe, b, in exchange for a corrupt service, the value of which to him is v. However, he suffers a moral cost m_c if he offers a bribe (even if the corrupt transaction does not eventually take place). The moral cost could be generated by the awareness that offering a bribe is illegal, and/or that if corruption takes place other people might suffer from it.

The private citizens' final payoff then equals: Y_c if he does not offer a bribe, $Y_c - m_c$ if he offers a bribe that is rejected and $Y_c + v - b - m_c$ if he offers a bribe that is accepted. The moral cost m_c is distributed uniformly on $[0, \overline{m}_c]$, $\overline{m}_c \geq v$.[16]

Each public official receives an initial endowment of Y_p. If the corrupt transaction takes place, he suffers a moral cost m_p. Again, this non-monetary cost could be the result of the knowledge that accepting a bribe is illegal and/or that corruption will generate negative externalities on others. The public official's final payoff is: Y_p if he is not offered a bribe or he is offered but does not accept it and $Y_p + b - m_p$ if he accepts the bribe. The moral cost m_p is distributed uniformly on $[0, \overline{m}_p]$, $\overline{m}_p \geq v$.

3.1.1 Baseline

In the baseline, each private citizen (public official) knows his own moral cost, but does not observe the moral cost of the public official (private citizen); he only knows that it is distributed uniformly on $[0, \overline{m}_p]$ ($[0, \overline{m}_c]$), with $\overline{m}_p \geq v$ ($\overline{m}_c \geq v$).

a Dictator game and communicates these beliefs to the dictator before the dictator makes the allocation decision; yet, in order to elicit truthful beliefs, the authors do not inform the recipients that their beliefs will be communicated to the dictator.

[16] The uniform distribution is assumed only to obtain simple closed-form solutions. None of the results qualitatively depends on this assumption.

In this setting, if the private citizen decides to offer the bribe, he solves the problem $\max_b (v-b)\Pr\{b - m_p > 0\} - m_c$. The optimal bribe is equal to $\frac{v}{2}$ and his payoff is $\left(v - \frac{v}{2}\right)\frac{v}{2\overline{m}_p} - m_c = \frac{v^2}{4\overline{m}_p} - m_c$. He decides to bribe if this payoff is greater than 0, that is, if $m_c < \frac{v^2}{4\overline{m}_p}$ which happens with probability $\frac{v^2}{4\overline{m}_p\overline{m}_c}$. The probability with which the public official is willing to receive some bribe is that of m_p being lower than v, that is, $\frac{v}{\overline{m}_p}$. He accepts the bribe $\frac{v}{2}$ if his moral cost m_p is lower which happens with probability $\frac{v}{2\overline{m}_p}$. The probability that both the private citizen and the public official are willing to engage in corruption is $\frac{v^3}{4\overline{m}_p^2\overline{m}_c}$ and the probability that the corrupt transaction will be successful is $\frac{v^3}{8\overline{m}_p^2\overline{m}_c}$.

3.1.2 No uncertainty

Now, the private citizen decides whether to offer or not a bribe knowing the moral cost of the official m_p. Thus, he offers a bribe exactly equal to m_p if his resulting payoff is positive, that is, if $m_c < v - m_p$. The average bribe in this case is $E[m_p \mid m_c + m_p \leq v] = \frac{v}{3}$. Since the private citizen now responds to a given m_p, a refusal to pay this bribe means either that he is corruptible but the bribe is too high or that he is not corruptible. The probability that corruption happens is equal to the probability that the citizen pays the bribe, which is $\Pr\{m_c + m_p \leq v\} = \frac{v^2}{2\overline{m}_c\overline{m}_p}$. The probability that the public official is willing to receive some bribe is that of m_p being lower than v, that is, $\frac{v}{\overline{m}_p}$.

3.1.3 Intermediary

Here we introduce a third player: the intermediary, whose role is to observe the bribe that the public official would accept (which is equal to his moral cost) and communicate it to the private citizen. However, we also assume that, in addition to providing information to the private citizen, the intermediary lowers the moral costs of private citizen and public officials. In other words, we assume that in the presence of intermediary the moral cost of the private citizen becomes αm_c, $\alpha \in (0,1)$ and the moral cost of the public official becomes βm_p, $\beta \in (0,1)$. Then, the moral cost of the private citizen is distributed uniformly on $[0, \alpha\overline{m}_c]$ and the moral cost of the public official is distributed uniformly on $[0, \beta\overline{m}_p]$. Assume that $\alpha\overline{m}_c > v$, that is, some citizens do not want to engage in corruption even at zero bribe.[17]

[17] Without this or the opposite assumption we need to distinguish between the two possible cases without any qualitative change for the results.

