Journal of Behavioral and Experimental Economics 63 (2016) 69–82

Contents lists available at ScienceDirect

Journal of Behavioral and Experimental Economics

journal homepage: www.elsevier.com/locate/socec

# Gender differences in beliefs and actions in a framed corruption experiment

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ARTICLE INFO

*Article history:*
Received 26 August 2015
Revised 20 May 2016
Accepted 21 May 2016
Available online 26 May 2016

*JEL classification:*
D73
C91

*Keywords:*
Corruption
Economic experiment
Belief elicitation
Gender

ABSTRACT

We elicit actions and beliefs in a framed corruption experiment enabling us to investigate how gender differences in corrupt behaviour relate to gender differences in both beliefs about the behaviour of others and the relationship between those beliefs and actions. We find that women are less likely to engage in costly punishment of corruption, and believe corruption to be more prevalent than men. Differences between the genders in the relationship between beliefs and actions provides evidence that men experience a greater psychological cost as a result of social sanctions. Controlling for beliefs and gender differences in sensitivity to beliefs we find that males are, in many instances, more likely to offer bribes, while females are less likely to conform to a norm of bribe-giving. This result was not apparent in the raw data, and highlights the importance of considering beliefs in corruption experiments.



## 1. Introduction

Corruption has been found to negatively affect the functionality of markets, economic growth, and social development.[1] It is therefore of great importance to understand the factors underlying individual corrupt behaviour. Beliefs play a number of important roles in the domain of corruption. On a practical level, corrupt behaviour is beset by risk and strategic uncertainty, and beliefs about the prevalence of corruption will be an important factor in shaping people's perceptions of, for example, the probability of bribery being detected or a corrupt official making good on a promise. Such beliefs will also interact with people's decisions on a social or moral level: the belief that corruption is pervasive may encourage corrupt acts as people conform to their perception of the social norm.[2]

Studying both beliefs and the relationship between beliefs and actions can also shed light on the mechanisms underlying patterns in corrupt behaviour, such as gender effects, which have been frequently identified in both empirical and experimental corruption studies (Chaudhuri, 2012). Alatas et al. (2009) points out that the different social roles played by different genders may lead to different experiences of corruption, resulting in different attitudes towards corruption and thus different propensities to act corruptly. However, different experiences will also lead to different beliefs about the prevalence of corruption, which could equally affect behaviour. Additionally, there is evidence of gender differences in the experience of both formal and social sanctions, which would cause even identical beliefs regarding the probability that an action is a norm violation or is likely to be punished to result in different levels of deterrence in men and women.

In the experiment reported in this paper, we elicit both actions and beliefs about the behaviour of others in a simple framed corruption game. We find that the decision to engage in corruption is strongly associated with beliefs that others in an identical role will do likewise, consistent with subjects conforming to perceived normative behaviour. Regarding gender differences, we find that

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[1] See, for example, Mauro (1995); Méon and Sekkat (2005); Fisman and Svensson (2009); Jong-Sung and Khagram (2005).

[2] There are two types of social norms: injunctive (what people *should* do), and descriptive (what people *actually* do). In this paper our data is on beliefs about actual behaviour, thus when we refer to social norms we are talking about descriptive norms.

http://dx.doi.org/10.1016/j.socec.2016.05.004
2214-8043/

females are less likely to engage in costly punishment of corruption, and believe corruption to be more prevalent than males. However we also find that the decision of males to act corruptly is more robustly related to their belief that a bribe will be accepted, and the probability they will be reported. Taking this into account we show that, given a belief that a bribe is likely to be accepted or unlikely to be reported, males are more likely than females to make an offer. Given that in our game a corrupt act can never reduce a subject's monetary payoff, we interpret this as evidence that, in our context, males are more sensitive than females to social concerns. Controlling for beliefs in a model which allows for gender differences in sensitivities to beliefs reveals that males are, *ceteris paribus*, typically more likely to offer bribes, and that females are less likely to conform to a culture of bribe giving.

In addition to our results on corruption, we also provide some results on two outstanding questions regarding the experimental elicitation of beliefs. We find that correcting our elicited beliefs for risk aversion has a minimal impact on the results of our subsequent analysis and no statistical evidence that the order in which beliefs and actions affected subjects' decisions.

The paper proceeds as follows: section 2 reviews the related literature; Sections 3 and 4 describe our experimental design and results; and section 5 provides a discussion of our contributions to the literature and concludes.

## 2. Related literature

Our experiment is related to several disparate strands of the behavioural science literature. We begin with a brief summary of the findings of corruption experiments that have looked for gender differences in behaviour.[3] We then review studies that identify links between behaviour and beliefs, and in particular, perceptions of social norms. Finally, we review relevent papers on the methodology of belief elicitation and describe two existing papers that have elicited beliefs in corruption experiments.

One of the earliest experimental designs for laboratory experiments on corruption was introduced by Abbink et al. (2002) where a firm and official could engage in corruption, but faced an exogenous risk of punishment if they did so. Rivas (2013) implemented a close variant of this game, varying the genders of the subjects in each role, and found that females were less likely to offer, accept, and reciprocate bribes. Our design is based on that of Cameron et al. (2009) which endogenizes punishment by introducing a third player who is harmed by corruption and may respond by punishing the corrupt at some personal cost. Using this game, Alatas et al. (2009) find no gender differences in behaviour in New Delhi, Jakarta, or Singapore, however females in Melbourne were found to be less likely to offer and accept bribes, and more likely to punish corruption than their male counterparts. Waithima (2011) repeats the design in Kenya and finds no gender differences in any role. Banuri and Eckel (2012) implements a similar three-player game and finds that gender effects are in the direction of females acting less corruptly but are not statistically significant.

As will be explained in detail in the following section, our design differs from the aforementioned experiments in that the threat of punishment does not provide any pecuniary deterrence to engaging in corruption. We therefore interpret any negative relationship in the propensity to offer bribes with beliefs about the probability of acceptance or being reported as reflecting social concerns. The role of social sanctions in reducing corruption has been considered in Salmon and Serra (2014), which finds that purely social sanctions can reduce rule-breaking in subjects who identify with high rule of law countries.

Conformism, i.e., people changing their behaviour to match how they believe others behave, is a well-established phenomenon in social psychology (Asch, 1952). In the economics literature, conformism has been modelled formally by Sliwka (2007), and supportive experimental evidence has been found by Thöni and Gächter (2014) and Rauhut (2013). Another explanation for the fact that people who take an action tend believe that action to be more common than those who take an alternative action is the so-called "false consensus effect" (Ross et al., 1977). One explanation proposed for this effect is a need to provide support or justification for one's behaviour (e.g., Messé and Sivacek, 1979; Sherman et al., 1984). However, Engelmann and Strobel (2000); 2012) find that the epithet "false" is unwarranted: the correlation between decisions and beliefs can be explained as a rational updating of beliefs based on information provided by one's own decision, and when relevant information is readily available, a subjects' own decisions are in fact underweighted relative to information about the decisions of others.

The impact of social sanctions has long been considered to differ between genders. Early work suggested that women were more sensitive to shame (e.g., Finley and Grasmick, 1985; Simpson, 1989); however, as with many other gender differences (Croson and Gneezy, 2009), the difference between how men and women respond to social rewards and sanctions is highly context specific. For example, Blackwell (2000) finds that, for those from less patriarchal families, men are more threatened by embarrassment, Prentice and Miller (1993) finds that, over time, men adjust their attitudes towards alcohol use in accordance with the perceived norm, whereas women do not, and Boyes et al. (2004) concludes that social approval is a greater motivator of tipping in restaurants for men than for women. Meier (2007) concludes that *"men tend to align their behavior with the average behavior of the group, whereas women seem to be insensitive to information about group behavior."*

Eliciting subjects' beliefs poses a number of challenges. As with other tasks in economic experiments, it is generally held that the elicitation should be incentivised to encourage considered and truthful responses. However, many incentivised methods are complex and require familiarity with numerical probabilities, and some commonly used techniques are only incentive compatible for risk-neutral subjects (Schlag et al., 2013). Our method, described in detail in Section 3.2, is carefully designed to address these concerns.

Eliciting both actions and beliefs from the same subjects raises further questions, as the decision or decision process in one task may affect behaviour in the other. This could occur for a number of reasons, such as belief elicitation deepening understanding of the game or beliefs being altered to justify to oneself an earlier decision.

The existing literature on whether or not eliciting beliefs from subjects affects subsequent decisions is small and inconclusive. In public goods experiments, Croson (2000) finds that belief elicitation decreases contributions, while Wilcox and Feltovich (2000) and Gächter and Renner (2010) find no effect and a positive effect, respectively. The results of Rutström and Wilcox (2009) contradict the earlier findings of Nyarko and Schotter (2002) that belief elicitation has no impact on the predictive power of fictitious play-type models in a matching pennies game. Finally, Koessler et al. (2012) find that, when bettors' beliefs are elicited, the information aggregation of parimutuel betting markets is improved.

