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Corruption and culture:

An Experimental Analysis

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Abstract

Why do some people choose corruption over honesty and others not? Do the social norms and values prevailing in the societies in which they grew up affect their decisions? In 2005, we conducted a bribery experiment and found that, among undergraduates, we could predict who would act corruptly with reference to the level of corruption in their home country. Among graduates we could not. In 2007, we replicated our result. We conclude that individuals' propensities to act corruptly may reflect the cultures in which they grew up. However, certain types of individuals may not conform to their cultures and could, therefore, act as agents for change.

Introduction

Why do some people choose corruption over honesty, while others do not? Is it only the economic costs and benefits associated with a corrupt act that are important or do intrinsic motivations also play a determining role? And if intrinsic motivations are important, are they culturally determined?

Intrinsic motivations originate from the internalisation of social norms existing within a society. Norms are "social" when the values underlying the norms are shared, so that deviation from the norm triggers social disapproval and, if the norm is internalised, generates feelings of shame and guilt (see Elster 1989, Posner and Rasmusen 1999, and Young 2008). Thus, cultural values "justify and guide the ways that social institutions function, their goals and modes of operation. Social actors draw on them to select actions, evaluate people and events, and explain or justify their actions and evaluations" (Licht et al, 2007).

It is often argued that values and beliefs are transmitted unchanged from generation to generation through primary socialisation, and that they therefore represent a slow-moving component of culture (Guiso, Sapienza and Zingales, 2006). However, social interactions may render cultural values and social norms at least partly endogenous (Akerlof, 1980).[1] Not only do values and beliefs affect adherence to a social norm, but the proportion of people who adhere to the norm affects individuals' beliefs in the values underlying the norm, and, as a consequence, the likelihood that the norm will be internalised by future generations. And these strategic complementarities may lead to multiple equilibria characterized by varying levels of adherence to the norm and belief in the underlying values.

Combining these theories with the idea of a social norm that prescribes abstinence from corruption, we can explain why a "culture of corruption" appears to exist and persist in some countries (see Hauk and Saez-Marti, 2002) and not in others. In the former, individuals have not internalised the anti-corruption norm and so the impact of intrinsic motivations on their decision to engage in or abstain from corruption is weak, while in the latter, the opposite applies. If this is the case, all other things

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[1] For a psychological treatise on the subject of social norms and their enforcement, see: Benedict, 1934; Grusec and Kuczynski, 1997. For formal models on the endogeneity of culture in the biological literature, see: Cavalli-Sforza and Feldman, 1981; and Boyd and Richerson, 1985.

being equal, individuals who grow up in societies in which corruption is prevalent should be more likely to act corruptly than individuals who grow up in societies where corruption is rare.

Here, we test this hypothesis by conducting economic experiments and analyzing the data in conjunction with cross-country data on corruption. The idea behind this methodological approach is as follows. Suppose we could take a sample of private citizens and public officials from a large number of countries, each with a markedly different level of corruption, and place them all in exactly the same formal institutional context. Suppose, also, that we could ensure that a given corrupt service was equally valuable to each private citizen and equally costly for each public servant to supply, and that the negative externality resulting from the former paying and the latter receiving a bribe in exchange for the service was equally large for all possible citizen-servant pairs. And finally, suppose that we could eliminate strategic complementarities and, hence, multiple equilibria. Then, if we could predict who would offer and accept bribes with reference to the levels of corruption prevailing in their home countries, it could be taken as evidence in support of our hypothesis.

Our study deviated from this 'ideal design' in two important ways. First, all participants in our study were students so, while they could also be described as private citizens, none were public servants. Second, because a real, formal institutional environment would have been impossible to control perfectly, our study involves an economic experiment based on two specially designed bribery games, one conducted in 2005 and another in 2007. Our experimental participants were Oxford University students originating from over 30 different countries including some of the most and least corrupt in the world.

Fisman and Miguel's (2007) investigation into the relationship between parking violations by diplomats in New York City and the level of corruption in their home countries has a similar basis to ours and does not suffer from concerns about external validity as it is not a laboratory experiment. However, their research subjects are rare in type and this raises questions about the generality of their findings. By providing evidence relating to a different type of research subject we aim to complement Fisman and Miguel's work.

In 2005, we found support for our hypothesis, but only among undergraduates. Among graduate students we found no relationship between the level of corruption in the country where they grew up and their behaviour in the experiment. This conditionality did not feature in our original hypothesis. So, having sought and found two explanations as to why graduates and undergraduates might differ, we designed and conducted a second experiment in 2007 involving an entirely new sample of student subjects. The aim of this second experiment was to provide a clean test of the modified, conditional hypothesis that, among undergraduate but not graduate students, those from more corrupt countries are more likely to engage in bribery within the experiment. Our original finding was replicated and the conditional hypothesis supported. We therefore conclude that social norms, values and beliefs internalised during childhood may play a determining role in individuals' decisions about bribery later in life and that corruption is, in part, a cultural phenomenon. However, certain types of individual are less likely than others to conform to their culture and, therefore, have the potential to act as agents for change.

The paper has seven sections. Following this introduction, in section 2 we briefly review the most recent literature on the relationship between culture, economic outcomes and corruption; then, in section 3, we describe the design of the experiment conducted in 2005. In section 4, we introduce our 2005 subject pool and the measure of corruption in the countries where they grew up that we use in our analysis. In section 5 we present the results of the 2005 experiment. In section 6, we describe the 2007 experiment and present the 2007 results. Finally, in section 7, we summarise and conclude.