The intermediary informs the private citizen of the moral cost of the official m_p. Thus, the private citizen now offers a bribe equal to m_p if his resulting payoff is positive, that is, if $m_c < v - m_p$. The decrease in the moral cost of public officials has two opposite effects on the average minimum bribe that they are willing to accept. First, it lowers the bribe demanded by the public officials who were already corruptible in the absence of the intermediary. Second, it induces some previously incorruptible public officials to become corruptible and since they have a relatively high moral cost, the bribe they demand is relatively high. If $\beta\overline{m}_p < v$, that is, all public officials are now corruptible, the latter effect is smaller, and, as a result, the average bribe is $\frac{v\frac{\beta\overline{m}_p}{2} - \frac{(\beta\overline{m}_p)^2}{3}}{v - \frac{\beta\overline{m}_p}{2}}$ which is lower than $\frac{v}{3}$. If instead $\beta\overline{m}_p \geq v$, the two effects cancel out and the average bribe is $E[m_p \mid m_c + m_p \leq v] = \frac{v}{3}$, which is the same as with no intermediary and no uncertainty.[18]

If $\beta\overline{m}_p < v$, the probability that the public official is willing to receive some bribe is that of m_p being lower than v, that is, 1. The probability that corruption happens is equal to the probability that the citizen pays the bribe. This probability is equal to $\Pr\{m_c + m_p \leq v\} = \frac{v - \frac{\beta\overline{m}_p}{2}}{\alpha\overline{m}_c}$ (and it is $\frac{v^2}{2\alpha\overline{m}_c\beta\overline{m}_p}$ if $\beta\overline{m}_p \geq v$).

3.2 Predictions

Assuming that, as modelled above, the intermediary both eliminates uncertainty and reduces the moral costs of private citizens and public officials, and that the official's stated minimum acceptable bribe (MAB) reflects his moral cost associated with corruption, we can make the following prediction:

Prediction 1: The average MAB is the same under uncertainty and under no uncertainty (with no intermediary). The presence of the intermediary can make the average MAB lower or higher; however, if most officials are corrupt even without the intermediary, the presence of the intermediary is likely to decrease the average MAB.

Indeed, the presence of the intermediary reduces the moral cost of the public officials which has two opposing effects on the average MAB: 1) the officials that are corrupt even without the intermediary now have a lower MAB; and 2) some of the officials who were not corrupt without the intermediary now become corrupt, and since they have a higher moral cost, their addition to the pool of corrupt officials increases the average MAB. The total effect can go either way. However, if most officials are corrupt even without the

[18] This result relies on the distribution being uniform and the effect of the intermediary being proportionate.

intermediary, the first effect is stronger and the average MAB is likely to be lower than without intermediary.

Prediction 2: The bribe paid in the case of a corrupt agreement is on average higher under uncertainty than under no uncertainty and in the presence of the intermediary since the citizen does not know the official's MAB and is afraid of offering a too low bribe. Comparing the average bribes paid under no uncertainty and in the presence of the intermediary amounts to comparing the average MABs (see Prediction 1). If most officials are corrupt even without the intermediary, the average bribe is likely to be lower in the presence of the intermediary.

Prediction 3: The proportion of public officials willing to accept a bribe is the same under uncertainty and under no uncertainty; it is higher in the presence of the intermediary. The higher proportion of "corruptible" officials in the presence of the intermediary is due to a reduction in the officials' moral costs.

Prediction 4: The proportion of citizens paying a bribe[19] – which also indicates the proportion of corrupt pairs, i.e., the occurrence of corruption – is lowest under uncertainty and highest in the presence of the intermediary.

The comparison between uncertainty and no uncertainty (with no intermediary), indicates that corrupt exchanges are less likely to take place under uncertainty because the bribe that citizens believe they need to pay may be too high for some of the citizens. Also, there is a chance that some citizens are simply unlucky and face an official that demands a higher bribe that what they offered. When the uncertainty is eliminated, the decision to engage in bribery is based on the observed MAB rather than the predicted "optimal bribe" and, therefore, some of the citizens who would abstain from bribing under uncertainty (or would be unlucky) now engage in bribery (and succeed for sure). In the presence of the intermediary, besides the increase in the proportion of citizens paying a bribe as a consequence of no uncertainty, we also observe a further increase in citizens paying the requested bribe due to a reduction in the citizens' moral cost associated with corruption. The proportion of corrupt pairs rises further due to the increase in the proportion of corruptible officials caused by the reduction in their moral costs. Finally, if the presence of the intermediary decreases the average MAB, this leads to a further reduction in the requested bribe, and consequently, to a further increase in the proportion of citizens paying a bribe, i.e., an increase in the proportion of corrupt pairs.

[19] In the baseline, these are the citizens who offered a bribe that was accepted by the matched officials. In the no uncertainty treatment these are the citizens that paid a bribe equal to the MAB of the matched officials.

3.3 Parameterization and implementation

We conducted the experiment using Experimental Currency Units, or ECU, where $1ECU$ equaled .25 USD. We set each player's endowment $Y_c = Y_p = Y_{OMS} = 35$, and the value of the corrupt service to the citizen v equal to 16. In the experiment, we also assumed that in order to provide a corrupt service, the official would have to sustain a cost K, which we set equal to 5. This represents the sum of the expected cost of being caught and punished, the cost of supplying the service, and the cost of any efforts made to reduce the likelihood of capture. We chose to make this cost deterministic rather than stochastic in order to reduce the potential impact of risk preferences on observed behavior. We also assumed that the citizen would have to sustain a small cost, E, when offering a bribe, no matter whether the bribe is accepted or rejected. In the Intermediary treatment E is the commission to be paid to the intermediary in order to use the intermediation service. In order to keep the monetary incentives constant across treatments, we set E equal to 1 in all treatments.[20]

If citizen and official engaged in corruption, the matched OMS would suffer a loss of 15 and therefore would end up with 20. Our design and parametrization imply that corruption is, by design, inefficient.

