

Gender, Culture, and Corruption: Insights from an Experimental Analysis^{*}

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Abstract

In recent years, a substantial body of work has explored the differences in the behavior of men and women in a variety of economic transactions. We contribute to this literature by investigating gender differences in behavior when confronted with a common bribery problem. Our study departs from the previous literature on gender and corruption by using economic experiments. Based on data collected in Australia (Melbourne), India (Delhi), Indonesia (Jakarta) and Singapore, we show that while women in Australia are less tolerant of corruption than men in Australia, there are no significant gender differences in the propensities to engage in and punish corrupt behavior in India, Indonesia and Singapore. Hence, our findings suggest that the gender differences reported in the previous studies may not be nearly as universal as stated and may be more culture-specific. We also explore behavioral differences by gender across countries and find that there are larger variations in women's behavior towards corruption than in men's across the countries in our sample.

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1. Introduction

In recent years, a substantial body of work has explored the differences in the behavior of men and women in various economic transactions. This paper contributes to this literature by investigating gender differences in behavior when confronted with a common bribery problem.

Due to the negative impact of corruption on economic development, eliminating corruption is a major concern for many countries. Two recent empirical papers have examined the relationship between gender and corruption. Dollar et al. (2001) use country-level data for a sample of more than 100 countries and find that the greater the representation of women in parliament, the lower the country's level of perceived corruption. This finding is consistent with the results of Swamy et al. (2001), who use both micro-level survey-data from a range of countries and country-level data. They also find that on average women are less tolerant of corruption than men.¹

Our study departs from these two papers by using economic experiments, which allows us to explore individuals' attitudes towards corruption.² One issue with drawing conclusions on the basis of surveys is that actual behavior (especially when confronted with non-trivial amounts of money) may be quite different from survey responses. Experiments differ from surveys and perception indices in that the participants in the experiments receive actual monetary payments, the amounts of which depend on the decisions they make during

¹ Their micro-level data is based on surveys that ask respondents about the acceptability of various dishonest or illegal behaviors. They find that a larger proportion of women than men believe that illegal or dishonest behavior are never justifiable. These results are consistent with those of Glover et al. (1997) and Reiss and Mitra (1998), who find that gender affects whether an individual regards certain workplace behavior as unacceptable.

² In the experimental literature, behavioral differences between men and women have been studied using public goods, ultimatum, dictator, and trust games. The results have been mixed, with some studies suggesting that women are more socially oriented, others finding that men are more socially oriented, and still others finding that there are no significant gender differences. See, for example, Andreoni and Vesterlund (2001), Bolton and Katoc (1995), Brown-Kruse and Hummels (1993), Nowell and Tinker (1994), Cadsby and Maynes (1998), Eckel and Grossman (1998 and 2000), and Solnick (2001). Croson and Gneezy (2005) provide an excellent survey.

the experiments. Hence, we explore whether the gender differences reported in the previous studies on corruption are also evident in an experimental setting.³

Gender differences may be the result of both biological and social differences, i.e., differences in social roles of men and women. An individual's social role and presence in the public domain may play an important role in that individual's exposure to corruption. Hence, if women and men differ in their social roles, one may also expect them to differ in their attitudes towards corruption. Higher levels of exposure to corruption in daily life may promote a tolerance and acceptance of corruption that is reflected in norms of behavior. In addition, women may be more victimized by (and, hence, less tolerant of) corruption in countries where their presence in the public domain is lower.^{4,5}

To investigate whether there are consistent gender differences across countries, we conducted experiments in four countries: Australia (Melbourne), India (Delhi), Indonesia (Jakarta), and Singapore. Two of the countries in our sample are consistently ranked among the least corrupt countries in the world (Australia and Singapore, with scores of 8.7 and 9.4 out of 10 respectively) and two of them are consistently ranked among the most corrupt (India and Indonesia, with scores of 3.3 and 2.4 respectively).⁶

Our results show that the gender differences found in the previous studies, which are largely based on data from Western countries, are also evident in the experimental data from

³ There is a growing literature that analyses corruption using experimental methodology. See Abbink (2005) for a survey. However, except for Frank and Schulze (2000), none of these papers explore the relationship between gender and corruption. Frank and Schulze (2000) analyze whether economists behave in a more self-interested way than other people. They find that economics students are significantly more corrupt than others, with male economists being the most corrupt and male non-economists the least.

⁴ Although all of the participants in our experiments were upper-level undergraduate or graduate students, their expectations and attitudes would nevertheless be influenced by the differing roles of men and women in their societies.

⁵ We discuss in Section 4 possible explanations for why gender differences may vary across cultures.

⁶ These rankings are based on the Corruption Perceptions Index (CPI), released annually by Transparency International. The CPI ranks countries in terms of the degree to which corruption is perceived to exist among politicians and public officials, based on the views of analysts and business people around the world. See www.transparency.org/policy_research/surveys_indices for more information. Table A1 in the Appendix contains a selective list of country rankings from the latest (2006) Corruption Perceptions Index.

Australia. That is, Australian men are more likely to engage in and more tolerant of corruption than Australian women. However, we find no systematic gender differences in the three Asian countries included in our study. Thus, gender differences in attitudes towards corruption appear not to be as robust as suggested by the previous evidence and may be culture-specific.

We also investigate whether cross-country variation in behavior is similar for men and women. We find greater variation in the behavior of women across the four countries we study than in the behavior of men. Cross-country variation in attitudes to corruption may reflect the differing levels of exposure to corruption in the different countries.⁷ Women may react differently to this exposure than men since there may be a larger variation in the social roles of women than in the social roles of men across countries.

The paper proceeds as follows. We discuss the experimental design in Section 2 and present the results in Section 3. We then discuss the implications of our results, possible explanations for why gender differences may vary across cultures, and avenues for future research in Section 4.