2. Culture, economics, and corruption

In the last decade, with the emergence of institutional economics, cultural differences across societies and their relationship to differences in economic behaviour and outcomes have attracted increasing interest among economists.[2] Defining culture is problematic, and the specific definitions used in the economics literature depend

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[2] For a fascinating historical review of economic studies that acknowledge the role of culture and norms, see Guiso, Sapienza and Zingales (2006). As highlighted by the authors, until recently the analysis of the impact of culture on economic outcomes was undertaken by non-economists, starting with Banfield (1958).

crucially on the role attributed to culture, as opposed to economic incentives and formal institutions, in individuals' decision-making processes. According to the most restrictive definitions, culture is merely a coordination device, i.e. a set of social norms and beliefs that lead a society to a specific equilibrium when multiple equilibria exist (Grief, 1994), while more comprehensive definitions encompass "the values, attitudes, beliefs, orientations and underlying assumptions prevalent among people in a society" (Huntington, 2000). We adopt the latter definition.

In recent years, a number of studies have investigated the impact of cultural variables on economic behavior and outcomes. The standard approach has been to conduct cross-country regression analyses using various measures of individual attitudes and beliefs drawn from cross-national surveys such us the World Value Survey as proxies for culture. The level of generalised trust among a country's population, for example, has been widely used as a proxy for the "socio-cultural capital" existing in a country, and has been found to be positively correlated with GDP per capita and growth and negatively correlated with levels of corruption (La Porta et al, 1997; Knack and Keefer, 1997; Knack and Zak, 2001).[3] Cross-country studies have also provided evidence of a negative relationship between the dominance of non-hierarchical religions and corruption (La Porta et al, 1997 and 1999; Treisman, 2000, Serra 2006). However, reverse causality, measurement bias and omitted variable bias impose limitations on the interpretability of results generated by cross-country studies.

A number of more recent studies have endeavoured to overcome these inferential constraints by comparing the economic behaviour and outcomes of immigrants from different countries who are currently living in the same environment.[4] This approach makes it possible to isolate the role of cultural factors from that of country-specific formal institutional settings. However, it may be subject to limitations of a different kind. The migration experience may cause immigrants to deviate from behaviours promoted by their traditional cultural values, beliefs and social norms. Exposure to the cultural values, beliefs and social norms prevailing in their new country

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[3] Fernandez (2008) and Guiso, Sapienza and Zingales (2006) provide an exhaustive literature review of the most recent cross-country studies of culture and economic outcomes.
[4] Fernandez (2008) and Algan and Cahuc (2007) provide a comprehensive review of the literature on the impact of cultural factors on fertility, labour market participation, family leaving arrangements, saving behaviour, family values, use of informal credit, propensity to trust others and shirking behaviour in the workplace, that makes use this approach.

of residence may weaken the impact of "their own" culture on their behaviour. And immigrants are unlikely to constitute a representative sample of the population in their home country – they are the ones who have chosen to leave. As pointed out by Fernandez (2008), these limitations may reduce the likelihood of such studies providing evidence of a significant impact of culture on economic behaviour and outcomes.

This notwithstanding, Fisman and Miguel (2007) successfully used this approach to identify a relationship between culture and corruption. They analyzed parking violations by diplomats from 149 different countries in New York City and found that diplomats from highly corrupt countries were significantly more likely to violate parking laws than diplomats from less corrupt countries. They interpret this result as evidence that anti-corruption norms internalised in the diplomats' home countries play a significant role in their decision to violate the norm in their new country of residence.

Aiming to complement Fisman and Miguel's (2007) work, we sought to identify a link between culture and corruption, while focusing on a different type of immigrant and using a behavioural experiment to measure individual variations in the tendency to act corruptly. Starting with Roth et al. (1991), researchers have been conducting identical experiments in two or more societies in order to investigate the impact of culture on behaviour. The advantage of an experimental approach is that the economic incentives and the "formal institutions" within which the research subjects make their decisions can be perfectly controlled and, so, any significant cross-society variations in behaviour can be attributed to the beliefs, values and social norms that the subjects bring with them into the experiment.[5] Cameron et al. (2005) endeavoured to apply a cross-societal, experimental methodology to the study of culture and corruption by engaging a large sample of students in Australia, India, Indonesia and Singapore in a bribery game. However, their results were inconclusive.

Our methodology, which could be described as a cross between Fisman and Miguel's (2007) and Cameron et al.'s (2005) is described below.

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[5] For interesting examples of experimental cross-cultural studies, see Henrich et al. (2001, 2006) and Hermmann et al. (2008).

3. The 2005 bribery game

In 2005, we designed and conducted an experiment involving a very simple bribery game.[6] The game simulates a situation in which a private citizen must decide whether and how much to offer a public servant as a bribe in exchange for a corrupt service, such as a reduction in tax, preferential treatment in a court hearing, or speedier admission to hospital. In turn, the public official has to decide whether, and how much, to accept as a bribe. If a bribe is offered and accepted, the briber-bribee pair benefit, while other members of society incur a cost.

The game involves 15 players, five "private citizens", five "public officials", and five "other members of society". Roles and "private citizen"–"public official" pairings are randomly assigned and play is anonymous and one-shot.

Each "private citizen" receives an initial endowment, Y_c, and may offer a "bribe", b, in exchange for a corrupt service, the value of which to him is V. If he offers a bribe, regardless of its magnitude and whether it is accepted or rejected by the "public official", he incurs a cost E. This represents the expected cost of being caught and punished. We chose to make this cost deterministic rather than stochastic in order to reduce the potential impact of risk preferences on observed behaviour. So, the "private citizen's" final payoff from the game is:-

$F_c = Y_c$ if he chooses not to offer a bribe;

    $= Y_c - E + V - b$ if he offers a bribe and the bribe is accepted; and

    $= Y_c - E$ if he offers a bribe and the bribe is rejected.