In the baseline private citizens could choose to offer any bribe $b \in \{1, 2, 3, \ldots 20\}$. In all treatments, public officials, instead of responding only to the particular bribe offered to them, had to state whether they would accept or reject each of the possible bribes, $b \in \{1, 2, 3, \ldots 20\}$, while knowing that whichever one of their responses turned out to be pertinent would determine their earnings. This full strategy elicitation enabled us to identify public officials who would reject any possible bribe – i.e. the "incorruptible" officials – and the minimum acceptable bribe (MAB) for the others. Put another way, the application of the strategy elicitation improved comparability as it ensured that each individual placed in the public official role responded to the same set of possible stimuli. Had their responses been directly elicited, the actual stimulus applied to each public official would have varied in accordance with the bribe offer made by his or her briber.[21]

[20] For simplicity we did not include K and E in our theoretical framework. Their inclusion does not alter the comparative statics and our general predictions.

[21] Whether and to what extent the strategy elicitation affects observed behavior is the subject of an ongoing debate. The empirical evidence is mixed. Güth et al. (2001), Shotter et al. (1994) and Brosig et al. (2003) find that the strategy elicitation induces a significantly different behavior as compared to the direct elicitation. Using different experimental designs, Cason and Mui (1998), Brandts and Charness (2000) and Oxoby and McLeish (2004) find no differences. The complexity of the experiment may be a crucial factor: the difference increases with the complexity of the game (Brandts and Charness, 2000).

In the no uncertainty treatment, citizens were informed of the MAB of their matched officials, and had to decide whether or not to pay a bribe equal to the MAB. In the intermediary treatment, citizens were also informed of the MAB of their matched officials, and had to decide whether to commission the intermediary to pay a bribe equal to the MAB to the official. Note that while the bribe offered by a citizen in the baseline, if any, could be either accepted or rejected by the matched official, the bribe paid by a citizen in the treatments with no uncertainty would be automatically accepted by the official.

At the end of the session, after each player received information about the final outcome of the corruption transaction, we administered a brief questionnaire.

We conducted 18 experimental sessions, involving a total of 409 students at Florida State University. Table 1 displays the distribution of sessions across the three treatments, and the total number of participants in the roles of citizen, official, OMS and intermediary.

Table 1:

Experimental Treatments

	N. of sessions	Citizens	Officials	OMS	Intermediaries	Total
Treatment:						
Baseline	5	39	39	39	0	117
No Uncertainty	6	44	44	44	0	132
Intermediary	7	40	40	40	40	160
Total	18	123	123	123	40	409

All sessions were conducted at the xs/fs lab at Florida State University. The software used for this experiment was programmed in Z-Tree (Fischbacher, 2007). Each session lasted about 50 minutes and average earnings were 19 USD, which included a 10 USD participation fee.

4 Results

In this section we first report our findings with respect to individuals' behavior in the different treatments of the game (Section 4.1) and then present insights from post-experiment questionnaire data (Section 4.2) on individuals' perceptions of the fairness of their decisions in the game, conditional on corrupt behavior.

Our game is simple so any effect is likely to be small. For a recent survey of experimental comparisons of strategy versus direct-response method, see Brandts and Charness (2009).

4.1 Experimental Findings

Table 2 provides a first comparison of individuals' decisions to engage in bribery under uncertainty, under no uncertainty and in the presence of the intermediary. As expected, we see that the officials' MAB under uncertainty and under no uncertainty are statistically the same. On the other hand, the officials' MAB in the presence of the intermediary is significantly lower, which is what we would expect if the intermediary lowers the moral cost of the officials *and* most officials were corrupt even without the intermediary.[22]

The second panel of Table 2 compares the average bribes paid by the citizens; therefore, under uncertainty the average is computed only for the bribes that were offered by the citizens and accepted by the matched officials.[23] In accordance to Prediction 2, we find that the bribe paid by the citizen is on average the highest under uncertainty, and the lowest in the presence of the intermediary, which is, once again, what we would expect given that most officials are corrupt even without the intermediary.

The third panel of Table 2 suggests that the presence of the intermediary, but not the mere elimination of uncertainty, significantly increases the proportion of corruptible officials. This is exactly what we would expect if the presence of the intermediary reduces the moral costs of the public official (see Prediction 3). Finally, the fourth panel of Table 2 indicates that, in accordance with Prediction 4, the proportion of corrupt pairs is the largest in the presence of the intermediary. Although the difference in the proportion of corrupt pairs under no uncertainty and in the presence the intermediary is not quite significant (the p-value from the corresponding Chi-square test is equal to 0.115), the significant difference that we observe when we compare the uncertainty and the intermediary treatments suggests that eliminating uncertainty is not the only channel through which the intermediary facilitates corruption. Given the experimental design, and the equivalence of monetary payoffs across treatments, the only other possible channel is the reduction in the moral costs of the public officials - which leads to an increase in the proportion of corruptible officials and a reduction in the MAB - and the reduction in the moral costs of the private citizens.[24]

[22] This is exactly what we observe in Panel 3 of Table 2.

[23] The average bribe offered under uncertainty by all citizens, including those whose bribes were rejected, is 8.75.