2. Experimental Design and Procedure

Since different cultures may have different perceptions of corruption, we wanted to capture in our experimental design behavior which would be viewed as corrupt in all of the countries included in our study. One of the fundamental aspects of corruption is that the parties who engage in it benefit from it at the expense of parties external to the corrupt transaction. We wanted to examine the behavior of parties on both sides of the corruption problem, those who are perpetrators of it as well as those who are victims of it. Hence, our

⁷ See Cameron et al. (2006) for a detailed discussion of how attitudes towards corruption vary across the four countries considered in this study.

experiment is based on a game where two players can act corruptly to increase their own payoff at the expense of a third player. The bribery that takes place between the first two players harms the third player and is illegal. Hence, the third player, the victim, is allowed to punish the first two players at a cost.⁸

More specifically, the experiment is based on a three-person, sequential-move game. The first player in the game is called the firm and is given the option to initiate a corrupt act by offering a bribe to a government official. The second player, whom we call the official, can either reject or accept the bribe. If the bribe is accepted, both the firm and the official are monetarily better off at the expense of the third player – the citizen. The citizen can, however, respond to the corrupt act by choosing to punish both the firm and the official. The punishment is costly to the citizen, but imposes a much larger monetary sanction on the firm and the official.⁹

This set-up allows us to examine two types of behavior: (1) the incentive to engage in a corrupt act from which one reaps benefits and (2) the incentive to incur a cost to punish a corrupt act that decreases one's payoff. This distinction enables us to examine whether individuals behave differently depending on whether they directly benefit from a corrupt act.

Figure 1 contains an extensive-form representation of the game, where all of the payoffs are denoted in experimental dollars. We constrain the amount of the bribe that the firm can offer to $B \in [4, 8]$. It costs the firm two experimental dollars to offer a bribe and the firm incurs this cost regardless of whether the bribe is accepted. This cost represents, for

⁸ Note that the World Values Survey also assesses the attitudes of people in different countries by asking their views on how justifiable it is to accept a bribe. See www.worldvaluessurvey.org/.

⁹ We chose to use emotive terms such as “bribe” and “punishment” in the instructions since our aim was to simulate a real-life corrupt transaction. Cooper and Kagel (2003) consider the role of loaded language in signaling games and suggest that the use of a meaningful context might better capture behavior in field settings than the use of neutral language. On the other hand, Abbink and Hennig-Schmidt (2002) find that the use of words like “bribe” does not make a difference in the corruption game that they study.

example, the cost of finding the right official to bribe.¹⁰ If a bribe is offered, the official decides whether to accept it. If the official decides to accept the bribe, the payoffs to the firm and the official increase by $3B$. The payoff to the citizen decreases by the amount of the bribe, B . Hence, the net benefit to the firm from paying the bribe is $3B - 2$. This may, for example, represent the benefit the firm gets from avoiding a regulation. We assume that the official's payoff also increases by $3B$ even though the amount of bribe paid by the firm is B . This is due to an assumption of difference in the marginal utilities of income. Since the income earned in the public service is likely to be lower than that earned in private firms, the same amount of money can be assumed to have a lower marginal utility value to the firm than to the official.¹¹

If a bribe has been offered and accepted, the citizen, who moves last after observing the choices made by the firm and the official, is given a chance to punish the firm and the official for the corrupt transaction. The citizen can choose an amount P in punishment. Such punishment is costly for the citizen and reduces the citizen's payoff by the amount of the punishment, P . We assume punishment is costly to the citizen for two reasons. First, the cost may represent the amount of tax the citizen has to pay for a legal system to exist. Second, it may represent the costs of filing a police report, appearing in court, etc. Since in most cases, these costs are much less than the amount of punishment actually imposed on the parties, we assume that if the citizen chooses a punishment amount of P , the firm and the official suffer a payoff reduction of $3P$.

In the subgame perfect equilibrium of this game, regardless of the parameters chosen, a payoff-maximizing citizen chooses not to punish. Knowing this, the official accepts the

¹⁰ To offer a bribe, firms usually have to incur some transaction costs. These costs are usually constant and have to be incurred irrespective of the size of the bribe being offered.

¹¹ The choice of multipliers has the additional advantage of helping us prevent negative total payoffs.

bribe and the firm offers the bribe. Moreover, the firm offers the maximum amount of bribe it can since its payoff is increasing in the amount it offers.

We have deliberately chosen to conduct a one-shot game because in a one-shot game the punishment has no economic benefit to the citizen. The decision to punish is not affected by the anticipation of possible future economic gains. This implies that if we observe any punishment by the citizens, we can infer that it is motivated by either negative reciprocity or moral considerations. Hence, with a one-shot game, a comparison of the citizens' willingness to punish across different countries reveals the differences in the tolerance of corrupt acts in those countries.

The one-shot nature of the game also helps us avoid issues associated with repeated games, such as signaling, reputation formation and serial correlation in decisions. Each subject in our database participated in the experiment only once and played only one role.¹² The subjects playing the three roles were grouped anonymously in the experiment to avoid conscious or unconscious signaling.

The experiments were run at the University of Melbourne, the Delhi School of Economics, the University of Indonesia in Jakarta, and the National University of Singapore using third year undergraduate or postgraduate students. In order to minimize the experimenter effects, we made sure that one of the authors (the same one) was present in all the countries where we ran the experiment.¹³

¹² One standard response in cases such as these is to have random re-matching of subjects. Kandori (1992) states that it is not clear whether random re-matchings do actually succeed in eliminating supergame effects. However, Duffy and Ochs (2005) consider an experiment with an indefinitely repeated 2-player prisoner's dilemma game and find that contrary to Kandori's theoretical conjecture, a cooperative norm does not emerge in the treatments where players are matched randomly. In the current paper, we decided to adopt a conservative stance and have players participate in pure one-shot games to avoid any repeated game effects.