Each "public official" receives an initial endowment of Y_p. If he accepts a bribe he automatically has to supply the corrupt service and incur a cost, K. This cost represents the sum of the expected cost of being caught and punished, the actual cost of supplying the service, and the cost of any efforts made to reduce capture. Again, we chose to make this cost deterministic rather than stochastic in order to reduce the potential impact of risk preferences on observed behaviour. So, the "public official's" final payoff from the game is:-

$F_p = Y_p$ if he is not offered a bribe;

    $= Y_p$ if he is offered but does not accept a bribe; and

    $= Y_p - K + b$ if he accepts a bribe.

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[6] Cameron *et al* (*op. cit.*) and Abbink *et al* (2002) provided the starting point for our design. For a review of these and other experiments addressing the issue of corruption see Abbink (2006).

Finally, each "other member of society" receives an initial endowment of Y_o and for every bribe offered by a "private citizen" and accepted by a "public official" he incurs a cost, h. So, each "other member of society's" final payoff from the game is $F_o = Y_o - N_c h$, where $N_c \in \{1, 2, 3, 4, 5\}$ is the number of "private citizen"-"public official" pairs who offer and accept bribes.

3.1 Predictions

If all "public officials" and "private citizens" are selfish, this game has a single sub-game perfect equilibrium. Each "public official" will accept any bribe that leaves him better off, i.e., he will accept any $b>K$, and will be indifferent between accepting and rejecting when $b=K$. Assuming "private citizens" know this, they will all offer bribes of $K+\mu$, where μ is a small positive amount. All bribes ($=K+\mu$) will be accepted, so each "other member of society" will suffer the maximum possible negative externality of $5h$.

However, if subjects in the "public official" and "private citizen" roles bring internalized anti-corruption norms with them into the experiment, they may choose to abstain from engaging in bribery despite the positive monetary payoff. And, if the likelihood of an individual internalizing an anti-corruption norm depends positively on the level of corruption in the society in which they grew up, we should see a positive relationship between the level of corruption in a student's home country and the likelihood of them engaging in bribery in the experiment.

3.2 Implementation

We implemented this bribery experiment during the final quarter of 2005 in seminar rooms in the Department of Economics, Oxford University. We conducted 13 experimental sessions, each involving 15 participants, giving a total of 195 experimental participants. The games were played using a fictitious currency called a Gilpet (Ǥ1 = £0.20 ≈ \$0.35), and we set $Y_c=Y_p=$Ǥ35, $Y_o=$Ǥ25, $V=$Ǥ16, $E=$Ǥ1, and $K=$Ǥ5. We varied the cost incurred by "other members of society", h, across sessions; in six sessions $h=$Ǥ1 and in seven sessions $h=$Ǥ4. Finally, the game was presented in abstract form, i.e., making no reference to "private citizens", "public servants", bribery, and corrupt services, in six of the sessions, and in framed form in seven sessions. While pertinent to the issue of whether intrinsic motivations affect individual behaviour, the effects of

these treatments do not speak directly to our hypothesis and, for this reason we control for but do not provide an analysis of them below. For a comprehensive analysis of the treatment effects see Barr and Serra (2008).

In every session the participants were seated at well-spaced desks, and received two tables showing how various possible decision combinations would lead to particular final payoffs for each player-type. The participants expressed their decisions on specially designed forms, which they completed behind privacy screens designed to ensure that their decisions could not be observed. No talking was allowed.

The subjects in the "public official" role played the game using a strategy form, i.e. they were asked to state on a form whether they would accept or reject each of the possible bribes that could be offered by the "private citizen" with whom they were paired, while knowing that whichever one of their responses turned out to be pertinent would determine their earnings. Once the game was complete, the participants' payoffs were calculated at the front of the seminar room and a show-up fee of £3 (≈$5.29) was added.[7] In the meantime, the participants filled out a questionnaire about themselves and their home countries.[8]

4 Participants

Our 195 participants were all students at the University of Oxford. Some signed up for the study at a stall set up by us at the Annual Freshers' Fare, an event at the start of each academic year designed to facilitate recruitment by student societies and other activity-based groups. The remainder contacted us by e-mail having seen promotional posters and leaflets advertising the study or received an e-mail through their school or college mail list. No attempt was made to target particular students on the basis of their nationality.

Out of the 130 participants who assumed active roles in the experiment, just over half were female, 68 percent were graduate students, and their ages ranged from 18 to 44 years, with the average age being just under 24 years.

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[7] The average participant's take-home pay, including show-up fee, was £9.53. Sessions lasted approximately 50 minutes.
[8] All the scripts, visual aids, tables, and forms designed for and used during the experiment are available from the authors.