The literature on the impact of decisions on beliefs is also small and contradictory. Offerman et al. (1996) finds no systematic differences between players and paired observers in distributions of beliefs elicited using a quadratic scoring rule in a step-level public

[3] For a more detailed review, see Chaudhuri (2012).

goods game. Palfrey and Wang (2009) had subjects make incentivised predictions about the decisions taken in Nyarko and Schotter (2002) and compare them with the predictions by players in the original study and find that their observers' predictions were more accurate and less extreme than those of the original players. Koessler et al. (2012), in contrast, find that placing bets in an experimental parimutuel betting market increases the accuracy of elicited beliefs relative to non-participant observers.

We are aware of only two experiments that elicit beliefs in the context of corruption. Berninghaus et al. (2010) uses a quadratic scoring rule to elicit beliefs; however, the game is quite different from ours and addresses different issues. Corruption is modelled as a coordination game where the larger the number of players who choose to accept bribes is, the lower the probability of detection will be. This means that the propensity of rational players to act corruptly should increase their belief about the prevalence of corrupt behaviour, making it impossible to disentangle strategic and psychological factors in a positive correlation between beliefs and actions. Second, the game is not framed and no third party is damaged by corruption, so there is no moral cost to bribery.[4]

Rivas (2013) asks about beliefs in a corruption game, but this is not incentivised and the possibility of elicitation affecting actions or vice versa is not considered. Additionally, the data from this experiment are unable to examine many of the questions we consider here, as only a subset of beliefs is requested from each player. For example subjects are not asked about the behaviour of other subjects in the same role, and subjects who choose not to bribe are not asked about the probability with which a bribe would have been accepted if offered. However, consistent with our results, amongst subjects who offer a bribe, it is found that men are more likely to believe that the bribe will be accepted than women.

## 3. Experimental design and procedures

### 3.1. The game

Three actors, a private citizen, a public official, and "another member of society" (OMS) are endowed with 100 points. Each actor is potentially faced with a one-shot binary decision: the private citizen decides whether or not to offer a bribe; if a bribe is offered, the public official must decide whether to accept or reject it. If a bribe is offered and accepted, the OMS chooses whether or not to report the corruption. Unless a bribe is both offered and accepted, all actors retain their endowment. If bribery occurs and is unreported, the corrupt parties each gain 20 points and the OMS loses 40 points. By reporting a successful bribe, the OMS loses a further 10 points, while the corrupt parties each lose the 20 points they had gained. All decisions are binary to keep the belief elicitation process as simple as possible. The game is illustrated in Fig. 1.

Compared to many previous experiments, this game is highly stylised. Rather than attempting to realistically capture various aspects of a particular corrupt environment (e.g., Abbink et al., 2002), the modelling choices were mostly driven by the desire to eliminate potentially confounding explanations of our results. The game does represent the basic elements of corruption: an individual is abusing his or her office for private gain at the expense of another. Furthermore, we maintain that our decision to frame the experiment is likely to heighten its external validity, that is, to elicit actions and beliefs in the lab that are related specifically to attitudes and beliefs about corruption in the field. This is particularly important when looking at differences in men's and women's

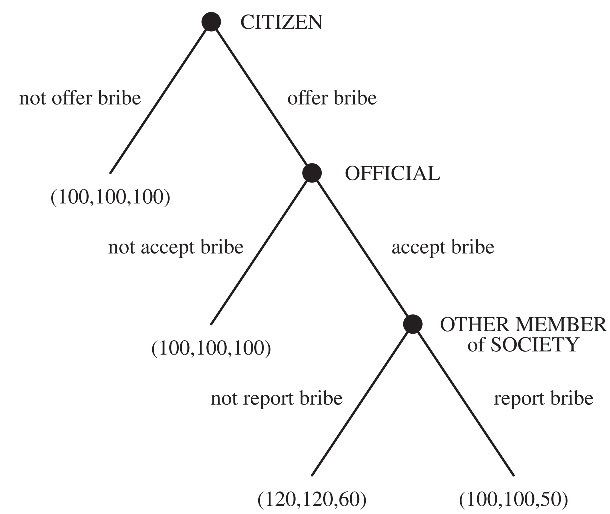


**Fig. 1.** Corruption game.

behaviour, given the context specificity of gender effects found in earlier work.

For a number of reasons, the payoffs of the game were designed such that each player has a weakly dominant strategy. We are primarily interested in people's attitudes towards corruption and their relationship with beliefs, and by making the decision to act corruptly weakly dominant, we can be confident that a decision not to do so is driven by moral or social concerns. There is no risk of losing out financially in the case that they a corrupt citizen, an official is reported, or an official rejects a bribe. Thus, choosing not to offer a bribe because one does not believe it will be accepted indicates a purely psychological fear of rejection, and choosing not to offer or accept a bribe because of the possibility of punishment must be related to a purely social sanctioning effect.[5] Finally, keeping the game strategically simple should minimise the possibility of belief elicitation deepening understanding of the game and affecting subsequent actions (see Croson, 2000).

We chose to implement the game using the strategy method (each subject makes a contingent decision in only one of the three roles) to maximise the number of observations from officials and OMS. Again, the simplicity of the design should allay any concerns that using the strategy method will affect behaviour by deepening understanding of the game; however, there is evidence that this method may reduce punishment (Brandts and Charness, 2011), so the number of OMS choosing to report in our experiment may be less than we would have found by implementing the game sequentially. Each participant made a single decision in only one of the three roles, abstracting from learning and reputation effects.

Finally, although the game does not realistically portray important aspects of all corrupt environments, it captures key elements of many such situations.

### 3.2. Belief elicitation

To elicit beliefs and adjust stated beliefs to account for risk preferences, we used a simplified version of the method described in Offerman et al. (2009).[6] A quadratic scoring rule (QSR) was used to elicit responses about subjective probabilities. Specifically, each subject reported the probability, $r$, with which he or she believed

[4] In fact, the only moral cost would be incurred by choosing not to bribe, which exerts a negative externality on players who do bribe by increasing the probability that they will detected!

[5] Although punishment results in a loss of 20 points, there is no loss relative to the citizen's or official's initial endowment, so this punishment should have no deterrence from a financial point of view.

[6] See Schlag et al. (2013) for a detailed discussion of all the issues raised in this section.

a randomly selected person in each role from the same session would take one of the two possible actions, $a$, and was paid according to the following formula:

$$\pi(r, I) = 40 - 40\left[I(1-r)^2 + (1-I)r^2\right]$$

where $I$ is a dummy variable indicating that action $a$ was chosen by a second randomly selected subject with whom the original subject was matched for this task.

Because the QSR is incentive compatible only for risk-neutral subjects, the same QSR was also used to incentivise choices over a set of objective probabilities, which enabled an approximation of the relationship between stated beliefs and true subjective beliefs. This relationship was then used to back out subjects' subjective probabilities from their stated beliefs. To avoid explanation of the equation determining payoffs in the QSR or the mention of single-event probabilities, which many find confusing, we implemented all choices using sliders.

The belief elicitation part began with an unpaid tutorial to explain the use of the sliders. Subjects were told that they (hypothetically) could earn points depending on where they placed a slider on a line and whether or not it rained tomorrow.[7] The slider appeared when subjects clicked anywhere on the line (to avoid a status quo bias) and could then be moved towards the left-hand end, labelled "It rains tomorrow", and the right-hand end, labelled "It does not rain tomorrow". They were informed that the closer the slider was to the event that actually occurred, the more points they could expect to earn.

At each end of the line, the number of points the subject would earn if the adjacent event was realised was displayed, calculated according to the QSR. Unknown to the subjects, each point on the line was associated with a number between zero (the left-most point) and one (the right-most point). Suppose that the subject placed the slider on a point $r$: the number displayed on the left would be $40 - 40r^2$, and on the right, it would be $40 - 40(1-r)^2$. These numbers were updated every time the slider was moved. When subjects had familiarised themselves with the sliders, they were asked several control questions to ensure that they understood.

In the calibration part (see Fig. 11 in Appendix B), the same mechanism was used, but subjects were paid based on a number between 1 and 100, generated by the role of two 10-sided dice. For each of 10 decisions, subjects would earn the points on the left-hand side if the number generated by the dice was between 1 and $x$ or the points on the right-hand side if it was between $x$ and 100 with $x \in \{5, 15, 25, 35, 45, 55, 65, 75, 85, 95\}$.[8] How the data we collected are used to approximate the relationship between stated and true beliefs will be explained in Appendix A.

To elicit probabilistic beliefs about decisions of others, subjects were shown three sliders similar to the earlier ones, but with the alternative actions of each role at each end (see Fig. 12 in Appendix B). In half the sessions, subjects played the game before beliefs were elicited. These subjects were told that they would be randomly matched with subjects from the session who had played in each of the three roles. In the other half of the sessions, beliefs were elicited first: these subjects were given the same description of the game, and were told they would be matched with subjects in the session who would play the game later. The points a subject earned would depend on where he or she placed the sliders and the decisions of the three subjects with whom they were matched. A copy of the instructions can be found in Appendix B.

The calibration part was presented first, as we thought it would help subjects understand how the positions of the slider related to probabilities.