¹³ See Roth et al. (1991) and Cardenas and Carpenter (2005) for a discussion of the methodological issues arising in multi-site experiments.

All the sessions were run as non-computerized experiments. At the beginning of each session subjects were asked to come to a large lecture theatre. Each session consisted of at least 30 subjects. These subjects, on entering the room, were randomly designated as either firms, officials or citizens. Each group was located far apart from the others in a recognizable cluster. Thus, each group could see the members of the other groups, but individual subjects were unaware of which three specific subjects constituted a particular firm-official-citizen trio.

At the beginning of each session, each subject received a copy of the instructions, which were then read out loud to them. They were also given a number of examples explaining how the payoffs would be calculated for specific bribe and punishment amounts. Then, the subjects playing the role of a firm were asked to decide whether or not to offer a bribe. If they chose to offer a bribe, they also had to choose an amount. After they made their decisions, the record sheets with the bribe amounts were collected by the experimenter and distributed to the corresponding officials. After the officials made their decisions, the record sheets of both the firms and the government officials were given to the corresponding citizens. Hence, the citizens learned whether a bribe was offered and whether it was accepted. The game ended after the citizens decided whether to punish by choosing a punishment amount. All the subjects were then asked to fill out a demographic survey, which included questions on age, gender, income, education stream, employment history, and frequency of exposure to corruption. Those in the role of the citizen were also asked to explain the motivation for their decisions.

Each experiment lasted about an hour. At the end of each session, the decisions made by all of the subjects were entered into a spreadsheet which generated their payoffs. The payoffs were converted into cash using an appropriate conversion rate, taking into

consideration purchasing power parity across the countries where the experiment was conducted.¹⁴ These conversion rates were public information. To guarantee parity in the payoffs to the different type of players (firm, official and citizen), we used a different conversion rate for each type.¹⁵

3. Results

With our experimental design, we are interested in exploring two issues. In Section 3.1, we start by investigating whether, controlling for culture (i.e., within each country), women are less tolerant towards corruption than men. We then control for gender in Section 3.2 and investigate whether there are larger cross-country variations in the behavior of women than in the behavior of men in the context of our game.

A total of 1326 subjects participated in the experiments. Of these, 596 (45%) were men. The number of participants in Australia, India, Indonesia and Singapore were 642, 309, 180 and 195 respectively.¹⁶

¹⁴ The conversion rates in each country were based on 1) the standard hourly wage paid for a student research assistant in each country and 2) a typical basket of goods bought by students in each country. This is similar to the procedure used by other researchers who have conducted cross-cultural studies (e.g., Carpenter and Cardenas, 2004 and Cardenas and Carpenter, 2005).

¹⁵ In Australia, the conversion rates were 3 experimental currency = 1 real currency for the firms, 2 experimental currency = 1 real currency for the officials and 1.5 experimental currency = 1 real currency for the citizens. Each subject made on average AU\$20. This amount is approximately equivalent to US\$15. In India subjects were paid an average of US\$11, in Singapore US\$13, and in Indonesia US\$9. Different conversion rates for different player types are sometimes used in experiments if the payoffs are expected to be very different across the subjects. Davis and Holt (1993) recommend that average payments in experiments should be high enough to compensate all participants for the opportunity cost of their time (pp. 24-26). Having different conversion rates for different types of players helped us achieve this goal since the equilibrium payoffs were highly asymmetric across the different player types (Firm, Official, and Citizen) in the experiment.

¹⁶ In Australia, 107 men and 107 women made decisions as firms, 89 men and 95 women as officials, and 59 men and 99 women as citizens. In India, 49 men and 54 women made decisions as firms, 39 men and 58 women as officials, and 44 men and 43 women as citizens. In Indonesia, 32 men and 28 women made decisions as firms, 22 men and 26 women as officials, and 17 men and 20 women as citizens. In Singapore, 23 men and 42 women made decisions as firms, 26 men and 30 women as officials, and 23 men and 27 women as citizens. As is clear from the design of the experiment, not all officials and citizens got the opportunity to make a decision, which is the reason we did not have a complete gender balance across the different roles.

We report results based on t-tests and multivariate regression analysis, where we estimated binary probit models for the bribe, acceptance and punishment rates, and ordinary least square models for the bribe and punishment amounts.¹⁷ The regression results control for variables not accounted for in the t-tests, such as field of study (whether it is economics) and the percentage of each Australian subject's life that has been spent outside of Australia.¹⁸ Of the variables we collected information on in the surveys, these were the only ones that were found to be consistently significant determinants of subject behavior. In the regressions for the officials' and citizens' behavior, we also control for the bribe amount.

The reported results are based on two different treatments that were conducted. In the Indian experiments and a subset of the Australian sessions, the citizens' punishment range was restricted to $P \in [2, 8]$.¹⁹ We refer to this treatment as "Treatment 1." In the other countries and the remaining Australian sessions, the punishment range was extended to $P \in [2, 12]$.²⁰ This is "Treatment 2." The t-tests below make comparisons within treatment and the regression results include a control for treatment. The variation in treatment design enabled us to examine the effectiveness of the punishment regime. We discuss the treatment effects in detail in Cameron et al. (2006). Since the focus of the current paper is gender differences and since gender differences do not vary across the treatments, we do not discuss the treatments effects here.²¹

¹⁷ We also estimated ordered probit models for positive bribe and punishment amounts. These recognize that the dependent variable is not continuous. The results were very similar to the reported results from the estimation of ordinary least squares models.

¹⁸ The last variable controls for the high number of foreign students that study in Australian universities. The majority of these students come from Asia. We find this variable to be insignificant in explaining behavior in most of the regressions. This is possibly because those who choose to study in Australia are more westernized than their counterparts and/or quickly absorb the social norms of the new environment.

¹⁹ Due to resource constraints, we do not have data for all treatments from all the countries.