[24] Given the additional subject in the treatment with the intermediary it is the case that the sign of the comparative statics we observe between treatments is also consistent with the predictions generated by the ERC model of Bolton and Ockenfels (2000). However, the ERC model would not be consistent with the magnitude of the behavioral change that we observe in the presence of the intermediary. More precisely, the additional subject makes the average payoff higher; therefore, any gain generated by a corrupt transaction

Table 2:

Individuals' decision to engage in corruption

	Baseline	No Uncertainty	Intermediary	All
MAB of corruptible officials (no mistakes of MAB<5)	**8.14**	**7.63**	**6.68**	**7.43**
p-value from ttest (one-tailed): Baseline vs. Intermediary	0.009***			
[p-value from two-tailed rank-sum test]	[0.030**]			
p-value from ttest (one-tailed): Baseline vs. nUnI	0.232			
[p-value from two-tailed rank-sum test]	[0.493]			
p-value from ttest (one-tailed) Intermediary vs. nUnI	0.030**			
[p-value from two-tailed rank-sum test]	[0.139]			
Bribe paid (no mistakes)	**8.84**	**7.43**	**6.72**	**7.44**
p-value form ttest (one-tailed): Baseline vs. Intermediary	0.000***			
[p-value from two-tailed rank-sum test]	[0.000***]			
p-value from ttest (one-tailed): Baseline vs. nUnI	0.010**			
[p-value from two-tailed rank-sum test]	[0.024**]			
p-value from ttest (one-tailed): Intermediary vs. nUnI	0.068*			
[p-value from two-tailed rank-sum test]	[0.230]			
% officials willing to be bribed	**92.31%**	**95.45%**	**100%**	**95.93%**
p-value (Chi-Square): Baseline vs. Intermediary	0.074*****			
p-value (Chi-Square): Baseline vs. nUnI	0.548			
p-value (Chi-Square): Intermediary vs. nUnI	0.172			
% corrupt pairs	**51.28%**	**88.64%**	**97.50%**	**79.67%**
p-value (Chi-Square): Baseline vs. Intermediary	0.000***			
p-value (Chi-Square): Baseline vs. nUnI	0.000***			
p-value (Chi-Square): Intermediary vs. nUnI	0.115			

Note: 15% of the citizens in the baseline mistakenly offered a bribe lower than 5 (but greater than 0). We exclude these citizens from the analysis. The citizens who paid a bribe lower than 5 in the remaining treatments did so as a result of mistakes made by the matched officials. 11% of the officials mistakenly stated that the minimum bribe they would be willing to accept was lower than 5 (but greater than 0). We exclude these officials and their matched citizens from the analysis. *** p<0.01, ** p<0.05, * p<0.1.

Note that the 51% of corrupt pairs under uncertainty does not reflect the proportion of citizens who attempted to engage in corruption by offering a bribe, but were unsuccessful, and the proportion of officials who were corruptible but were matched with citizens who decided not to offer a bribe. The proportion of pairs "willing to engage in corruption" under uncertainty, i.e. the pairs where the citizen offered a bribe and the official was willing to accept a bribe, no matter whether the corruption exchange actually took place, was 79.49%. Our design does not allow comparing the pairs "willing to engage in bribery" across treatments, since in the no uncertainty treatments we can only observe the proportion of officials willing to engage in bribery and the proportion of matched citizens willing to pay the specific MAB. Therefore, by looking at the proportion of corrupt pairs

represents a smaller deviation from the average payoff, making both citizen and official more willing to engage in corruption. However, given our parameterization, the difference in average payoffs between the treatments with and without intermediary is very small and is equal to 0.42 ECU or $0.10, which is a 1% shift in the average. Therefore, any increase in corrupt behavior that we might observe in the presence of the intermediary is unlikely to be driven by such a small difference in average payoffs.

in the no uncertainty and in the intermediary treatments we might be under-reporting the proportion of pairs willing to engage in bribery. Nevertheless, the proportion of corrupt pairs in the presence of the intermediary (97.50%) is significantly higher (with a p-value of 0.000) than the proportion of pairs willing to engage in bribery under uncertainty.

In Table 3 we conduct three regression analyses, where the dependent variable is respectively: 1) a dummy equal to 1 if corruption took place, and 0 otherwise; 2) the MAB of the corruptible public officials; and 3) the bribe paid when corruption took place. In all regressions we control for participants' demographics and we cluster the standard errors to account for possible within-session interdependencies.

Table 3:

The effect of the intermediary on actual corruption, MAB and bribe paid

	Dependent variable: Dummy equal to 1 if corruption takes place	**Dependent variable:** MAB of "corrupt" officials	**Dependent variable:** Bribe paid
	Probit	**OLS**	**OLS**
	(1)	(2)	(3)
Baseline (Uncertainty)	-0.66***	1.42**	1.84***
	(0.000)	(0.022)	(0.003)
No Uncertainty (no intermediary)	-0.28***	0.95***	0.55
	(0.003)	(0.009)	(0.140)
Constant		4.98***	10.03***
		(0.001)	(0.004)
Demographics	Yes	Yes	Yes
Observations	123	116	99
R-squared	0.28	0.062	0.155

Note: Robust pvalues in parentheses. Standard errors have been adjusted to account for clustering within sessions. In column (1) we report marginal effects of continuous variables and the effect of a change from 0 to 1 for dichotomous variables; *** p<0.01, ** p<0.05, * p<0.1. The citizens and officials who made mistakes, i.e. those with b<5 and MAB<5 are excluded from the regression analysis.

Our estimates confirm the results obtained in Table 2. We find that the presence of the intermediary induced significantly more citizen-official pair to engage in corruption, as compared to both the case with uncertainty, and the case with no uncertainty and no intermediary. Moreover, the intermediary reduced the MAB of the public official. By eliminating uncertainty and reducing the MAB, the presence of the intermediary reduced the size of the bribe paid by citizens as compared to the case with uncertainty. The bribe paid is however not significantly lower than under no uncertainty and no intermediary.