### 3.3. Procedures

Subjects were assigned to one of two treatments, referred to as the Game First (GF) or Belief First (BF) treatment depending on the order in which they played the game and completed the belief elicitation task. A summary of the sessions is provided in Table 1. At the beginning of each treatment, subjects were informed that there would be three parts to the experiment, but they were given no details until each part was about to begin. All subjects were paid for the calibration task, but to minimise the possibility of hedging, only one of the game or belief elicitation tasks was randomly chosen to be paid. For the calibration task, one of the lotteries was chosen for each subject based on the role of a 10-sided dice and played out to determine the payment.

The experiment was programmed in z-Tree (Fischbacher, 2007). Subjects were recruited through advertisements on Masaryk University websites and consisted of students from all faculties of the university. There were four sessions of each treatment, with 93 and 87 participants in the GF and BF treatments, respectively. Because of an error in the program, some observations of subjects' actions were lost in two of the BF sessions.

At the end of a session, points earned were added up and converted into Czech Koruna (CZK) at an exchange rate of 1 point = 1 CZK.[9] In addition, each participant received a 20 CZK participation fee. Sessions lasted about 50 minutes, including time for payment. Participants earned from 40 CZK to 160 CZK[10] and received their payments privately at the end of the experiment.

## 4. Results

We begin by reporting the data on actions and beliefs and then look at the relationship between the two. Here we report only beliefs that have been corrected for risk preferences using the data from the calibration task; details of the calibration calculations can be found in Appendix A, and all results using unadjusted belief data are available upon request. Unless stated otherwise, reported results are robust to using the unadjusted belief data. In Section 4.1 we look for gender differences in actions, beliefs, and belief-action relationships using simple non-parametric tests. In Section 4.2 we complement this analysis by estimating linear probability models.

### 4.1. Non-parametric analysis

#### 4.1.1. Actions

We find no statistical evidence that belief elicitation affects decisions in this game.[11] Table 2 reports the proportions of subjects of each gender taking each action. Consistent with earlier studies in developed countries, males are 14p.p. more likely to offer a bribe, however this effect is not statistically significant. There is virtually no difference in the propensity to accept bribes, however males are 32 p.p. more likely than females report corruption, with this difference significant at the 5% level.

#### 4.1.2. Beliefs

It is not possible to reject the hypothesis that beliefs in the BF treatment were unaffected by playing the game first.[12] Table 3

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[7] The actual points were never calculated, and subjects were aware that this would be the case.

[8] Ideally, one would like a response for each probability that could have been selected (i.e., $x \in [0, ..., 100]$), but this would have been extremely tedious for the subjects and not necessarily result in higher quality data.

[9] At the time of the experiment, 1 euro was worth approximately 25 CZK.

[10] The average payment was 124 CZK, which is roughly one and a half times a typical student hourly wage.

[11] See C.1 for data presented by treatment and relevant statistical tests.

[12] See C.2 for data presented by treatment and relevant statistical tests.

**Table 1**
Treatment structure.

| Treatment | Part 1 | Part 2 | Part 3 | n sessions | n subjects |
|---|---|---|---|---|---|
| GF | Game | Calibration | Belief elicitation | 4 | 93 |
| BF | Calibration | Belief elicitation | Game | 4 | 87 |

**Table 2**
Proportion of subjects choosing to offer/accept/report.

| Action | Full sample | Males | Females | p-value |
|---|---|---|---|---|
| Offer bribe | 0.69 | 0.74 | 0.60 | 0.318 (m = 31, f = 20) |
| Accept bribe | 0.69 | 0.68 | 0.69 | 0.956 (m = 25, f = 26) |
| Report bribe | 0.61 | 0.75 | 0.43 | 0.026** (m = 28, f = 23) |

*Notes:* p-values for 2-tailed z-tests.

**Table 3**
Average beliefs about probability of subjects choosing to offer/accept/report.

| | Full sample | Males | Females | p-value |
|---|---|---|---|---|
| Offer bribe | 0.69 | 0.67 | 0.72 | 0.085* |
| Accept bribe | 0.68 | 0.66 | 0.70 | 0.059* |
| Report bribe | 0.54 | 0.57 | 0.50 | 0.149 |

*Notes:* p-values for Mann-Whitney tests (m = 90, f = 75)

**Table 4**
Average risk-corrected beliefs about probablilty of men subjects choosing to offer/accept/report (full sample).

| Sample | Action | Offer bribe | Accept bribe | Report bribe |
|---|---|---|---|---|
| Citizens | - bribe (21) | 0.76 | 0.76 | 0.52 |
| | - not bribe (7) | 0.47 | 0.45 | 0.80 |
| p-value | | 0.038** | 0.053** | 0.067* |
| Officials | - accept (16) | 0.78 | 0.75 | 0.45 |
| | - not accept (8) | 0.60 | 0.50 | 0.87 |
| p-value | | 0.178 | 0.043** | 0.006*** |
| OMSs | - report (20) | 0.60 | 0.55 | 0.70 |
| | - not report (7) | 0.61 | 0.72 | 0.27 |
| p-value | | 0.868 | 0.102 | 0.001*** |

*Notes:* p-values for Mann-Whitney tests. Sample size indicated next to sample description.

**Table 5**
Average risk-corrected beliefs about probablilty of female subjects choosing offer/accept/report (full sample).

| Sample | Action | Offer bribe | Accept bribe | Report bribe |
|---|---|---|---|---|
| Citizens | - bribe (11) | 0.85 | 0.82 | 0.43 |
| | - not bribe (8) | 0.68 | 0.75 | 0.39 |
| p-value | | 0.147 | 0.508 | 0. 869 |
| Officials | - accept (17) | 0.73 | 0.81 | 0.53 |
| | - not accept (7) | 0.42 | 0.47 | 0.69 |
| p-value | | 0.042** | 0.013** | 0.374 |
| OMSs | - report (9) | 0.69 | 0.53 | 0.74 |
| | - not report (10 ) | 0.70 | 0.62 | 0.35 |
| p-value | | 0.967 | 0.414 | 0.003*** |

*Notes:* p-values for Mann-Whitney tests. Sample size indicated next to sample description.

reports the average beliefs of each gender about the probability that each action will be taken. Women place approximately 5 p.p. higher probability than males on the likelihood of citizens and officials acting corruptly. Mann-Whitney tests find the differences in both these sets of belief distributions to be weakly significant. There is no significant gender difference in the distribution of beliefs regarding reporting behaviour.

We note, however, that, while the gender differences in average beliefs regarding corrupt behaviour remain of a similar magnitude when considering the unadjusted belief data, statistical significance is lost. Interestingly, this appears to be due to having dropped the observations with inconsistent responses in the calibration task rather than the correction for risk aversion: the differences are significant when the unadjusted belief data are used but the 15 subjects with inconsistent responses are dropped.

### 4.1.3. Belief-action relationships

Tables 4 and 5 compare the average beliefs of subjects depending on the action they took for men and women, respectively. We present only data pooled across both treatments, as disaggregating by both gender and treatment results in very small sample sizes.

Considering men first, we observe in all three roles a strong and statistically significant positive relationship between taking an action and the belief that others in the same role were more likely also to choose that action. Male citizens who offer a bribe also place significantly greater weight on the probability that it will be accepted than those who do not offer a bribe. Finally, the male citizens and male officials who choose not to act corruptly have significantly higher beliefs regarding the probability that they would be reported.

With regard to women, the positive relationship between actions and beliefs about others' actions in the same role again exists in all three roles but is only statistically significant for officials and OMSs. Unlike for men, there is no significant relationship between the actions of citizens and their beliefs about the likelihood of a bribe being accepted; however, female officials who would accept a bribe are more likely to believe that a bribe would be offered. The most striking contrast to the results for men is that, for women, there is no relationship between the decision to act corruptly and beliefs about the likelihood of being reported: not only are these relationships not significant, but the magnitude of differences in beliefs between officials who accept bribes and those who do not is three times smaller for women compared to men, while the equivalent difference for citizens is seven times smaller and in the opposite direction.

## 4.2. Parametric analysis

To examine whether the gender differences in actions found in Section 4.1.1 are robust to controlling for beliefs, and to formally test the statistical significance of the gender differences that are apparent from our non-parametric analysis, we estimate a number of probit models, reported in Table 4 . For each role we estimate three models: the first regresses only on a gender dummy, the second adds the three belief variables, and the third includes gender-belief interactions.[13]

Regressing each of the three decisions on gender only (models 1, 4, and 7) gives identical results to the non-parametric tests, finding a significant effect only for the probability of reporting a bribe.

[13] We report the coefficients from the estimations rather than marginal effects because of our focus on interaction effects. As shown in (Ai and Norton, 2003), both the size and statistical significance of interaction effects in non-linear models varies with the values of all the covariates, and showing a single value (e.g. at the mean of covariates) is uninformative and can be highly misleading. The implications of our coefficient estimates are shown visually in the following.