²⁰ These values were chosen to guarantee two things. First, we wanted to ensure that no one obtained a negative payoff. Second, we wanted to make sure that the average earning was high enough to offset the participants' opportunity cost of time (Davis and Holt, 1993).

²¹ Cameron et al. (2006) also present and discuss results from a third treatment. In both Treatments 1 and 2, the bribe is welfare-enhancing in that the total payoff gains to the firm and the official *exceed* the payoff loss to the

3.1 Are women less tolerant of corruption than men?

As stated above, both Dollar et al. (2001) and Swamy et al. (2001) find that women are less tolerant of corruption than men. Within the design of our experiment, this is equivalent to asking whether female participants in the four countries where we ran our experiment had a lower propensity to pay bribes, a lower propensity to accept bribes, and a higher propensity to punish bribery than the male participants.

Table 1 presents the results of t-tests for differences in the means of the behavior of the male and female participants in the three roles. Panel A of Table 1 pools the data and shows that overall the male participants have a higher propensity to bribe than the female participants ($p = 0.04$), but that there are no other statistically significant gender differences in behavior. However, if we break the data down by individual countries (Panels B-E), we observe that the difference in the bribe rates is driven by Australia. In Australia, 91.6% of male participants offered bribes compared with 80.4% of female participants ($p = 0.02$). In none of the other countries do we see any significant gender differences in the propensities to offer bribes. Further, in Australia, the male subjects also had higher acceptance rates and lower punishment rates than the female subjects. The bribe was accepted 92.1% of the time when it was offered to a male participant in Australia while it was accepted 80% of the time when it was offered to a female participant. This difference is statistically significant according to a test of difference of means ($p = 0.02$). The Australian male participants in the role of the citizen chose to punish 49.2% of the time while the Australian female participants chose to punish 62.6% of the time. This difference is marginally significant at the 10% level.

citizen. In Treatment 3, the payoffs are altered so that the combined gains to the firm and the official are *less* than the payoff loss to the citizen. Hence, the bribe is welfare-reducing. Since the gender differences are similar across all three treatments, we chose not to discuss Treatment 3 in this paper for ease of exposition.

In India, Indonesia and Singapore, we find no significant differences in the behavior of the male and female participants in the three roles. The point estimates also do not vary systematically by gender. For example, in India men bribe more often, but also punish more often.

The regression results presented in Table 2 confirm the results from the t-tests. Panel A pools all the data across all the countries. Overall, men offer bribes with a higher frequency (significant at the 5% level) and punish corrupt acts by higher amounts (significant at the 10% level). In Panel B, the effect of gender is allowed to differ by country. For example, the coefficient on the variable “Male-Australia” captures the difference between men and women in Australia. The results show that in Australia men bribe approximately 8 percentage points more often, accept bribes approximately 8 percentage points more often, and punish bribery about 14 percentage points less often than women. However, if the Australian men do punish, then they do so by a larger amount than the Australian women. In the other countries, there are no significant gender differences in the bribe, acceptance, and punishment rates. The only significant differences we find are in the bribe and punishment amounts. Specifically, the Indian male subjects, when they bribe, offer larger bribes than the Indian female subjects, and the Indonesian male subjects, when they punish, choose higher punishment amounts than the Indonesian female subjects.

A possible criticism of our results is that the difference we observe in the behavior of men and women in Australia may be the result of gender differences in other-regarding preferences, such as inequity aversion, or in motivations for punishment, such as negative reciprocity. To examine this issue further, we conducted a set of experiments with Australian subjects using neutral language, where we replaced words such as “bribe” and “punishment”

with “transfer” and “forego money to reduce others’ payoff,” respectively.²² Moreover, instead of designating different types of players as firms, officials and citizens, we referred to them as players 1, 2 and 3.

Table 3 presents the results from these experiments. In comparison, both genders offer and accept transfers more often in the neutral-language treatment than they offer and accept bribes in the loaded-language treatment. They also punish less often. However, the gender differences in behavior are much less in the neutral-language treatment than they are in the loaded-language treatment. In the neutral-language treatment, women’s propensity to offer a transfer is not significantly different from the men’s (100% of the time instead of 94%). Their propensity to punish is not different either (30% in both cases). These results suggest that the use of loaded language stimulates a reaction to corruption and that Australian women react more strongly against a corrupt transaction than Australian men do.

The only exception is in the acceptance rates. Women still accept less often than men (85% versus 100%) and the difference remains statistically significant ($p = 0.08$). It is not clear why the acceptance rate decision would differ from the other two decisions. If women are more risk averse or more concerned about fairness than men, this would also lead them to “bribe” less often in the neutral-language treatment, which they do not do. The difference in the decision to accept is driven by the behavior of only 4 (out of 26) women. In fact, if we group the decision to offer and accept a transfer together, we find that the probability of engaging in a transaction to increase one’s own payoff at the expense of another player is very similar across the genders (92% for women versus 97% for men, $p = 0.34$). Doing the same exercise with the loaded-language data reveals that the difference is large and statistically significant (75% for women versus 87% for men, $p = 0.03$). Hence, we conclude

²² The neutral-language experiments were run with Treatment 2 only, where a larger range of punishments were allowed.

that the neutral-language treatment supports our contention that the gender differences we observe in the loaded-language experiments reflect different reactions to the corrupt context.^{23,24}

3.2 Does the cross-country variation in behavior differ by gender?

Our finding in the previous section is that the differences between men and women do not necessarily lead to statistically significant behavioral differences in terms of corruption. Another way to think of the impact of social roles is to observe how it affects the behavior of one gender across countries. To do this, we start by discussing the variations in the behavior of men. Table 4A, Panels (i)-(iv) compare the means of behavior across the Australian, Indian, Indonesian and Singaporean male subjects. These pair-wise country comparisons show that there are no significant differences in the propensities to bribe, the bribe amounts, and the propensities to accept. Hence, in terms of the propensities to engage in corrupt behavior, the male subjects in all four countries display similar tendencies.