In order to investigate if the intermediary facilitates corruption simply by reducing the moral cost of the official, and therefore reducing the MAB, or if the possible reduction in citizens' moral costs also plays a role, we conduct probit regressions on the citizens' decision to pay a bribe, restricting the analysis to the two treatments with no uncertainty.

In this way, when looking at the citizen's decision to pay a bribe, we are able to control for the MAB of the public official with whom each citizen was matched.

Table 4:

The effect of the intermediary on the citizen's propensity to pay a bribe

	Dependent variable: Citizen's decision to pay the requested bribe	**Dependent variable:** Citizen's decision to pay the requested bribe
	Probit	Probit
	(1)	(2)
Intermediary	0.12***	0.06**
	(0.000)	(0.011)
Official's MAB		-0.01***
		(0.009)
Demographics	Yes	Yes
Observations	84	84
Psuedo R-square	0.12	0.40

Note: Robust pvalues in parentheses. Standard errors have been adjusted to account for clustering within sessions We report marginal effects of continuous variables and the effect of a change from 0 to 1 for dichotomous variables; *** p<0.01, ** p<0.05, * p<0.1. The citizens and officials that made mistakes, i.e those with b<5 and MAB<5 are excluded from the regressions.

The estimates in the first column of Table 4 confirm that the presence of the intermediary significantly increased the likelihood that citizens paid a bribe. In column 2 we control for the official's MAB. The estimates show that, as expected, the citizen's propensity to engage in bribery is lower if the MAB of the official is higher. Although the coefficient of the intermediary treatment dummy gets lower in magnitude when controlling for the MAB, it stays significant at the 5 % confidence level, suggesting that the citizens' higher propensity to bribe in the presence of the intermediary was only partially driven by the lower bribe demanded by the officials. Since the monetary incentives were identical in the two treatments, we can conclude that the intermediary induced more citizens to pay a bribe also by reducing their moral or psychological costs associated with corruption.

4.2 Insights from questionnaire data

At the end of the experimental session, we asked citizens and officials whether they agreed or disagreed (on a 5-item Likert scale) with the statement "I made fair decisions in the experiment", and we asked the other members of society whether they agreed or disagreed (on a 5-item Likert scale) with the statements "The citizen made fair decisions in the experiment" and "The official made fair decisions in the experiment".

Table 5 compares citizens' and officials' perceptions about the fairness of their decisions in the game, and OMS's perceptions about the fairness of the decisions of their matched

citizen and official, across treatments. The analysis is restricted to citizens and officials who acted corruptly in the game, and their matched OMS.

Table 5:

"Fair decisions" across treatments

(1 – 5 scale; 1=strongly disagree, 5=strongly agree)

	Baseline	No Uncertainty	Intermediary	All
Citizen believes that he/she "made fair decisions in the experiment" (if the citizen acted corruptly)	**3.38**	**3.49**	**3.95**	**3.62**
p-value from ttest (one-tail): Baseline vs. Intermediary	0.016**			
p-value from ttest (one-tail): Baseline vs. nUnI	0.348			
p-value from ttest (one-tail): Intermediary vs. nUnI	0.029**			
Official believes that he/she "made fair decisions in the experiment" (if the official acted corrupty)	**3.58**	**3.67**	**3.75**	**3.67**
p-value form ttest (one-tail): Baseline vs. Intermediary	0.259			
p-value from ttest (one-tail): Baseline vs. nUnI	0.376			
p-value from ttest (one-tail): Intermediary vs. nUnI	0.371			
Citizen believes that his/her decisions "will be seen as fair by the OMS" (if the citizen acted corruptly)	**1.94**	**1.85**	**2.33**	**2.04**
p-value from ttest (one-tail): Baseline vs. Intermediary	0.076*			
p-value from ttest (one-tail): Baseline vs. nUnI	0.341			
p-value from ttest (one-tail): Intermediary vs. nUnI	0.035**			
Official believes that his/her decisions "will be seen as fair by the OMS" (if the official acted corruptly)	**2.53**	**2.14**	**2.32**	**2.32**
p-value form ttest (one-tail): Baseline vs. Intermediary	0.769			
p-value from ttest (one-tail): Baseline vs. nInU	0.072*			
p-value from ttest (one-tail): Intermediary vs. nInU	0.227			
OMS believes that the citizen "made fair decisions in the experiment" (if the citizen acted corruptly)	**2.53**	**2.74**	**3.08**	**2.85**
p-value form ttest (one -tail): Baseline vs.Intermediary	0.068*			
p-value from ttest (one -tail): Baseline vs. nUnI	0.298			
p-value from ttest (one -tail): Intermediary vs. nUnI	0.119			
OMS believes that the official "made fair decisions in the experiment" (if the official acted corruptly)	**2.60**	**2.77**	**2.69**	**2.71**
p-value form ttest (one -tail): Baseline vs.Intermediary	0.405			
p-value from ttest (one -tail): Baseline vs. nUnI	0.341			
p-value from ttest (one -tail): Intermediary vs. nUnI	0.604			

The statistics in the first panel of Table 5 confirm our experimental finding of lower moral costs in the presence of the intermediary. In particular, citizens (but not officials) who acted corruptly in the game were significantly more likely to see their decisions as fair in the presence of the intermediary than in both under uncertainty and under no uncertainty and no intermediary. Conversely, there is no statistically significant difference in citizens' perceived fairness between the baseline and the no uncertainty treatment.[25]

[25] Note that citizens and officials may or may not consider their decision as fair based not only on the

In an attempt to restrict citizens' and officials' perceptions of fairness to the effect of their decisions on the OMS's payoff, we also asked them whether they agreed with the statement "My decisions in the game will be seen as fair by the OMS". The results, presented in the second panel of Table 5, suggest that in the presence of the intermediary citizens (but not officials) who acted corruptly were more likely to think that their decisions in the game would be seen as fair by the OMS - although in all treatments the average answers indicate general disagreement with the statement.