**Table 6**
Probit models regressing each of the three decisions on gender, believe and gender-belief interaction.

| VARIABLES | (1) | (2) Bribe offered | (3) | (4) | (5) Bribe accepted | (6) | (7) | (8) Bribe reported | (9) |
|---|---|---|---|---|---|---|---|---|---|
| male | 0.396 | 1.037** | 1.424 | −0.0347 | 0.0653 | 3.002 | 0.839** | 1.260** | −7.074 |
| | (0.374) | (0.489) | (2.567) | (0.366) | (0.490) | (2.194) | (0.368) | (0.601) | (6.665) |
| CB | | 2.176* | 17.23 | | 0.131 | 1.362 | | 0.710 | −0.442 |
| | | (1.137) | (16.27) | | (1.163) | (1.504) | | (1.759) | (2.058) |
| OB | | 0.812 | −15.71 | | 2.507** | 1.584 | | −1.910 | −1.756 |
| | | (1.171) | (16.24) | | (1.199) | (1.226) | | (1.787) | (2.400) |
| OMSB | | −0.723 | 0.139 | | −2.061** | −0.200 | | 4.908*** | 5.096* |
| | | (0.780) | (1.054) | | (0.877) | (1.180) | | (1.513) | (2.754) |
| male x CB | | | −12.28 | | | 1.999 | | | 17.60 |
| | | | (16.51) | | | (5.957) | | | (11.62) |
| male x OB | | | 18.10 | | | 1.094 | | | −10.03 |
| | | | (16.34) | | | (4.252) | | | (8.408) |
| male x OMSB | | | −6.405* | | | −7.215* | | | 7.861 |
| | | | (3.530) | | | (4.222) | | | (7.689) |
| Constant | 0.253 | −1.841* | −0.956 | 0.502* | 0.0271 | −1.225 | −0.164 | −2.182* | −1.571 |
| | (0.284) | (0.998) | (1.519) | (0.257) | (0.850) | (1.244) | (0.263) | (1.213) | (1.262) |
| Beliefs † | | 0.010*** | | | 0.000*** | | | 0.000*** | |
| Interactions ‡ | | | 0.004*** | | | 0.100* | | | 0.279 |
| Observations | 51 | 47 | 47 | 51 | 48 | 48 | 51 | 46 | 46 |
| Log likelihood | −31.162 | −22.945 | −16.321 | −31.720 | −20.485 | −17.358 | −31.492 | −15.680 | −13.759 |

Standard errors in parentheses. † p-value of likelihood ratio test of joint significance of belief terms. ‡ p-value of likelihood ratio test of joint significance of interaction terms. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Adding the belief variables (models 2, 5, and 8) improves the fit of all three models (Likelihood ratio test; $p < 0.01$). Actions are significantly correlated with beliefs about others in the same role for all roles, and the gender effect for OMSs remains. Interestingly we now find a significant gender effect for Citizens, with males more likely to offer bribes. Also, the decision to accept a bribe is negatively correlated at the 5% level with the probability with which officials believe they will be reported (Table 6).

Including the three gender-belief interaction (models 3, 6, and 9) terms improves the fit of the model for citizens (Likelihood ratio test; $p < 0.01$) and officials (Likelihood ratio test; $p < 0.10$) but not for OMSs (Likelihood ratio test; $p = 0.279$). For both citizens and officials we find a weakly significant interaction effect between gender and beliefs about the probability of being reported, with the coefficients suggesting a much larger sensitivity for males. Although there is little statistical significance for individual coefficients in models 3 and 6, this is probably due to the high degree of collinearity between beliefs about citizens and officials, and between the interaction terms and their constituent parts, and we follow the likelihood ratio tests in selecting these as our preferred models.

To understand the implications of differing responses to beliefs implied by models 3 and 6, we plot predicted probabilities and 95% confidence intervals for offering and accepting a bribe.[14] Predictions are shown by gender, varying levels of each belief variable in turn while keeping the other two fixed at their mean.

With regard to citizen behaviour, we can see from Fig. 2 that males are significantly more likely to offer a bribe for most beliefs about the behaviour of other citizens. The difference disappears only when the citizen thinks it highly likely that others will offer a bribe, in which case both genders are almost certain to do likewise. One can also see that females are less likely to conform to a corrupt norm: the probability a female will offer a bribe is always lower than her belief about the probability that others do likewise, and it is only when that belief passes 50% that her probability of offering a bribe increases beyond 10%.[15]

As shown in Fig. 3 a male citizen is significantly more likely to offer bribes than a female citizen when they believe there is a greater than 65% probability that the offer will be accepted.[16] Fig. 4 clearly demonstrates the lack of sensitivity of females to the possibility of being reported. Males, on the other hand, are significantly more likely than females to offer a bribe when they believe the probability of being reported is less than 60%, with the gender difference becoming non-significant as that probability increases further.

The results for official behaviour are not so striking. There is almost no difference between genders in the probability of accepting a bribe as beliefs about the probability citizens offer bribes and other officials accept bribes vary (Figs. 5 and 6). Fig. 7 shows a similar pattern to 4 with a flat relationship between the probability of acting corruptly and the belief about being reported for females, and a downward-sloping relationship for males, however the gender difference is not significant at any point.

## 5. Discussion and conclusion

We examined gender differences in behaviour and beliefs in a framed corruption game. We briefly discuss the implications of our results for two methodological questions related to belief elicitation and then return to our main conclusions.

The first methodological issue is whether beliefs elicited using the quadratic scoring rule need to be corrected for risk aversion. While this is clearly true in theory, in terms of testing our hypotheses, we found minimal differences when using adjusted versus non-adjusted beliefs. Where we did find a difference, this did not appear to be a result of the belief-calibration but was due to the restriction in the sample necessitated by some subjects giving inconsistent responses in the calibration task. The increase in statistical significance we found after dropping those subjects could well have been a result of reduction in noise, as subjects who

[14] For completeness, we also plot predicted probabilities of reporting a bribe for our preferred model (8) in Figs. 8–10. As there are no interaction effects, they do not reveal much more than the regression coefficients.

[15] We thank an anonymous referee for pointing this out.

[16] The negative relationship seen between the probability of females offering bribes and the probability with which they think it will be accepted is interesting. A tentative explanation is that females require more "moral wiggle room" to take an action which may harm others, and need to convince themselves that the bribe will not be accepted before making the offer. This kind of behaviour would be consistent with the results from the "Diffusion of Responsibility" treatment in (Dana et al., 2007), who unfortunately did not report results by gender.

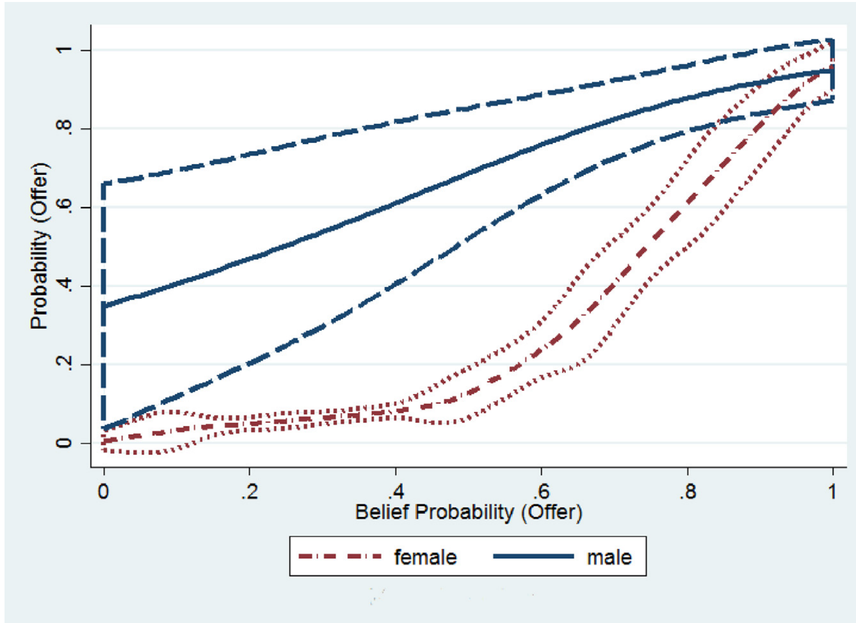


**Fig. 2.** Probability of offering a bribe for varying levels of beliefs about probability of others offering (predictions from Table 6, Probit model (3); other variables at mean).