It is only when we consider the propensities to punish corrupt behavior that we see some significant differences in the behavior of male subjects in the four countries. Specifically, the Indonesian male subjects have the highest rate of punishment followed by the Australian male subjects (76.5% and 50% respectively). This difference is significant at the 10% level. The Singaporean male subjects punished in 39.1% of the cases. Although their rate of punishment is not statistically significantly different from that of the Australian male

²³ As further evidence, we also checked to see whether there were significant gender differences in the reasons the citizens gave for their decisions to punish in the post-experimental survey we asked them to fill out. If it is the case that Australian women differ from Australian men in terms of their other-regarding preferences or motivations for punishment, one would expect them to cite reasons of fairness or negative reciprocity more frequently while explaining their decisions to punish. However, we find this not to be the case. On the contrary, the Australian women cite punishing for moral reasons more often than the Australian men (39% of the female citizens who had the chance to punish versus 25% of the male citizens who had the chance to punish). The difference is statistically significant with a p-value of 0.07. Hence, our view that it is the Australian women's lower tolerance of corruption that causes the gender differences in behavior was further strengthened.

²⁴ Note that it is possible that men and women react differently to the framed context and that what we observe is not the real difference in their tolerance of corruption. Although it is not clear why this would be the case, we cannot rule this out as a possible explanation of the gender difference we observe.

subjects ($p = 0.46$), it is significantly less than that of the Indonesian male subjects ($p = 0.02$). The Indian male subjects have the lowest punishment rate of all (27.3%). This is significantly less than the punishment rate of the Australian male subjects ($p = 0.06$).

The regression results presented in Table 2, Panel C confirm the results from the t-tests.²⁵ We test for equality of coefficients across the four countries for each gender. As shown in the table, the tests indicate that we are unable to reject the hypothesis that male behavior in each of the countries is the same, except in the case of punishment rates ($p = 0.08$). In the case of punishment rates, the regression results show that, once we control for the field of study (i.e., whether it is economics), the percentage of each Australian subject's life that has been spent outside of Australia, and treatment effects, the punishment behavior of the male subjects in Australia is not significantly different from that in any of the other countries. However, since the male subjects in Indonesia have significantly higher rates of punishment than those in India and Singapore, we get the result that the coefficients in this case are not equal to each other.²⁶

In contrast, the t-tests reported in Table 4B and regression results reported in Table 2, Panel C reveal differences in female behavior across the four countries in all categories of comparison. Testing for equality of regression coefficients, we find that female behavior varies across the four countries in the case of bribe rates, bribe amounts, and punishment rates. All of these differences are significant at the 5% level. In the case of acceptance rates and punishment amounts, we are only narrowly unable to reject a hypothesis of equality of

²⁵ These results are the same as those presented in Table 2, Panel B. However, they are configured (by interacting both the male and female dummies with the country dummies) to enable an easier interpretation of within-gender cross-country differences.

²⁶ The pairwise regression tests give p-values of 0.058 and 0.028 respectively. The high rate of punishment we observe among the Indonesian male subjects is an unexpected outcome given the high level of corruption in this country. One possible explanation for this outcome is the recent institutional changes that have occurred in Indonesia. Since the introduction of democracy in Indonesia in 1998 and the relaxation of media restrictions, corruption has received a lot more negative media attention. This may have resulted in a hardening of attitudes against corruption. See Cameron et al. (2006) for a more detailed discussion of this point.

coefficients at the 10% level (with p-values of 0.12 and 0.11 respectively). Moreover, unreported pairwise tests of the regression coefficients show that the acceptance rate in Singapore is significantly higher than that in each of the other three countries.

The magnitude of the cross-country variation in female behavior is quite large. For instance, the regression results show that the female bribe rate in Australia is 16.6 percentage points lower than that in Indonesia and 17.2 percentage points lower than that in Singapore ($p = 0.02$ and $p = 0.007$ respectively). Similarly, the female acceptance rate in Singapore is 19.7 percentage points higher than that in Australia, 15.2 percentage points higher than that in India, and 12.9 percentage points higher than that in Indonesia (with $p = 0.016$, $p = 0.089$, and $p = 0.089$ respectively).²⁷

In summary, we find less cross-country variation in the behavior of men than in the behavior of women. When we compare the behavior of the male subjects, we find significant differences only in the propensity to punish corrupt behavior. In contrast, when we compare the behavior of the female subjects, we find significant differences in both the propensity to engage in corrupt behavior (the bribe rate and amount) and the propensity to punish corrupt behavior. Overall, the Australian female subjects seem to have the lowest tolerance of corrupt behavior.

4. Discussion

Our goal in this paper was to examine gender differences in behavior when confronted with a common bribery problem. We explored two issues. First, we investigated whether women are less likely to offer bribes and more likely to punish corrupt behavior. We

²⁷ As explained in Cameron et al. (2006), one possible explanation for the relatively higher tolerance of corruption we find in Singapore is the top-down policy approach that has been adopted in this country. Such an approach could have had the effect of eradicating corruption at a faster rate than it takes to fundamentally change society's social norms.

find this to be the case in only one of the four countries studied – Australia. We do not find significant gender differences in India, Indonesia or Singapore.

The results for the only Western country in our study are similar to those found in the existing literature. In both Dollar et al (2001) and Swamy et al. (2001), the Western countries make up a large part of their sample.^{28,29} Our findings suggest that the gender differences found in these previous studies may be culture-specific. This is important because the gender differences found in the previous studies on corruption have prompted policy makers in many developing countries to recommend higher rates of female participation in the political and economic institutions. Our results indicate that, although there may be other valid reasons for advocating policy measures that promote female political involvement, some caution needs to be taken in asserting that increased female participation will lower corruption in all countries.^{30,31}

Further work is needed to understand the reasons for the variations in gender differences in attitudes towards corruption across countries and to establish in which countries gender differences exist. It is possible that countries with different cultural backgrounds display gender differences to different degrees. For example, Gneezy et al. (2006) find that the gender differences in attitudes towards competition that are observed in

²⁸ Swamy et al. (2001) present some results disaggregated to the country level. Interestingly, scrutiny of these results reveals that there are no gender differences in tolerance of corruption in the three Asian nations in their sample (China, India and South Korea). This is also true of Nigeria, the only African nation in their sample other than South Africa.