Finally, in the third panel of Table 5 we report the OMS's perceived fairness of the decisions of the matched citizens and officials, conditional on citizens and officials acting corruptly. The striking result is that the presence of the intermediary induced the OMS to judge the citizen's (but not the official's) decision to engage in corruption, and harm them, less harshly.

Overall, citizens' and OMS' answers to our "fairness questions" confirm that the presence of the intermediary lowered the moral or psychological costs of potential bribers by allowing the briber to distance himself from the corrupt transaction and the possible *unfair* harm caused on third parties. Our results are in line with the moral psychology findings of less moral judgment of indirect actions that harm others (Roysman and Baron 2002) or involve unethical behavior (Paharia et al. 2009) as compared to direct actions. The fact that we do not find the same result for the public officials is not surprising, given that the presence of the intermediary does not render accepting a bribe an indirect action. As discussed in previous sections of the paper, in our setting the decline in the moral cost of the public official is rather due to the fact that the intermediary acts as a signal that corruption is institutionalized, and therefore more acceptable. Therefore, our questionnaire data cannot capture the channel through which the intermediary lowered the moral cost of corrupt public officials.

5 Conclusions

In the last two decades, the problem of corruption has received increasing attention among academics and practitioners around the world. Theoretical and empirical investigations

effect of their actions on the OMS's payoff - which decreases in case of bribery, no matter the size of the bribe - but also on the effect of their decision on the payoff of their partner in corruption - which increases in the case of bribery, but also depends on the size of the bribe. We endeavoured to at least partly address this problem by conducting ordered probit regressions on the citizens' and officials' answer to the fairness question while controlling for the size of the bribe (or the official's MAB). The estimates (not reported here) are consistent with the comparative statics presented in the first panel of Table 5.

into its causes and consequences have rapidly proliferated. Since the seminal work of Shleifer and Vishny (1993), how corruption is "organized" has been recognized as an important determinant of both the existing level of corruption and how damaging corruption is to a country's economy and to society as a whole. This paper focused on one aspect of the organization of corruption that has received little attention in the literature: the presence of agents that act as intermediaries between potential bribers and public officials. Anecdotal evidence on the activities of intermediaries in corruption abounds in current news, yet empirical investigations into the channels through which intermediaries may facilitate corruption are scarce.

Recent theoretical studies suggest that intermediaries increase corruption by reducing uncertainty with respect to whom and how much a potential briber should bribe and by limiting the chances of breaches in corruption deals. This paper proposed an additional overlooked channel through which intermediaries may increase corruption: they might reduce the moral or psychological costs of the citizens and the officials possibly involved in corruption deals. This is due to the fact that, by rendering the act of bribing an indirect action, intermediaries may create psychological distance between the briber and the illegal activity; moreover, their presence may act as a signal that corruption is institutionalized.

We investigated the moral cost-reduction role that intermediaries may play in corruption by conducting a bribery lab experiment that simulated a petty corrupt transaction between private citizens and public officials. While the transaction benefited a citizen-official pair, it generated negative externalities on an "other member of society". By conducting different versions of the game, in which we altered the degree of uncertainty and/or the presence of the intermediary, we were able to isolate the effect that the presence of the intermediaries had on the private citizens' and public officials' moral or psychological costs associated with corruption. Post-experiment questionnaire data allowed us to further explore the role of the intermediary in altering individuals' judgement of acts of corruption that harmed others.

Our experimental data confirmed that the proportion of corrupt citizen-official pairs significantly increases in the presence of intermediaries. In accordance with our theoretical predictions, we found that, besides eliminating uncertainty, intermediaries facilitate corruption by reducing the moral or psychological costs of both private citizens and public officials. Our questionnaire data provided further evidence of more lenient judgement of the act of bribing when carried on indirectly though an intermediary.

The present study represents the first step of a broader program of research on the role that intermediaries might play in corrupt exchanges. Future experimental research will

allow for a more active role of the intermediary, as well as for repeated corrupt exchanges.

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INSTRUCTIONS

INTERMEDIARY TREATMENT

General instructions

Thank you all for coming today. You are here to participate in an experiment on individual decision-making. After playing the game you will be asked to complete a brief questionnaire. In addition to a $10 participation fee, you will be paid any money you accumulate from the game. You will be paid privately, by check, at the conclusion of the experiment. This study has been reviewed and approved by the FSU Human Subjects Committee. If you have any questions during the experiment, please raise your hand and wait for an experimenter to come to you. Please do not talk, exclaim, or try to communicate with other participants during the experiment. Participants intentionally violating the rules may be asked to leave the experiment and may not be paid.

Please read and sign the Consent form that you found on your desk. Please raise your hand if you have any question about any of the information on the Consent form. We will proceed with the experiment once we have collected all signed consent forms.

Detailed Instructions

You will be playing a simple game with the other participants in this room. The number that you have found on your desk is your identification number in the game. We won't ask you to write down your name at any time during this experimental session. At the end of the session, you will need to show your player number to the experimenter in order to receive the money that you collected while playing the game.