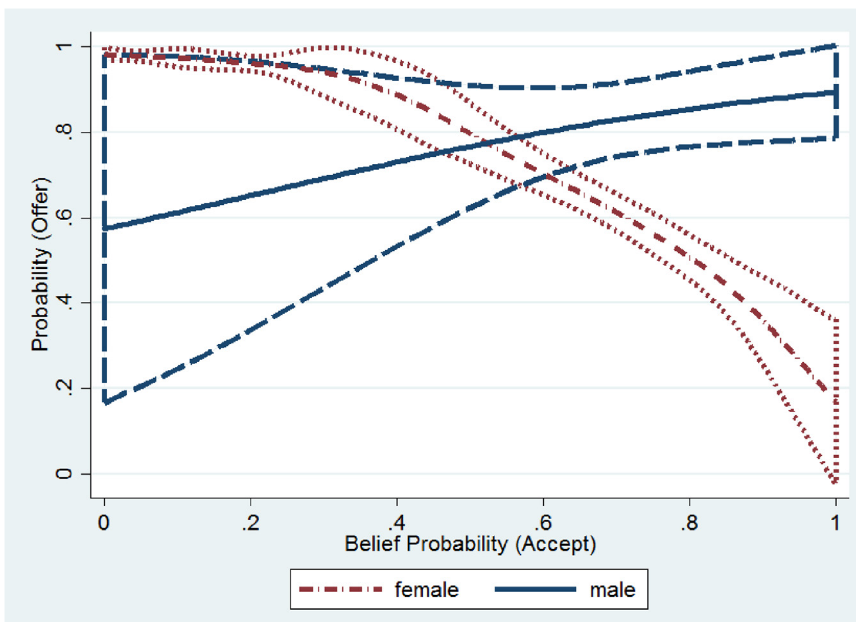


**Fig. 3.** Probability of offering a bribe for varying levels of beliefs about probability of acceptance (predictions from Table 6, Probit model (3); other variables at mean).

gave incoherent responses in the calibration task may also have responded randomly in other parts of the experiment. We therefore conclude that calibrating beliefs to account for risk aversion was unnecessary in this experiment.

The second related issue is whether the elicitation of beliefs changes behaviour in a subsequent game or vice-versa. Here we must be equivocal. While we did not find formal statistical evidence of an order effect in either case, the magnitude of differences were in some cases quite large.

Beliefs could be important in two different ways in influencing behaviour in a corrupt environment. First, a tendency to "conformity" will lead those who believe that a corrupt action is often taken or that corruption is often reported to do likewise to behave in line with perceived social norms. In line with this notion, we found that actions were strongly correlated with beliefs about the actions of others in the same role. Our design does not allow us to eliminate the possibility that this correlation is not due to some consensus effect (projecting ones own behaviour on others), however, as the effect was observed in the treatment where beliefs were elicited before roles were assigned, it cannot be fully explained by subjects altering beliefs to justify their action.

Second, beliefs about the actions of people in other roles will affect one's own behaviour if, for example, there is a possibility of a bribe being rejected or corruption being punished. We designed the payoffs in the experiment such that there is no financial risk to offering or accepting a bribe, so any relationship between one's own actions and the beliefs of others can be interpreted as a psychosocial cost. For men, we found that the propensity to offer

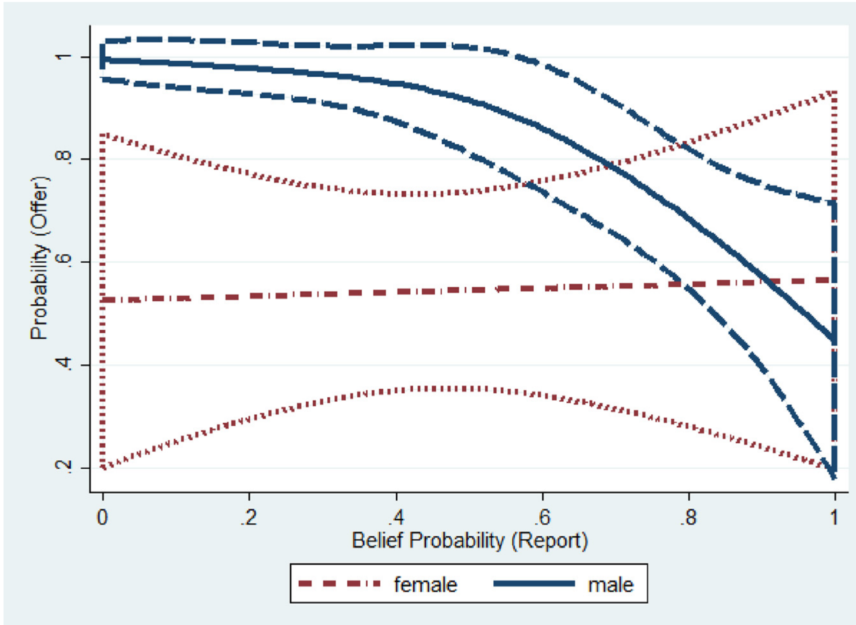


**Fig. 4.** Probability of offering a bribe for varying levels of beliefs about probability of being reported (predictions from Table 6, Probit model (3); other variables at mean).

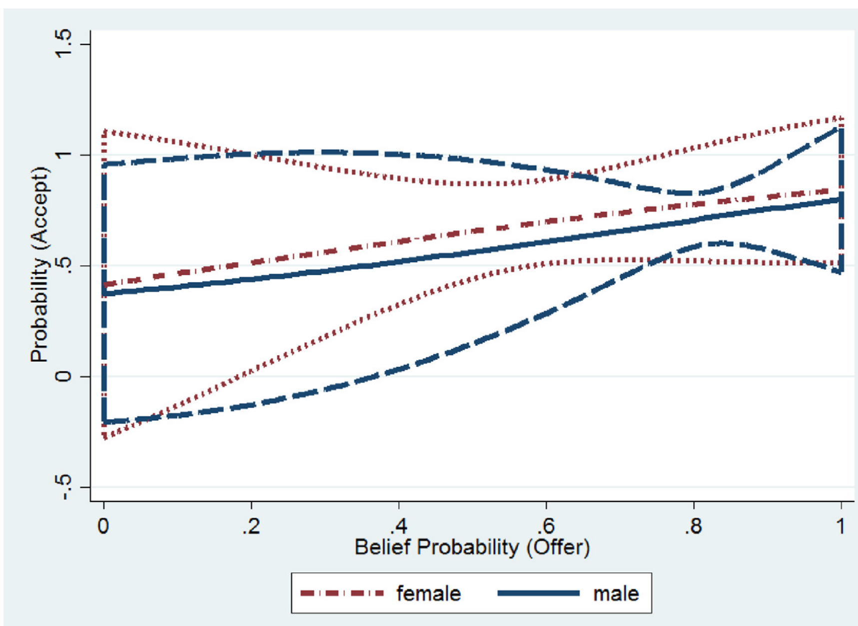


**Fig. 5.** Probability of accepting a bribe for varying levels of beliefs about probability of being offered (predictions from Table 6, Probit model (6); other variables at mean).

bribes was positively related to their belief that the bribe would be accepted, and the propensity to act corruptly was negatively related to their belief that their action would be reported. These relationships were absent for women, which we interpret as evidence that men experience a greater psychological cost of rejection and social sanctions in this environment.

Before considering the interaction of beliefs and actions, we identified three significant gender differences: females were less likely to report bribes[17], and more likely to believe that bribes would be offered and accepted. Taking into account the differences between genders in beliefs and the belief-action relationship allowed us to identify a significant gender-difference in the propensity to offer bribes, with males more likely to do so, but only for certain ranges of beliefs. This approach also revealed that females are less inclined to conform to offering bribes.

The relationships we observe between actions and beliefs are correlational, and we cannot make strong claims to causality. Other factors than those mentioned above, such as the false consensus effect, will almost certainly play a role. However, the relationships we have identified and the gender differences we have found show that further study of beliefs is crucial to understanding patterns in corrupt behaviour.

[17] This last result is contrary to the results in Alatas et al. (2009), but this could be related to a differing relative cost of punishment. Eckel and Grossman (1996) find that females are more sensitive to the cost of punishment than males in an experiment where the relative cost is very similar to ours.

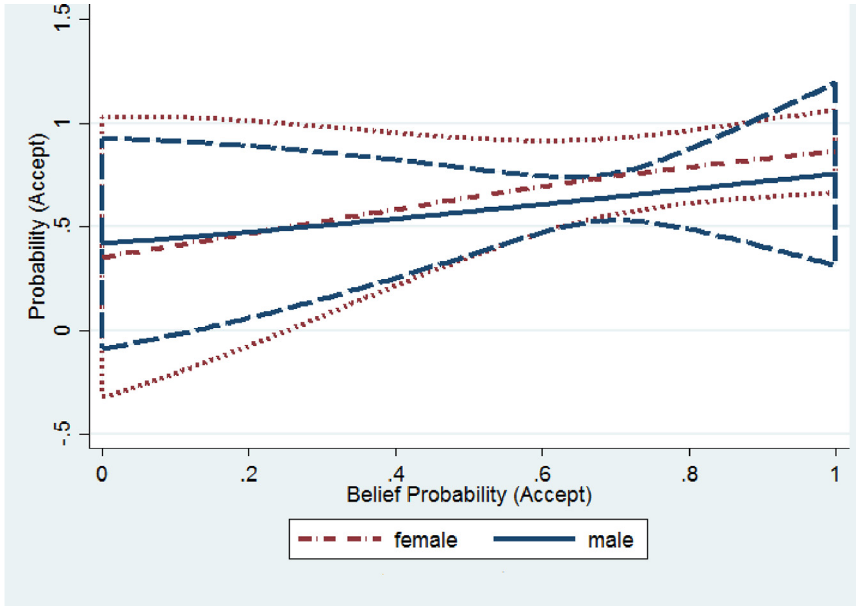


**Fig. 6.** Probability of accepting a bribe for varying levels of beliefs about probability of others accepting (predictions from Table 6, Probit model (6); other variables at mean).