²⁹ Most of the previous experimental studies that have examined behavioral gender differences have been based on data from the Western nations, with the majority being from the U.S.

³⁰ See Duflo (2005) for a discussion of the various reasons for reserving positions for groups that are perceived as being disadvantaged.

³¹ In fact, the World Values Survey (WVS, available at www.worldvaluessurvey.org/), which asks respondents whether someone accepting a bribe is acceptable, yields results consistent with ours. Specifically, the WVS also shows that while the Australian women are significantly less tolerant of corruption than the Australian men (88% of the women stated accepting a bribe is never acceptable versus 83% of the men, $p < 0.01$), there are no statistically significant gender differences in India and Singapore. However, according to the WVS, the Indonesian women are significantly less tolerant of corruption than the Indonesian men (86% versus 79%, $p < 0.01$). The WVS was also conducted in Vietnam, the Philippines, Bangladesh, and China, where the results again yield no statistically significant gender differences. These figures are all for the most recent survey run in each country.

the Western countries are reversed in matrilineal societies. Their results provide insights into how the existing societal structure is crucially linked to the observed gender differences in competitiveness. In the context of corruption, one possible explanation for the different gender effects that are observed in our data is the differing social roles of women across cultures. In relatively more patriarchal societies where women do not play as active a role in the public domain, women's views on social issues may be influenced to a greater extent by men's views. Hence, in such societies, one would expect to see less of a gender difference in behavior towards corruption in comparison to societies where women feel more comfortable in voicing their own opinions.³²

The second issue we investigated is whether cross-country variation in behavior is similar for men and women. The behavior of the male subjects was shown to be quite similar in all four countries. In contrast, there are important differences in the behavior of the female subjects across the four countries. One possible explanation for these results is that there are greater variations in women's social roles across countries than in men's. Understanding why the cross-country variation in attitudes towards corruption differs by gender is another important agenda for future research.

³² See, for example, Chan (2000), Bessell (2005) and Ganguly-Scrase (2000) for discussions of the limited roles of women in the public domain in Singapore, Indonesia and India respectively. Australia, in contrast, has historically had a pioneering role in the advancement of women's rights (Sawer, 1994). See also Nelson and Chowdhury (1994) for a discussion of the variation in the women's attitudes towards participation and activism in societal affairs across different cultures.