Earnings during the experiment will be denominated in Experimental Currency Units, or ECU. At the end of the game your earnings will be converted to dollars at the exchange rate of $1 for 4 ECU. The game you are going to play involves 4 players, each playing a different role. Your role will be either a Private Citizen, a Public Official, an Intermediary, or an Other Member of Society. You will be matched with three other participants, and roles will be anonymously and randomly assigned. At no point will you learn the identity of the other members from your group.

Each participant will have 35 ECU to start. The game proceeds as follows. First, the Private Citizen can pay a fee to the matched Intermediary to be given as a bribe to the Public Official with whom he or she is matched. While the Citizen makes his or her decision, the Public Official will decide, for each potential bribe amount, whether he would accept or reject the offer. If a fee is paid, the Intermediary will keep 1 ECU as

a commission and must offer the remaining amount to the Public Official as a bribe on behalf of the Citizen. The Citizen can pay any amount between 2 and 21 ECU.

If the Private Citizen decides not to pay a fee to the Intermediary, all participants retain their initial endowment of 35 ECU.

If the Citizen decides to pay a fee to the Intermediary but the Public Official rejects the bribe offered by the Intermediary, the Public Official keeps the initial 35 ECU. The Private Citizen receives 34 ECU, which is the initial amount minus the commission to the Intermediary. That is, a rejected bribe is returned to the Citizen, but he or she loses the 1 ECU commission given to the Intermediary. The intermediary earns 36 ECU (initial 35 + 1 commission). The Other Member of Society keeps his or her initial 35 ECU.

If the private citizen decides to pay a fee to the Intermediary and the Public Official accepts the bribe offered by the Intermediary, the private Citizen receives 51 ECU – 1 commission paid to the intermediary – the bribe. The public official receives 30 ECU + the bribe. The Intermediary earns 36 ECU, as before. The Other Member of Society suffers a loss of 15 ECU, and therefore receives 20 ECU.

To summarize, in this game each Private Citizen decides whether or not to pay a fee to the Intermediary, knowing that the Intermediary will keep a commission equal to 1 and offer the remaining money as a bribe to the Public Official. The Public Official decides whether or not to accept the bribe offered by the Intermediary.

Note that if the Intermediary is paid a fee by the Citizen, he or she can only keep 1 ECU as commission and must offer the rest of the money to the Official as a bribe. In other words, the Intermediary cannot keep more than 1 ECU for him or herself and cannot refuse to offer the remaining money to the Official. The Other Member of Society does not make any decisions in this game. He or she suffers a loss of 15 ECU if the matched Citizen decides to pay a fee to the Intermediary and the Official accepts the bribe offered by the Intermediary. If no fee is paid or a bribe is rejected, the Other Member of Society retains the initial 35 ECU.

Now, we are going to work through some examples. Look at Table 1 that you have found on your desk. It is the same as the one here on the board. It is designed to help you to decide how to play the game.

Payoff Table

		The citizen pays a fee, the Intermediary offers the bribe and the Official decides to...					
		accept			reject		
		Private citizen	Public official	Other member of society	Private citizen	Public official	Other member of society
	no bribe	35	35	35	35	35	35
The Intermediary offers a bribe equal to....	1	49	31	20	34	35	35
	2	48	32	20	34	35	35
	3	47	33	20	34	35	35
	4	46	34	20	34	35	35
	5	45	35	20	34	35	35
	6	44	36	20	34	35	35
	7	43	37	20	34	35	35
	8	42	38	20	34	35	35
	9	41	39	20	34	35	35
	10	40	40	20	34	35	35
	11	39	41	20	34	35	35
	12	38	42	20	34	35	35
	13	37	43	20	34	35	35
	14	36	44	20	34	35	35
	15	35	45	20	34	35	35
	16	34	46	20	34	35	35
	17	33	47	20	34	35	35
	18	32	48	20	34	35	35
	19	31	49	20	34	35	35
	20	30	50	20	34	35	35

First, I am going to explain how to read the table. The first column on the left shows you all the possible amounts that the Intermediary could pay as a bribe to the Official if the Citizen pays him or her a few. Remember that the Intermediary will offer a bribe equal to the fee paid by the Citizen minus 1 ECU commission. So, in this top row the Intermediary is not offering a bribe to the Official. This happens when the Private Citizen decides not to pay a fee to the Intermediary. In the bottom row the Intermediary is offering a bribe equal to 20. This is because the Private Citizen has decided to pay a fee equal to 21ECU to the Intermediary. All the other possible bribes are listed in descending order. Note that the Citizen cannot pay a fee equal to 1 to the Intermediary, because such fee would leave the Intermediary no money to offer to the Official as a bribe.

To the right of this first column, you have two sets of three columns. The first set of three shows you what happens to the payoffs of the Private Citizen, the Public Official

and the Other Member of Society if the Public Official accepts the bribe offered by the Intermediary. The second set of three shows you what happens to the payoffs of the Private Citizen, the Public Official and the Other Member of Society if the Public Official rejects the bribe offered by the Intermediary.

So, here are some examples *[point to relevant cells as you go]:*

1.1. Suppose that the Private Citizen decides to pay a fee equal to 3 ECU to the Intermediary. This means that the Intermediary will keep 1 ECU and will offer 2 ECU to the Public Official as a bribe. Then if the public official accepts the bribe, the Private Citizen receives 48 ECU (which is 51-1commission-the bribe equal to 2) from the experiment, the Public Official receives 32 ECU (which is 30+the bribe of 2), and the Other Member of Society receives 20 ECU (which is 35- the loss of 15). If, instead, the Public Official rejects the bribe offered by the Intermediary, the Citizen receives 34 ECU, which is the initial 35 minus the commission paid to the Intermediary, while the Public Official and the Other Member of Society each retain their initial 35 ECU.