The University of Oxford attracts students from all over the world and this was reflected in our sample. While approximately one third of the participants were British, the remaining two thirds came from 33 other countries, which, according to Transparency International, differ significantly with respect to the level of corruption.[9]

For the purpose of our cross-cultural analysis, we constructed a corruption index, *TI*, for each of the students in our sample equal to 10 minus the value of the Corruption Perception Index (CPI) assigned by Transparency International to the students' home country in the year that they left that country.[10] Higher values of *TI* correspond to higher levels of corruption. For students whose countries had not yet been assessed by Transparency International at the time they left, we use the corruption index for the first available year. For British students, we use the corruption index corresponding to the year in which the study was conducted.[11]

Figure 1:

Kernel density function for the level of corruption in

the participants' home countries
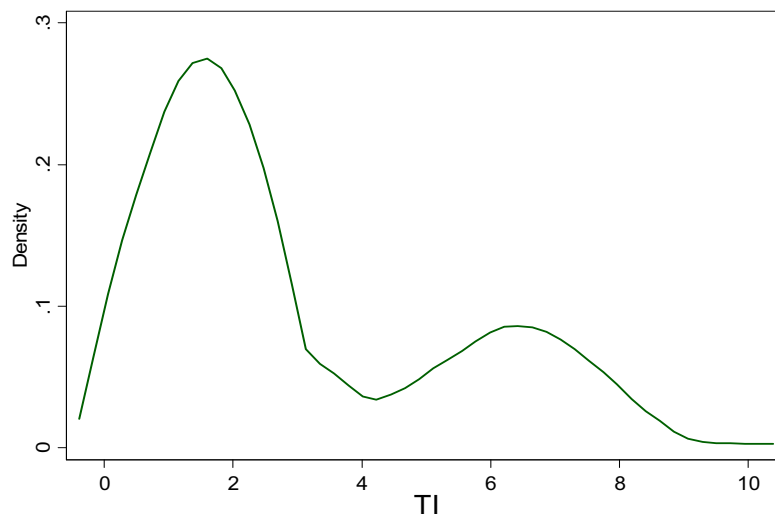
[9] Countries represented in the sample: Argentina, Australia, Bangladesh, Barbados, Belarus, Canada, China, Germany, Greece, Hong Kong, India, Italy, Kazakhstan, Malawi, Malaysia, Mauritius, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Romania, Russia, Singapore, Slovenia, South Africa, South Korea, Sweden, Switzerland, UK, Ukraine, USA, Zimbabwe..
[10] We subtract from 10 because, perplexingly, Transparency International's CPI, takes a higher value the lower the level of corruption. It too takes values between zero and 10. So, by subtracting the CPI from 10 we are simply inverting the scale.
[11] All but two of the foreign students left their home countries at the age of 18 or older. The two exceptions left at 9 and 11 years. We treat these two as British in the analysis.

Figure 1 plots the Kernel density function of *TI* for our 130 participants. The dominant mode reflects the large proportion of British students in the sample (the UK had a *TI* of 1.4 in 2005); the secondary mode reflects the proportion of students coming from highly (but not the most) corrupt countries, such as China and Argentina.

We chose to base our country-level measure of corruption on Transparency International's CPI because it is widely cited and highly respected. However, the CPI is based on surveys of elite business-people and assessments by country analysts, and thus may not be a good indicator of the levels of corruption in the environments in which the students in our study spent their childhood.[12] To explore this issue, we asked the students about their own perceptions of corruption in their home countries. In addition, we asked them whether they thought bribery could ever be justified.[13] The means for each of the resulting variables, as well as the correlation coefficients between each and *TI* are presented in Table 1.

Table 1:

Home country experiences of and attitudes towards corruption

Variable	Scale	Means	*Correlation with TI*
Corruption in health	(common 1=not 4=very)	1.897	0.694***
Corruption in public appointments	(common 1=not 4=very)	1.835	0.781***
Corruption in police	(common 1=not 4=very)	2.325	0.639***
Corruption in politics	(significance 1=none 4=high)	2.677	0.634***
Corruption in business	(significance 1=none 4=high)	2.441	0.506***
corrupt culture and values	(significance 1=none 4=high)	2.103	0.546***
Corruption in personal life	(significance 1=none 4=high)	1.467	0.463***
bribe giving justifiable	(1=never 4=always)	1.323	0.146**
bribe taking justifiable	(1=never 4=always)	1.338	-0.004

Note: The last column reports Pearson's correlation coefficients; *** indicates that the pair-wise correlation is significant at the 1 percent level; ** indicates that the pair-wise correlation is significant at the 5 percent level.

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[12] For further details on the construction of Transparency International's CPI, see Lambsdorff (2004).

[13] The precise wording of the questions used, is presented in the Appendix, Table A1.

The correlations between *TI* and the students' perceptions of how common bribery and nepotism are in public health service provision, public appointments and the police in their own countries are all positive and highly significant (1 percent level). The same is true of their perceptions of the impact of corruption on politics, business, culture and values, and their own personal lives. However, the correlation is weaker, and the mean response lower, in the case of the latter. The correlation with how justifiable the participants deemed the giving of bribes to public officials to be is weaker again, although still significant, and there is no correlation with how justifiable they thought bribe taking by public officials.

Because these data were collected directly after the completion of the game, we cannot use them to identify a causal link running from the level of corruption prevailing in the participants' home country to their behaviour in the experiment. However, the correlations suggest that an analysis based on a reduced form in which we use *TI* as a proxy for the causal variable of interest will have at least some power.

5. Results

In the 2005 experiment, of the 65 students assuming the "private citizen" role, 17 (26 percent) chose not to offer a bribe, while the remaining 48 offered some positive amount. And of the 65 students assuming the "public servant" role, 12 (15.46 percent) chose strategies indicating that they would not accept a bribe of any amount, while the remaining 53 would accept bribes above some threshold.[14]

In Table 2 we report the marginal effects and corresponding standard errors and significance levels relating to five Probit estimations. The estimates in the first two columns relate to the sample of students who assumed the "private citizen" role in the experiment and take a dummy variable equal to one for those who offered a bribe and zero otherwise as the dependent variable. The estimates in the third and fourth columns relate to the sample of students who assumed the "public official" role and take a dummy variable equal to zero for those whose strategy indicated that they would not accept any bribe and one otherwise as the dependent variable. The model in the fifth column relates to the two samples pooled and takes a dummy variable equal to one for

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[14] See Barr and Serra (2008) for data on the amounts offered and the acceptance strategies.

those who either offered a bribe or indicated that they would accept at least some bribes and zero otherwise. All standard errors have been adjusted to account for possible non-independence within sessions. In addition to the explanatory variables of interest, all the presented Probit estimations included two dummy variables relating to treatments applied during the experiment and the age and gender of the subjects as control variables.[15] In the analysis of the pooled sample we also include a dummy variable indicating the role assumed by the student in the game.