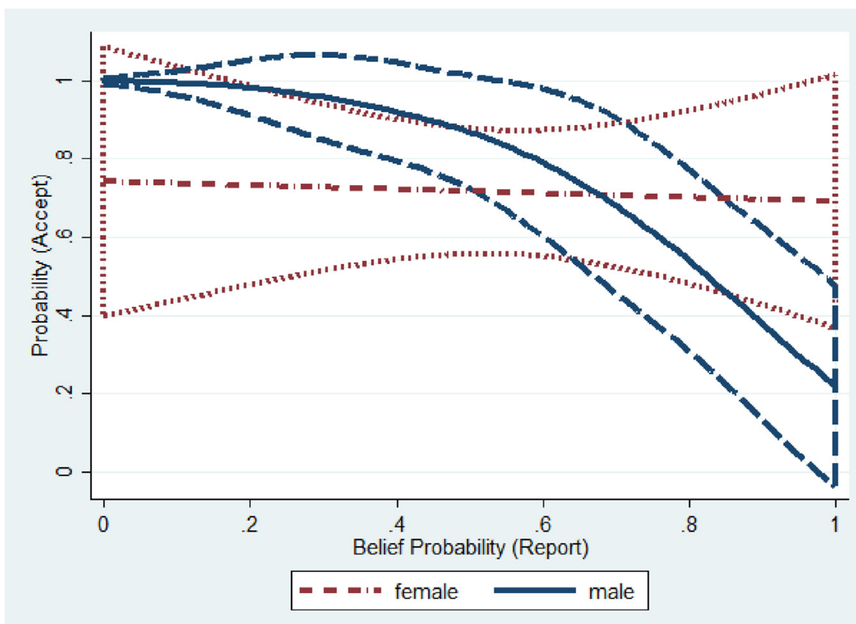


**Fig. 7.** Probability of accepting a bribe for varying levels of beliefs about probability of being reported (predictions from Table 6, Probit model (6); other variables at mean).

## Acknowledgements

This paper was created as a part of the research project no. MUNI/M/0045/2013 at Masaryk University.

## Appendix A. Belief Calibration

To determine a unique risk-corrected belief from stated beliefs, we require a monotonic relationship between the responses to the calibration task and the objective probabilities. In addition, any standard utility function would imply that the responses should be monotonic and increasing in the objective probabilities. As with "multiple switching points" in the Holt and Laury risk elicitation procedure (Holt and Laury, 2002) we are left with the question of what to do with subjects whose responses do not satisfy these conditions.

In our sample, 32 subjects' responses did not monotonically increase. However, in a number of cases, this was evidently due to imprecise placement of the sliders; for example, a subject might give a response of 0.51 to the probability 0.45 and 0.50 to the probability 0.55. Allowing some tolerance, we find that only 15 subjects have responses where any decrease in responses between adjacent objective probabilities is less than 0.05. This is roughly in line with the proportion of subjects who respond with multiple switching points in Holt-Laury risk elicitations, suggesting that the degree of understanding in our procedure is similar.

A number of options are available for using our data to calibrate beliefs. Sonnemans and Offerman (2001) use a linear interpolation, whereas Offerman et al. (2009) estimate a complex function

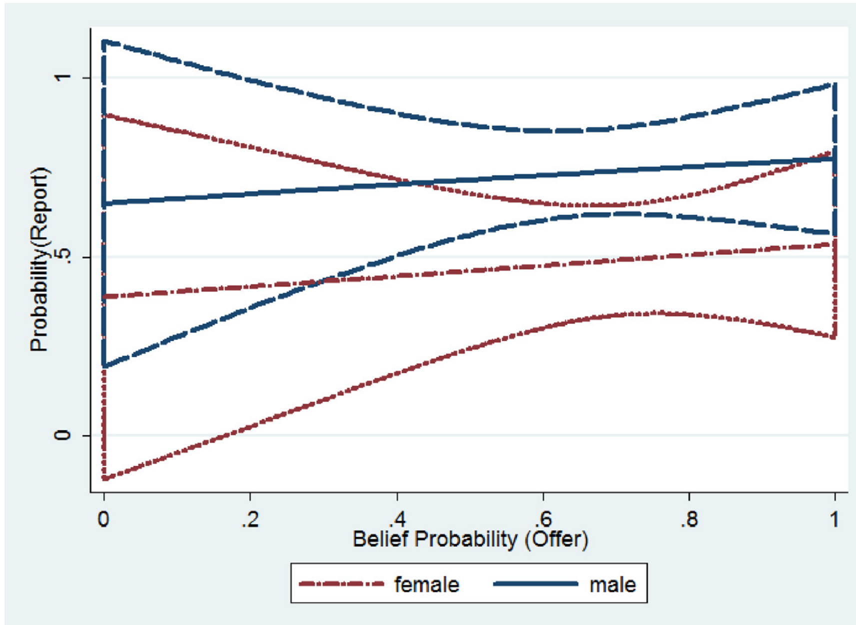


**Fig. 8.** Probability of reporting a bribe for varying levels of beliefs about probability of being offered (predictions from Table 6, Probit model (8); other variables at mean).

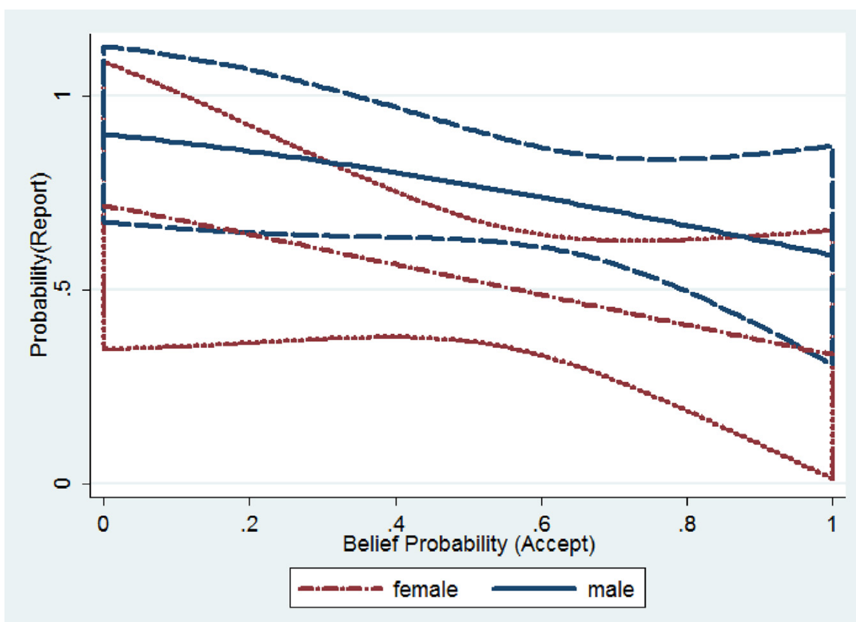


**Fig. 9.** Probability of reporting a bribe for varying levels of beliefs about probability of others accepting (predictions from Table 6, Probit model (8); other variables at mean).

derived from assuming power utility, but they say that a fitting a simple quadratic curve gives almost indistinguishable results. The advantage of fitting a curve is that we can determine a unique belief for every subject even if the responses are non-monotonic. However, if we restrict ourselves to one or two parameter functions (as is reasonable with so few data points), for some individuals, the fitted curves will be unrepresentative of their actual responses. For this reason, we have chosen to use a linear interpolation, discarding subjects whose responses were not increasing and monotonic. Additionally, we assumed that the fitted relationship would pass through the points (0,0), (0.5,0.5), and (1,1). When subjects' responses to the calibration task were flat in the region of a stated belief, the risk-corrected belief was assumed to be in the middle of the flat region. For example, if a subject's response to probabilities 0.35, 0.45, and 0.55 were all 0.5 and a stated belief was 0.5, the risk-corrected belief was 0.45. To maximise the number of observations we could use, we allowed a tolerance of 0.05 for monotonicity: if responses to two adjacent probabilities were not increasing but the difference between them was less than 0.05, we adjusted both to the average of the numbers; for example, if the response to 0.35 was 0.40 and the response to 0.45 was 0.38, we would adjust both responses to 0.39.

Clearly, our risk-correction procedure introduces noise into our data through both measurement error and our assumption of a functional form in the relationship between stated and true beliefs. However, heterogeneous risk preferences will result in noise in stated beliefs and create the hazard of reaching spurious conclusions if a variable of interest is correlated with risk preferences.