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Figure 1: The Game Tree

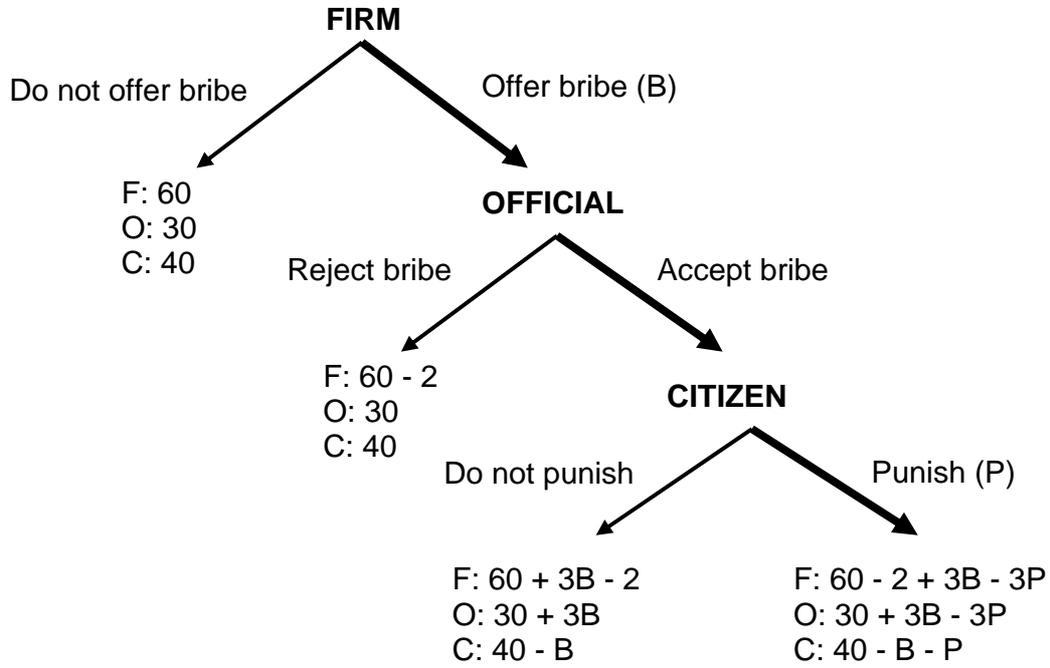


Table 1: Gender Differences

A. All Countries, Treatments 1 and 2			
	Male	Female	p-value
% firms bribing	90.52	83.98	0.04
Bribe Amount (if >0)	7.59	7.55	0.63
% officials accepting	88.64	84.21	0.21
% citizens punishing	44.06	51.85	0.16
Punishment Amount (if >0)	6.05	5.37	0.24
B. Australia, Treatments 1 and 2			
	Male	Female	p-value
% firms bribing	91.59	80.37	0.02
Bribe Amount (if >0)	7.63	7.72	0.42
% officials accepting	92.13	80.00	0.02
% citizens punishing	49.15	62.63	0.10
Punishment Amount (if >0)	6.48	5.34	0.12
C. India, Treatment 1			
	Male	Female	p-value
% firms bribing	95.92	92.59	0.48
Bribe Amount (if >0)	7.57	7.18	0.10
% officials accepting	89.74	89.66	0.99
% citizens punishing	27.27	20.93	0.50
Punishment Amount (if >0)	3.25	4.33	0.30
D. Indonesia, Treatment 2			
	Male	Female	p-value
% firms bribing	78.13	82.14	0.70
Bribe Amount (if >0)	7.40	7.61	0.47
% officials accepting	77.27	76.92	0.98
% citizens punishing	76.47	70.00	0.67
Punishment Amount (if >0)	7.00	4.29	0.12
E. Singapore, Treatment 2			
	Male	Female	p-value
% firms bribing	91.30	83.33	0.38
Bribe Amount (if >0)	7.67	7.60	0.77
% officials accepting	84.62	93.33	0.30
% citizens punishing	39.13	48.15	0.53
Punishment Amount (if >0)	7.00	7.38	0.82

Table 2: Multivariate Regression Results

A. Pooled Regression Results

	Bribe (0/1)		Bribe Amount (>0)		Accept (0/1)		Punish (0/1)		Punishment Amount (>0)	
	1	2	3	4	5	6	7	8	9	10
	M. Effect*	p-value	Coeff	p-value	M. Effect*	p-value	M. Effect*	p-value	Coeff	p-value
India	0.059	0.32	-0.456	0.03 *	0.012	0.86	-0.277	0.01 Δ	-2.154	0.05 *
Indonesia	0.073	0.08 #	-0.254	0.23	0.025	0.68	0.045	0.72	-1.068	0.30
Singapore	0.105	0.00 Δ	-0.096	0.64	0.100	0.06 #	-0.224	0.04 *	0.665	0.53
Male	0.063	0.04 *	0.089	0.35	0.035	0.31	-0.062	0.29	1.008	0.08 #
Econ major	0.026	0.42	0.200	0.05 *	0.082	0.03 *	-0.159	0.01 Δ	-0.380	0.58
% life out of Australia	0.148	0.01 Δ	-0.119	0.55	0.092	0.14	-0.060	0.56	-0.730	0.42
Treatment 1	0.148	0.00 Δ	0.031	0.82	0.090	0.08 #	-0.105	0.20	-0.741	0.32
Bribe amount const			7.641	0.00 Δ	-0.007	0.71	-0.035	0.27	0.191	0.55
									4.797	0.05 *
R-squared	0.102		0.012		0.056		0.102		0.046	
N	440		383		384		332		161	

* We report marginal effects for the probits. *, #, and Δ denote statistical significance at the 5%, 10%, and 1% level, respectively.

B. Pooled Data, Gender-Country Interaction (Australian Female Subjects are the reference category.)

	Bribe (0/1)		Bribe Amount (>0)		Accept (0/1)		Punish (0/1)		Punishment Amount (>0)	
	1	2	3	4	5	6	7	8	9	10
	M. Effect*	p-value	Coeff	p-value	M. Effect*	p-value	M. Effect*	p-value	Coeff	p-value
India	0.074	0.26	-0.725	0.00 Δ	0.036	0.61	-0.367	0.00 Δ	-0.95	0.50
Indonesia	0.105	0.02 *	-0.179	0.49	0.051	0.44	-0.047	0.76	-1.85	0.12
Singapore	0.110	0.01 Δ	-0.181	0.45	0.135	0.02 *	-0.237	0.07 #	1.33	0.28
Male-Aust	0.083	0.02 *	-0.044	0.74	0.084	0.06 #	-0.143	0.08 #	1.34	0.09 #
Male-India	0.048	0.44	0.472	0.01 Δ	-0.024	0.73	0.073	0.54	-0.95	0.54
Male-Indonesia	-0.030	0.68	-0.203	0.43	-0.008	0.92	0.070	0.69	2.74	0.04 *
Male-Singapore	0.060	0.33	0.110	0.66	-0.121	0.30	-0.101	0.48	0.497	0.74
Econ major	0.027	0.39	0.198	0.05 *	0.083	0.03 *	-0.160	0.01 Δ	-0.364	0.59
% life out of Australia	0.152	0.01 Δ	-0.135	0.50	0.078	0.21	-0.063	0.54	-0.793	0.38
Treatment 1	0.145	0.00 Δ	0.040	0.76	0.077	0.13	-0.101	0.22	-0.777	0.29
Bribe amount const			7.719	0.00 Δ	-0.007	0.72	-0.035	0.28	0.192	0.55
									4.728	0.06 #
R-squared	0.110		0.022		0.069		0.108		0.055	
N	440		383		384		332		161	

* We report marginal effects for the probits. *, #, and Δ denote statistical significance at the 5%, 10%, and 1% level, respectively.