Table 2:

Probit analyses of engagement in bribery in the 2005 experiment

Sample	Private Citizens		Public Officials		Pooled Sample
Dependent Variable	Offered a bribe		Accepted a bribe		Engaged in bribery
	(1)	(2)	(3)	(4)	(5)
TI	0.002	0.490	0.001	0.083	0.198
	[0.028]	[0.230]**	[0.019]	[0.044]*	[0.084]**
TI*graduate		-0.490		-0.095	-0.204
		[0.228]**		[0.040]**	[0.079]***
Graduate		0.9999		0.029	0.213
		[1.05E-04]***		[0.148]	[0.187]
Treatment dummies	Yes	Yes	Yes	Yes	Yes
Role dummy	-	-	-	-	Yes
Age and gender	Yes	Yes	Yes	Yes	Yes
Observations	65	65	65	65	130

Note: Robust standard errors, in brackets, have been adjusted to account for clustering within sessions. We report marginal effects of continuous variables and the effect of a change from 0 to 1 for dichotomous variables. * significant at 10%; ** significant at 5%; *** significant at 1%

The first and third columns of Table 2 present tests of our original hypothesis as it applies to the "private citizen" and "public official" roles respectively – that those who grew up in more corrupt environments would be more likely to offer or accept bribes in the experiment. The size and insignificance of the estimated coefficients on *TI* in these columns indicates that this hypothesis is not supported.

However, moving out of hypothesis-testing mode and into exploratory mode, we found that if we interacted *TI* with a dummy equal to 1 for graduate students and 0 for undergraduate students and include both this interaction term and the graduate dummy in the Probit analyses, the estimates reported in columns 2 and 4 were returned. These

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[15] We do not report the marginal effects of the treatment dummies in the tables as they are not pertinent to the current analysis. For a comprehensive analysis of these treatments see Barr and Serra (2008).

suggest that, while there is no relationship between the level of corruption in graduate students' home countries and the likelihood of them engaging in bribery in the game (in both columns the sum of the marginal effect of *TI* and the interaction term is very small and statistically indistinguishable from zero), for undergraduates such a relationship *might* exist.

In the fifth column we pooled the data across roles. This could raise concerns. First, we applied strategy elicitation to the "public official" role and direct elicitation to the "private citizen" role. Brandts and Charness (2000) and Cason and Mui (1998) show that strategy and direct elicitation methods do not induce significantly different behaviour, but the game we use here differs in a number of ways from theirs. Second, there is a difference in the maximum possible payoff to engaging in bribery across the roles: a "public official" who accepts the largest possible bribe of ₲20 would receive a final payoff of ₲50; while a "private citizen" who pays the smallest bribe that stands a non-zero chance of being accepted, i.e., a bribe of ₲5, which leaves "officials" indifferent between accepting and rejecting, would receive a final payoff of ₲45. However, against these concerns must be weighed the potential advantage of greater degrees of freedom, an important concern given that only 32 percent, i.e. 42, of our subjects are undergraduates. The pooled analysis returns the same finding: undergraduate behaviour in the experiment can be explained with reference to the level of corruption in their country of origin, while graduate behaviour cannot.

The literature offers two possible explanations for this difference between graduates and undergraduates. First, recalling Fernandez' (*op. cit.*) point, that immigrants may assimilate the values, beliefs, and social norms of their host countries, it may be that graduates have spent more time away from "their own" culture thereby weakening its impact on their behaviour. Second, it may be that the selection processes for undergraduate and graduate students are different. Stolzenberg (1994) found that, in the US, socio-economic background was a strong predictor of enrolment in undergraduate but not graduate programmes and proposed that this may be because undergraduate enrolment reflects parents' aspirations, whereas graduate enrolment reflects those of the students. Further, among immigrant students, the decision to continue on to graduate studies may reflect a desire not to return home, possibly

because of either a prior or newfound disagreement with the prevailing values, beliefs, and social norms.

It is not possible to distinguish between these explanations using our data.[16] However, the exploratory finding that, unlike US-based diplomats and Oxford undergraduates, Oxford graduate students do not behave in accordance with the values and social norms prevailing in their home countries, is of sufficient interest to warrant formal testing.

6. The 2007 experiment

6.1 Experimental design and implementation

In the last quarter of 2007 we designed and implemented another bribery experiment. This experiment focused on a game in which the "public servant" demanded a bribe in exchange for a corrupt service and the "private citizen" had to indicate which, if any, bribe amounts he or she would be prepared to pay. So, in this case, the decision of the "public servant" was elicited directly and the decision of the "private citizen" was elicited using the strategy method. All the other parameters of the game were left unchanged: both the "official" and the "citizen" were initially endowed with ₲35; engaging in corruption generated a cost $K=$₲5 to the "official", and both a cost $E=$₲1 and a monetary benefit $V=$₲16 to the "citizen"; "other members of society" were initially endowed with ₲25 and, as in one of the treatments applied in 2005, if a bribe was demanded and paid each "other members of society" suffered a cost of ₲4; the game was played by five "private citizens", five "public officials" and five "other members of society".