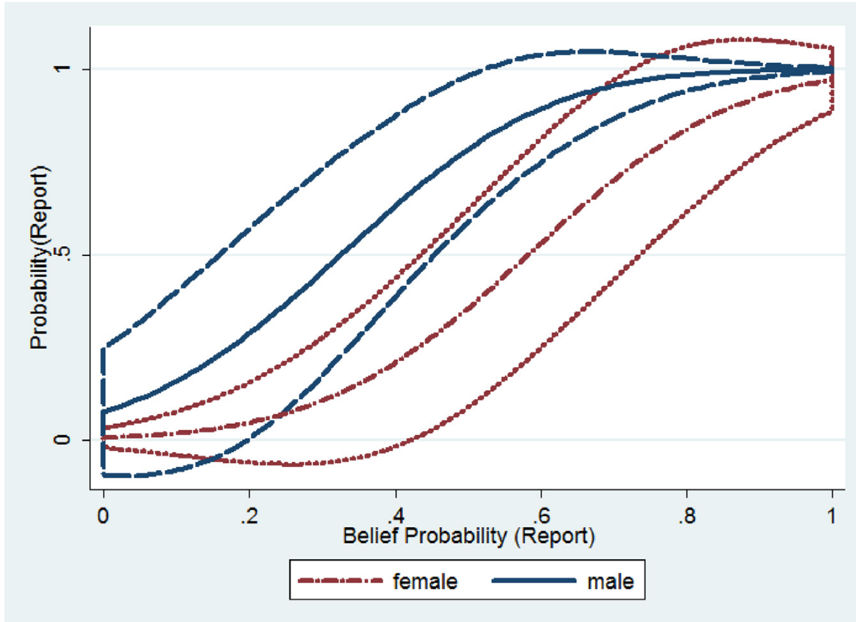


**Fig. 10.** Probability of reporting a bribe for varying levels of beliefs about probability of being reported (predictions from Table 6, Probit model (8); other variables at mean).

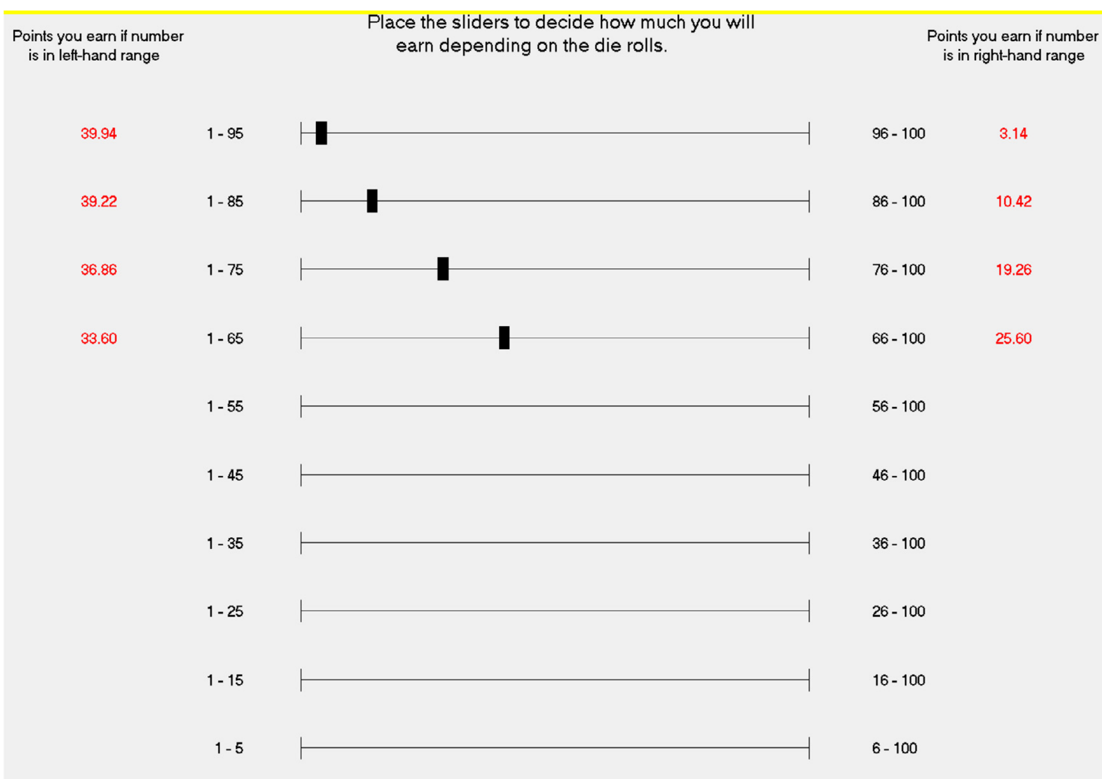


**Fig. 11.** Screenshot, risk calibration.

When looking for treatment effects, random assignment to treatment implies that the latter problem is not relevant, and the only question is whether the stated or risk-corrected beliefs are more noisy.

Gender, in contrast, is a variable that is often found to be correlated with risk. Here, a spurious difference in elicited beliefs is a real danger. For example, suppose that both genders mostly state beliefs that citizens will bribe with probability above 0.5, and women's beliefs are significantly lower on average than those of men. In this case, we do not know whether women believe that citizens are less likely to be corrupt or they are simply more risk averse than men and shading their stated beliefs in line the incentives provided by the QSR. Similarly, a significant difference between the true beliefs of the genders could be obscured if women' true beliefs were higher than those of men.

The direction of differences in average beliefs with respect to variables of interest are almost always the same for stated beliefs and the risk-corrected beliefs that have been estimated using the

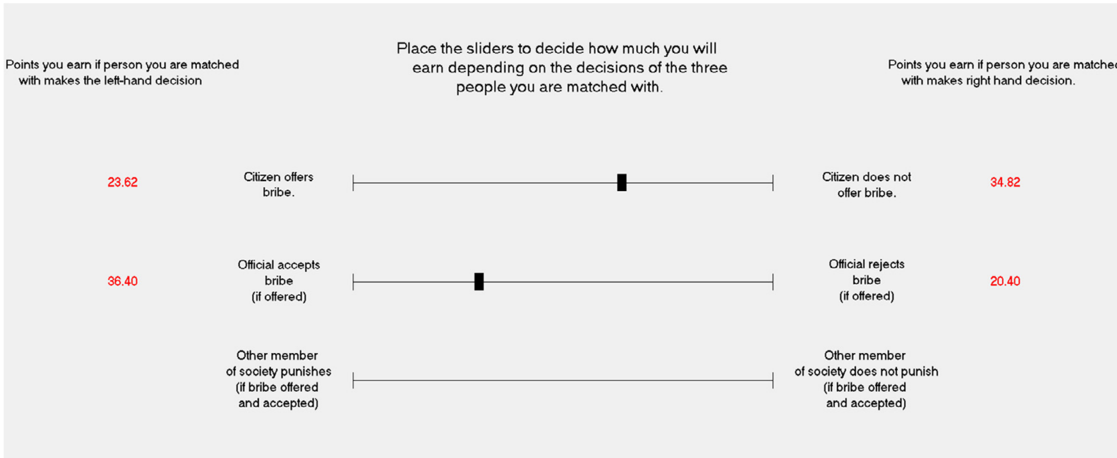


**Fig. 12.** Screenshot, belief elicitation.

**Table 7**
Proportion of subjects choosing to offer/accept/report.

| Role | Full sample | GF treatment | BF treatment | p-value |
|---|---|---|---|---|
| Citizens | 0.69 | 0.65 | 0.75 | 0.430 |
| Officials | 0.69 | 0.71 | 0.65 | 0.653 |
| OMSs | 0.61 | 0.58 | 0.65 | 0.617 |

*Notes:* $H_0$: no difference between treatments, p-values for two-tailed z-tests. $n = 20$ for each role for BF and 31 for GF treatment (40 and 62, respectively when data for citizens and officials are pooled).

results of the calibration task. However, in some cases, there is a difference in the level of significance of differences in distributions, and where this occurs, we report both.

## Appendix B. Instructions - game first treatment

### *B1. Description of game*

Three individuals will interact: a PRIVATE CITIZEN, a PUBLIC OFFICIAL and an OTHER MEMBER OF SOCIETY.

Those assigned the role of the PRIVATE citizen will make up their minds whether or not to offer a bribe to the OFFICIAL. The PUBLIC official has to decide whether they would be willing accept a bribe if one is offered, or to refuse it. The OTHER MEMBER OF SOCIETY decides whether they would report corruption if a bribe is offered AND accepted.

Each individual begins with 100 POINTS. If corruption occurs (i.e. a bribe is offered AND accepted) the PRIVATE CITIZEN and PUBLIC OFFICIAL gain 20 POINTS each, and the OTHER MEMBER OF SOCIETY loses 40 POINTS. If corruption occurs and is reported, the OTHER MEMBER OF SOCIETY pays 10 POINTS, and the PRIVATE CITIZEN and PUBLIC OFFICIAL lose the 20 POINTS they had gained.

To summarize:

If the PRIVATE citizen chooses to offer a bribe, the PUBLIC OFFICIAL chooses to accept a bribe if offered, and the OTHER MEMBER OF SOCIETY chooses not to report corruption, the PRIVATE CITIZEN ends with 120 Points, the PUBLIC OFFICIAL ends with 120 Points, and the OTHER MEMBER OF SOCIETY ends with 60 Points.

If the PRIVATE citizen chooses to offer a bribe, the PUBLIC OFFICIAL chooses to accept a bribe if offered, and the OTHER MEMBER OF SOCIETY chooses to report corruption, the PRIVATE CITIZEN ends with 100 Points, the PUBLIC OFFICIAL ends with 100 Points, and the OTHER MEMBER OF SOCIETY ends with 50 Points.