1.2. Here is another example. Suppose that the Private Citizen decides to pay a fee equal to 13 ECU to the Intermediary. This means that the Intermediary will keep 1 ECU and will offer 12 ECU to the Public Official as a bribe. Then if the public official accepts the bribe, the Private Citizen receives 38 ECU (which is 51- 1 - 12) from the experiment, the intermediary receives 36 ECU (35+1 commission) the Public Official receives 42 ECU (which is 30 + the bribe of 12), and the Other Member of Society receives 20 ECU (which is 35-15). If, instead, the Public Official rejects the bribe offered by the Intermediary, the Citizen receives 34 ECU, which is the initial 35 minus the commission paid to the Intermediary; the Intermediary receives 36 ECU (35+1 commission), while the Public Official and the Other Member of Society retain their initial 35 ECU.

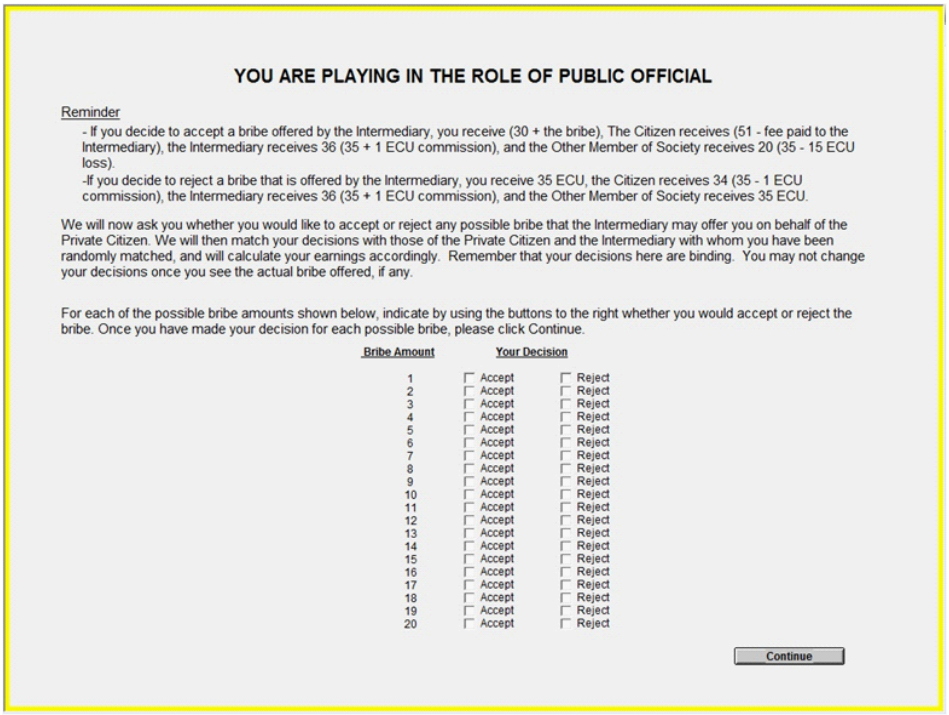
You will play this game only once.

Remember, none of you will know the identity of the participants with whom you are playing. You will now find out the role that you will play in this game on your computer screen. You will also receive additional information on how to play the game. Remember to use the payoff table to help you make your decisions in the game.

Are there any last questions before we begin? Just to remind you, if you have a question at any time during the experiment, please raise your hand and wait for the experimenter to come to you to answer your question in private. Please click Continue to see your role.

Screenshots

Public official's screenshot



YOU ARE PLAYING IN THE ROLE OF PUBLIC OFFICIAL

Reminder

- If you decide to accept a bribe offered by the Intermediary, you receive (30 + the bribe), The Citizen receives (51 - fee paid to the Intermediary), the Intermediary receives 36 (35 + 1 ECU commission), and the Other Member of Society receives 20 (35 - 15 ECU loss).
-If you decide to reject a bribe that is offered by the Intermediary, you receive 35 ECU, the Citizen receives 34 (35 - 1 ECU commission), the Intermediary receives 36 (35 + 1 ECU commission), and the Other Member of Society receives 35 ECU.

We will now ask you whether you would like to accept or reject any possible bribe that the Intermediary may offer you on behalf of the Private Citizen. We will then match your decisions with those of the Private Citizen and the Intermediary with whom you have been randomly matched, and will calculate your earnings accordingly. Remember that your decisions here are binding. You may not change your decisions once you see the actual bribe offered, if any.

For each of the possible bribe amounts shown below, indicate by using the buttons to the right whether you would accept or reject the bribe. Once you have made your decision for each possible bribe, please click Continue.

Bribe Amount	Your Decision	
1	Accept	Reject
2	Accept	Reject
3	Accept	Reject
4	Accept	Reject
5	Accept	Reject
6	Accept	Reject
7	Accept	Reject
8	Accept	Reject
9	Accept	Reject
10	Accept	Reject
11	Accept	Reject
12	Accept	Reject
13	Accept	Reject
14	Accept	Reject
15	Accept	Reject
16	Accept	Reject
17	Accept	Reject
18	Accept	Reject
19	Accept	Reject
20	Accept	Reject

Continue

Private citizen's screenshot