We conducted six sessions of the 2007 bribery game, involving 15 students per session. In three of the six sessions, we employed an abstract frame, and in the remaining three sessions we employed a corruption frame. The experimental sessions were conducted in the same manner and in similar venues to the sessions held in 2005.

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[16] Using data on when each of the students in our sample left their home country and arrived in the UK, we endeavoured to find evidence in support of the first explanation. No significant findings emerged, but this may be due to data issues. In particular, if we drop UK citizens from the analysis our samples become too small, but if we keep them in we have to pick an arrival date for them in the UK. The year of their birth seems the most justifiable choice and was the choice we made, but it may not have been the right choice.

Roles and 'private citizen'–'public servant' pairings were randomly assigned and play was anonymous and one-shot.

The switch in the identity of the first mover renders the sub-game perfect equilibrium bribe in the 2007 game different to that in the 2005 game.[17] However, theory still predicts that selfish officials will demand a bribe, now equal to (V-E-μ), selfish citizens will be willing to pay the bribe demanded, and "other members of society" will suffer the largest possible cost of €20.

6.2 The role of culture: A modified hypothesis

As in the 2005 experiment, if subjects bring internalized anti-corruption norms with them into this new experiment, they may choose to abstain from engaging in bribery despite the positive monetary payoff. And, if the likelihood of an individual internalizing an anti-corruption norm depends positively on the level of corruption in the society in which they grew up, we may see a positive relationship between the level of corruption in a student's home country and the likelihood of them engaging in bribery in the experiment. However, due to either secondary socialization or selection, we do not expect this reasoning to apply to graduates to the same degree as undergraduates.

6.3 The participants in the 2007 bribery game

The 90 participants in the 2007 game were all Oxford University students. All of them contacted us by e-mail having seen promotional posters and leaflets advertising the study or received an e-mail through their school or college mail list. As before, no attempt was made to target particular students on the basis of their nationality. None of them had been involved in the 2005 experiment. The 2007 sample contained smaller percentages of graduate students (55% vs. 68% in 2005) and female students (40% vs. 50%); and the average age was the same in the two years.

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[17] Here we assume sequential play, even though, the application of the strategy method renders play simultaneous. Referring again to Brandts and Charness (2000) and Cason and Mui (1998), we propose that the students may well have played the game as if it was sequential, thereby rendering the sub-game perfect equilibrium salient.

Approximately one third of the 2007 sample were British, while the remainder hailed from 21 other countries.[18]

Figure 2:

Kernel density of the level of corruption in the participants' home countries
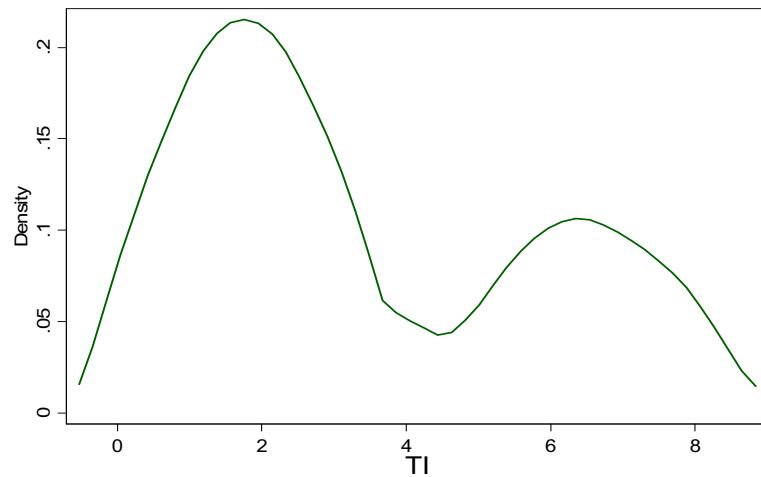
2007 sample

Figure 2 presents the Kernel density function for *TI*, the level of corruption in the students' countries of origin in the year they left. As in 2005, the dominant mode reflects the proportion of British students in the sample and the secondary mode reflects the proportion of students coming from highly (but not the most) corrupt countries, such as China and India.

Table 3 shows that, as in 2005, the students' perceptions of how common bribery and nepotism are in public health service provision, public appointments and the police in their home countries are all positively and significantly correlated with the *TI* corruption index. The same applies to the students' perceptions of the impact of corruption on politics, business, culture and values in their home countries, and on their own personal lives. However, also as in 2005, the correlation with how justifiable the participants thought bribe-giving is weaker, and there is no correlation with how justifiable they thought bribe-taking by public officials.

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[18] Countries represented in the 2007 sample: Arab Emirates, Argentina, Australia, China, Germany, Ghana, Hong Kong, India, Ireland, Israel, Italy, Kazakhstan, Netherlands, New Zealand, Philippines, Singapore, Slovak Republic, South Africa, South Korea, Switzerland, UK, USA.

Table 3:

Perceptions of and attitudes toward corruption of participants in the 2007 game

Variable	Scale	Mean or proportion	*Correlation with TI*
corruption in health	(common 1=not 4=very)	2.000	0.804***
corruption in public appointments	(common 1=not 4=very)	2.433	0.671***
corruption in police	(common 1=not 4=very)	1.983	0.688***
corruption in politics	(significance 1=none 4=high)	2.800	0.617***
corruption in business	(significance 1=none 4=high)	2.516	0.607***
corrupt culture and values	(significance 1=none 4=high)	2.233	0.546**
corruption in personal life	(significance 1=none 4=high)	1.567	0.629***
bribe giving justifiable	(1=never 4=always)	1.517	0.309**
bribe taking justifiable	(1=never 4=always)	1.117	0.081

Note: The last row reports the Pearson's correlation coefficients; *** indicates that the pair-wise correlation is significant at the 1 percent level; ** indicates that the pair-wise correlation is significant at the 5 percent level. TI is the level of corruption in the students' home country in the year they left, as measured by Transparency International.