In all other cases (for example if a bribe is offered but not accepted, or if the official would have accepted a bribe but none was offered) , the PRIVATE CITIZEN ends with 100 Points, the PUBLIC OFFICIAL ends with 100 Points, and the OTHER MEMBER OF SOCIETY ends with 100 Points.

If you have understood these instructions, please click “Continue” and make your decisions. Otherwise raise your hand and an experimenter will come to help you as soon as possible.

### *B2. Belief elicitation tutorial*

- This tutorial is just to help you understand the decisions you must make in this Part, and what you do here will not affect your payments. If you have any questions, please raise your hand and an experimenter will come to help you as soon as possible.
- Each choice you make will be about a situation where there are only two possible outcomes. In this tutorial we will talk the event that it rains tomorrow, or does not rain tomorrow. The decisions you will make later will be about different situations.
- On your screen you will see a line, labeled “Rain Tomorrow” at one end and “No Rain Tomorrow” at the other end. Click somewhere on this line and a slider will appear.
- Two numbers will also have appeared: the number on the left is the number of points you will earn if it rains tomorrow; the number on the right is the number of points you will earn if it doesn’t rain tomorrow.
- You can now move the slider (click and drag) and see how the possible payments change. Notice that the closer you move the slider to “Rain Tomorrow” or “No Rain Tomorrow”, the more points you will earn if that is what actually happens.
- Note also that if you want to maximise the amount you can expect to earn, the more likely you think an event is, the closer you should move the slider to that end; similarly, the less sure you are about what will happen, the closer you should move the slider to the middle.
- Once you are sure you have understood how you should make your decision and how the payments work, follow the instructions on the lower part of the screen.

### *B3. Risk calibration*

- Once you have completed the tutorial for Part 2 you can make your real decisions for which you may earn Points.
- This time, your choices will be matched with the roll of two dice.
- Two 10-sided dice will be rolled to generate a random number between 1 and 100 (each number will be equally likely).

**Table 8**
Average risk-corrected beliefs about probablilty of subjects choosing to offer/accept/report by treatment.

| Sample | Offer bribe | | | Accept bribe | | | Report bribe | | |
|---|---|---|---|---|---|---|---|---|---|
| | FS | GF | BF | FS | GF | BF | FS | GF | BF |
| All Roles (165) | 0. 69 | 0. 71 | 0. 67 | 0.68 | 0. 67 | 0. 68 | 0. 54 | 0. 52 | 0.56 |
| | (0.261) | (0.226) | (0.293) | (0.269) | (0.267) | (0.273) | (0.325) | (0.317) | (0.334) |
| | | <0.657> | | | <0.813> | | | <0.410> | |
| Citizens (47) | 0. 73 | 0. 77 | 0. 66 | 0. 72 | 0. 74 | 0. 69 | 0.52 | 0. 50 | 0. 55 |
| | (0.242) | (0.202) | (0.290) | (0.236) | (0.221) | (0.262) | (0.324) | (0.327) | (0.328) |
| | | <0.264> | | | <0.569> | | | <0.638> | |
| - Bribe (32) | 0. 79 | 0. 79 | 0. 81 | 0. 78 | 0. 76 | 0. 80 | 0. 49 | 0. 49 | 0.49 |
| | (0.170) | (0.180) | (0.159) | (0.156) | (0.168) | (0.140) | (0.327) | (0.320) | (0.351) |
| | | <0.773> | | | <0.409> | | | <0.969> | |
| - Not Bribe (15) | 0. 59 | 0.73 | 0.29 | 0.61 | 0.71 | 0.40 | 0. 58 | 0.52 | 0. 70 |
| | (0.311) | (0.245) | (0.200) | (0.329) | (0.307) | (0.293) | (0.321) | (0.356) | (0.217) |
| | | <0.010**> | | | <0.037**> | | | <0.391> | |
| Officials (48) | 0.68 | 0. 75 | 0. 58 | 0. 69 | 0. 73 | 0. 64 | 0.58 | 0. 63 | 0. 54 |
| | (0.278) | (0.195) | (0.346) | (0.290) | (0.261) | (0.326) | (0.347) | (0.357) | (0.335) |
| | | <0.105> | | | <0.558> | | | <0.336> | |
| - Accept (33) | 0. 75 | 0. 81 | 0. 67 | 0. 78 | 0. 80 | 0. 76 | 0. 49 | 0. 48 | 0. 50 |
| | (0.227) | (0.151) | (0.296) | (0.215) | (0.219) | (0.217) | (0.358) | (0.374) | (0.345) |
| | | <0.117> | | | <0.568> | | | <0.740> | |
| - Not Accept (15) | 0. 52 | 0. 59 | 0. 43 | 0. 49 | 0. 55 | 0. 41 | 0.78 | 0. 71 | 0. 87 |
| | (0.316) | (0.215) | (0.403) | (0.333) | (0.288) | (0.389) | (0.218) | (0.264) | (0.117) |
| | | <0.488> | | | <0.418> | | | <0.183> | |
| OMSs (46) | 0. 64 | 0. 62 | 0. 67 | 0. 59 | 0. 55 | 0. 64 | 0. 57 | 0. 52 | 0. 65 |
| | (0.269) | (0255) | (0.295) | (0.277) | (0.280) | (0.269) | (0.297) | (0.270) | (0.326) |
| | | <0.386> | | | <0.265> | | | <0.100> | |
| - Report (29) | 0. 63 | 0. 61 | 0. 66 | 0. 54 | 0. 52 | 0. 57 | 0. 71 | 0. 68 | 0. 76 |
| | (0.270) | (0.282) | (0.262) | (0.281) | (0.294) | (0.273) | (0.222) | (0.218) | (0.227) |
| | | <0.568> | | | <0.742> | | | <0.263> | |
| - Not Report (17) | 0.66 | 0.65 | 0. 68 | 0. 66 | 0. 59 | 0. 84 | 0. 32 | 0. 30 | 0.36 |
| | (0.275) | (0.224) | (0.404) | (0.261) | (0.269) | (0.129) | (0.235) | (0.151) | (0.393) |
| | | <0.399> | | | <0.058*> | | | <0.916> | |

*Notes:* Standard deviation in parentheses. p-values for Mann-Whitney tests in angular parentheses. p-values for Mann-Whitney tests in angular parentheses. Sample size indicated next to sample description.

- Your choice about where to place the slider will now be based on how likely it is you think that the number that is rolled will fall into a certain range, for example 1–35, or 36–100.
- Remember, if you want to maximise the amount you can expect to earn, the more likely you think the number rolled will fall into a certain range, the closer you should move the slider to that end.
- You will make ten similar choices. You will be paid for one of these: at the end of the experiment an experimenter will roll one of the 10-sided dice to select one of the choices, then roll the two dice to see which of the two payments (determined by your choices) you will receive.
- If you have any questions, please raise your hand. When you have read and understood these instructions, click "Continue" to make your decisions.

*B4. Belief elicitation*

- In this part of the experiment you will make more choices similar to those in Part 2.
- Using sliders like in Part 2 you must guess about the decisions of three other participants in this experiment: one who made a choice as a PRIVATE CITIZEN, one as a PUBLIC OFFICIAL, and one as and an OTHER MEMBER OF SOCIETY.
- At the end of the experiment your choices will be matched with the decisions of three such randomly chosen participants to determine how many Points you can earn from this part of the experiment.
- You will NOT be randomly matched with your own decision. Also, remember you will only be paid for either Part 1 or Part 3, so the decision you made in Part 1 should not affect your decision here.
- If you have understood these instructions, please click "Continue" and make your decisions. Otherwise raise your hand and an experimenter will come to help you as soon as possible.

*B5. Screens*

## Appendix C. Treatment effects

*C1. Actions*

Table 7 displays the proportion of Citizens, Officials, and OMSs choosing to offer, accept, or report a bribe in the full sample and each treatment, and p-values for z-tests looking for a treatment effect. No comparison is close to significant.

*C2. Beliefs*

Table 8 reports the beliefs of subjects about the probability that a random citizen/official/OMS would offer/accept/report a bribe in the full sample and by treatment. As indicated in the first row, Mann-Whitney tests find no difference in distributions of beliefs between treatments.

The remainder of each table compares subsamples of the data, comparing subjects in the same role, and then further disaggregating according to the action they chose. This disaggregation by action is important because it is possible, for example, that citizens who chose to bribe then adjusted their beliefs about others bribing upwards, while citizens who chose not to bribe made a downward adjustment, leaving no net effect.

Using standard p-values, we find that citizens who chose not to bribe believe that officials and other citizens are significantly more likely to act corruptly in the GF treatment. In addition, the distributions of beliefs of OMSs who chose not to report about the probability of officials accepting bribes differ weakly between treatments, with the average belief lower in the GF treatment. However, the p-values in the table have not been adjusted for the fact that we are conducting 18 tests of the hypothesis that the treatment affects beliefs, and, after applying the Bonferroni correction for multiple comparisons, none of the differences remains significant.

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