C. Pooled Data, Gender-Country Interaction (Australian Male Subjects are the reference category.)

	Bribe (0/1)		Bribe Amount (>0)		Accept (0/1)		Punish (0/1)		Punishment Amount (>0)	
	1	2	3	4	5	6	7	8	9	10
	M. Effect*	p-value	Coeff	p-value	M. Effect*	p-value	M. Effect*	p-value	Coeff	p-value
Female-Australia (α_1)	-0.117	0.02 *	0.044	0.74	-0.112	0.06 #	0.145	0.08 #	-1.34	0.09 #
Female-India (α_2)	-0.011	0.89	-0.681	0.00 Δ	-0.067	0.46	-0.237	0.06 #	-2.30	0.13
Female-Indonesia (α_3)	0.049	0.38	-0.135	0.60	-0.044	0.64	0.098	0.53	-3.19	0.02 *
Female-Singapore (α_4)	0.055	0.28	-0.137	0.55	0.085	0.24	-0.102	0.47	-0.019	0.99
Male-India (β_1)	0.040	0.59	-0.209	0.36	-0.036	0.69	-0.172	0.17	-3.244	0.02 *
Male-Indonesia (β_2)	0.029	0.62	-0.338	0.18	-0.054	0.59	0.166	0.31	-0.452	0.74
Male-Singapore (β_3)	0.089	0.08 #	-0.027	0.92	0.016	0.85	-0.196	0.17	-0.507	0.74
Econ major	0.027	0.39	0.198	0.05 *	0.083	0.03 *	-0.160	0.01 Δ	-0.364	0.59
% life out of Australia	0.152	0.01 Δ	-0.135	0.50	0.078	0.21	-0.063	0.54	-0.793	0.38
Treatment 1	0.145	0.00 Δ	0.040	0.76	0.077	0.13	-0.101	0.22	-0.777	0.29
Bribe amount					-0.007	0.72	-0.035	0.28	0.192	0.55
Const			7.719	0.00 Δ					4.728	0.06 #
Tests:										
Female: ($\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4$)		0.04 *		0.02 *		0.12		0.01 Δ		0.11
Male: ($\beta_1 = \beta_2 = \beta_3$)		0.35		0.48		0.86		0.08 #		0.14
R-squared	0.110		0.022		0.069		0.108		0.055	
N	440		383		384		332		161	

* We report marginal effects for the probits. *, #, and Δ denote statistical significance at the 5%, 10%, and 1% level, respectively.

Table 3: Neutral versus Loaded Language (Australia, Treatment 2)

	Loaded Language			Neutral Language		
	Male	Female	p-value	Male	Female	p-value
% firms offering a bribe (transfer)	87.3	71.2	0.032	94.4	100	0.22
Bribe (transfer) amount (if >0)	7.67	7.64	0.85	7.71	7.37	0.23
% officials accepting	85.7	78.3	0.38	100	84.4	0.08
% citizens punishing	50.0	68.6	0.11	30.4	30.0	0.98
Punishment amount (if >0)	7.08	5.57	0.22	6.71	5.66	0.71
% participating in a corrupt act	86.7	74.6	0.03	97.2	92.5	0.34

Table 4A: Differences Between Males Across Countries

	Australia (Treatment 1)	India (Treatment 1)	p-value
(i)			
% of firms bribing	96.15	95.92	0.95
Bribe amount (if >0)	7.60	7.57	0.89
% of officials accepting	96.30	89.74	0.21
% of citizens punishing	48.48	27.27	0.06
Punishment amount (if >0)	6.00	3.25	0.01
(ii)	Australia (Treatment 2)	Indonesia (Treatment 2)	p-value
% of firms bribing	87.27	78.13	0.27
Bribe amount (if >0)	7.67	7.40	0.22
% of officials accepting	85.71	77.27	0.42
% of citizens punishing	50.00	76.47	0.09
Punishment amount (if >0)	7.08	7.00	0.97
(iii)	Australia (Treatment 2)	Singapore (Treatment 2)	p-value
% of firms bribing	87.27	91.30	0.62
Bribe amount (if >0)	7.67	7.67	1.00
% of officials accepting	85.71	84.62	0.91
% of citizens punishing	50.00	39.13	0.46
Punishment amount (if >0)	7.08	7.00	0.97
(iv)	Indonesia (Treatment 2)	Singapore (Treatment 2)	p-value
% of firms bribing	78.13	91.30	0.20
Bribe amount (if >0)	7.40	7.67	0.38
% of officials accepting	77.27	84.62	0.53
% of citizens punishing	76.47	39.13	0.02
Punishment amount (if >0)	7.00	7.00	1.00

Table 4B: Differences Between Females Across Countries

	Australia (Treatment 1)	India (Treatment 1)	p-value
(i)			
% of firms bribing	95.12	92.59	0.62
Bribe amount (if >0)	7.82	7.18	0.01
% of officials accepting	82.86	89.66	0.35
% of citizens punishing	56.25	20.93	0.00
Punishment amount (if >0)	5.04	4.33	0.47
	Australia (Treatment 2)	Indonesia (Treatment 2)	p-value
(ii)			
% of firms bribing	71.21	82.14	0.27
Bribe amount (if >0)	7.64	7.61	0.88
% of officials accepting	78.33	76.92	0.89
% of citizens punishing	68.63	70.00	0.91
Punishment amount (if >0)	5.57	4.29	0.28
	Australia (Treatment 2)	Singapore (Treatment 2)	p-value
(iii)			
% of firms bribing	71.21	83.33	0.15
Bribe amount (if >0)	7.64	7.60	0.83
% of officials accepting	78.33	93.33	0.07
% of citizens punishing	68.63	48.15	0.08
Punishment amount (if >0)	5.57	7.38	0.13
	Indonesia (Treatment 2)	Singapore (Treatment 2)	p-value
(iv)			
% of firms bribing	82.14	83.33	0.90
Bribe amount (if >0)	7.61	7.60	0.97
% of officials accepting	76.92	93.33	0.08
% of citizens punishing	70.00	48.15	0.14
Punishment amount (if >0)	4.29	7.38	0.04

APPENDIX

Table A1: The 2006 Corruptions Perceptions Index

RANK	COUNTRY	SCORE
1.	Finland Iceland New Zealand	9.6
4.	Denmark	9.5
5.	Singapore	9.4
...		
9.	Australia Netherlands	8.7
...		
11.	Austria Luxembourg United Kingdom	8.6
...		
20.	Belgium Chile USA	7.3
...		
45	Italy	4.9
54	Greece	4.4
...		
70.	Brazil China Egypt Ghana India Mexico Peru Saudi Arabia Senegal	3.3
...		
130.	Azerbaijan Burundi Central African Republic Ethiopia Indonesia Papua New Guinea Togo Zimbabwe	2.4
...		
163.	Haiti	1.8
Source: Transparency International		