6.5 Results

In the 2007 experiment, of the 30 students assuming the "public servant" role, 6 (20 percent) chose not to demand a bribe, while the remaining 24 demanded some positive amount. And of the 30 students assuming the "private citizen" role, 5 (16.67 percent) chose strategies indicating that they would not pay any bribe, while the remaining 25 indicated that they would pay bribes below some threshold.

Table 4 presents Probit estimations relating to the sample of students assuming the "public servant" role in the 2007 experiment (first column) and the pooled sample of all students assuming an active role in the 2007 experiment (second column). We do not present estimates for the sample of students assuming the "private citizen" role because, for this sample, the estimation failed due to a lack of variation in *TI* across the undergraduate students. Out of the ten undergraduates randomly assigned to the "private citizens" role, eight were British, with *TI* s equal to 1.6, and two were German, with *TI*s equal to 1.8 and 2.1. The estimations based on the 2007 data contain the same controls and were conducted using the same methodology as those presented in section 5 above.

The signs and significance of the marginal effects reported in both columns accord with our earlier findings and support our modified hypothesis. Once again, we can predict whether an undergraduate will engage in bribery in the experiment with

reference to the level of corruption in their country of origin, while for graduate students no such prediction is possible.

Finally, in the interest of increasing the degrees of freedom in our analysis still further while remaining circumspect about issues of comparability, in the third column of Table 4 we present the estimated marginal effects and corresponding standard errors and significance levels for a Probit model based on a sample pooled both across roles and the two experiments. Here, once again, the same pattern emerges.

Table 4:

The decision to engage in bribery in 2007

Sample	**Public Officials**	**Pooled Sample: 2007**	**Pooled Sample: 2005 and 2007**
Dependent Variable	**Demanded a bribe** (1)	**Engaged in bribery** (2)	**Engaged in bribery** (3)
TI	0.089	0.099	0.119
	[0.048]*	[0.057]*	[0.042]***
TI*graduate	-0.083	-0.098	-0.125
	[0.042]**	[0.041]**	[0.039]***
Graduate	0.122	0.147	0.133
	[0.157]	[0.142]	[0.116]
Treatment dummies	Yes	Yes	Yes
Role dummy	-	Yes	Yes
Year dummy	-	-	Yes
Age and gender	Yes	Yes	Yes
Observations	30	60	190

Note: Robust standard errors, in brackets, have been adjusted to account for clustering within sessions. We report marginal effects of continuous variables and the effect of a change from 0 to 1 for dichotomous variables. * significant at 10%; ** significant at 5%; *** significant at 1%

6 Summary and conclusion

In 2005, we took a sample of individuals living and studying in the UK but coming from over 30 countries with markedly different levels of corruption, presented them with a corruption decision associated with an exogenously defined set of private monetary costs and benefits, and found that, among the undergraduates, we could predict who would and who would not engage in corruption with reference to the level of corruption prevailing in their home country. However, among graduates we could not. This was not consistent with our original hypothesis that we would be able to make

such a prediction for *our entire* subject sample. So, we endeavoured to replicate the finding and, in so doing, provide a clean test of an appropriately modified hypothesis.

In 2007, we took a different sample of individuals living and studying in the UK but coming from over 20 countries with markedly different levels of corruption, presented them with a similar set of private costs and benefits associated with corruption, and found, once again, that among undergraduates we could predict who would and who would not engage in bribery with reference to the level of corruption prevailing in their home country, while among graduates we could not. This finding is robust across samples, roles and model specifications and suggests that variations in at least some individuals' propensities to engage in bribery reflect the values and social norms that prevail in the societies in which they grew up. Thus, in agreement with Fisman and Miguel (2007) we conclude that corruption is, in part, a cultural phenomenon.

However, unlike Fisman and Miguel (2007), we have identified a type of immigrant that seems either to have never been bound by or to have broken free of the values and social norms prevailing in the country where they grew up. Could graduate students' be an agent for change? Our analysis suggests that this might be the case. However, further research is required. In particular we need to know whether the difference between undergraduates and graduates is due to selection or secondary socialization.

References

Abbink, K., B. Irlenbusch, and E. Renner (2002) "An Experimental Bribery Game", *Journal of Law, Economics, and Organization* 18, no. 2: 428-54.

Abbink, K. (2006) "Laboratory experiments on corruption", in *The Handbook of Corruption*, edited by Susan Rose-Ackerman, Edward Elgar Publishers, Cheltenham, UK, and Northampton, USA.

Akerlof, G. A. (1980) "A Theory of Social Custom, of Which Unemployment May Be One Consequence." *Quarterly Journal of Economics* 94, no. 4: 749-75.

Algan, Yann, and Pierre Cahuc (2007) "Social Attitudes and Macroeconomic Performance: an Epidemiological Approach", Mimeo, University of Paris 1.

Barr A. and D. Serra (2008) "The effect of externalities and framing on bribery in a petty corruption experiment". CSAE working paper *WPS/2008-24*.

Benedict, R. (1934) *Patterns of culture* Boston, MA: Houghton Miffin.

Brandts J. and G. Cherness (2000) "Hot vs. Cold: Sequential Responses in Simple Experimental games" *Experimental Economics* 2, 227-38.

Boyd , R., and P. J. Richerson (1985) *Culture and Evolutionary process* Chicago, IL: University of Chicago Press.

Cameron, L., Chaudhuri A., Erkal N., and L. Gangadharan (2005) "Do Attitudes Towards Corruption Differ across Cultures? Experimental Evidence from Australia, India, Indonesia and Singapore." *Working Paper, University of Melbourne.*

Cason T. and V. Mui (1998), "Social Influence in the Sequential Dictator Game," *Journal of Mathematical Psychology,* 42: 248-265

Cavalli-Sforza, L. L., and M. W. Feldman (1981). Cultural transmission and evolution. Princeton, NJ: Princeton University Press.

Elster, J. (1989), "Social Norms and Economic Theory", *Journal of Economic Perspectives,* 3 (4): 99- 117.

Fernandez, R. (2008) "Culture and Economics" in The New Palgrave Dictionary of Economics. Second Edition, Steven N. Durlauf and Lawrence E. Blume, eds. (Palgrave Macmillan.

Fisman, R. and E. Miguel (2007) "Corruption, Norms, and Legal Enforcement: Evidence from Diplomatic Parking Tickets", *Journal of Political Economy*, 115(6): 1020-1048.

Greif, A. (1994) "Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies", *The Journal of Political Economy*, 102, 912-950.

Grusec, J. E., and L. Kuczynski (1997) *Parenting and Children's Internalisation of Values: A Handbook of Contemporary Theory*, New York: John Wiley & Sons.

Guiso, L., P. Sapienza and L. Zingales (2006), "Does Culture Affect Economic Outcomes?" *Journal of Economic Perspectives*, 20, 23-49.

Hauk, E., and M. Saez Marti (2002) "On the Cultural Transmission of Corruption." *Journal of Economic Theory* 107, no. 2: 311-35.

Henrich, J., McElreath, R., Barr, A., Ensimger, J., Barrett, C., Bolyanatz, A., Cardenas, J.,

Gurven, M., Gwako, E., Henrich, N., Lesorogol, C., Marlowe, F., Tracer, D., Ziker, J. (2006) "Costly Punishment Across Human Societies", *Science*, 312: 1767- 1770.

Henrich, J. Boyd, R., Bowles, S., Camerer C., Fehr, E., Gintis, H. and R. McElreath, (2001) "Cooperation, Reciprocity and Punishment in Fifteen Small-scale Societies", *American Economic Review*, 91: 73–78.

Herrmann B., Thoni C. and S. Gatcher (2008) "Anti-social punishment across societies", *Science,* 319, 5868, pp. 1362 - 1367

Huntington, S.P. (2000) "Cultures count" in L.E. Harrison and S.P. Huntington (eds) *Culture Matters: How Values Shape Human Societies.*

Knack, S., and P. Keefer (1997). "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation." *Quarterly Journal of Economics* 112, no. 4: 1251-88.

Knack, S. and P. Zak (2001) "Trust and Growth," *Economic Journal*, Royal Economic Society, vol. 111(470), 295-321.

Lambsdorff, J. G. (2004) "Background Paper to the 2004 Corruption Perceptions Index." http://www.transparency.org/cpi/2004/dnld/framework_en.pdf.

La Porta, R., F. Lopez de Silane, A. Shleifer, and R. W. Vishny.(1999) "The Quality of Government." *Journal of Law, Economics, and Organization* 15, no. 1: 222-79.

La Porta, R., F. Lopez de Silane, A. Shleifer, and R. W. Vishny (1997) "Trust in Large Organizations." *American Economic Review* 87, no. 2: 333-38.

Licht A.N., Goldschmidt C. and S. H. Schwartz (2007) *Culture Rules: The Foundations of the Rule of Law and Other Norms of Governance*, Journal of Comparative Economics, 35: 659-688 (2007).

Posner, R. A. and E. B. Rasmusen (1999) "Creating and enforcing norms, with special reference to sanctions" *International Review of law and economics* 19, 369-382

Roth, A.E., Prasnikar, V., Okuno-Fujiwara, M. and S. Zamir (1991) "Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study." *American Economic Review*, *81*(5), 1068–95

Serra, D. (2006) ""Empirical Determinants of Corruption: A Sensitivity Analysis"." *Public Choice* 126*,* no. 1-2: 225-256.

Stolzenberg R. M. (1994) "Educational Continuation by College Graduates," in *American Journal of Sociology* 99: 1042-1077.

Treisman, D. "The Causes of Corruption: A Cross-National Study." *Journal of Public Economics* 76, no. 3 (2000): 399-457.

Vicente, P. "Does Oil Corrupt? Evidence from a Natural Experiment in West Africa." *working paper* (2005).

Young, P. (2008) "Social norms", in the New Palgrave of Economics, *Second Edition*, edited by Steven N. Durlauf and Lawrence E. Blume. London: Macmillan.

Table A1:

Survey questions on corruption

Question	Abbreviation	Scales
How seriously do you think that corruption affects different spheres of life in the country <u>where you grew up</u>?		
Political Life	corruption in politics	1 = not significant
Business Environment	corruption in business	2 = somewhat significant
Culture and Values in society	corrupt culture and values	3 = significant
Your personal life	corruption in personal life	4 = very significant
In the country <u>where you grew up</u>, when in need of public health services, was it common for people to contact a relative, friend, or friend of a friend who worked in the service and/or offer favours/gifts to health workers in order to improve the speed or quality of the health service?	corruption in health	
In the country <u>where you grew up</u>, when trying to secure a job in the public sector, was it common for people to contact a relative, friend, or friend of a friend already working in a position of authority in the sector and/or offer favours/gifts to those in authority?	corruption in job market	1 = not at all common 2 = not very common 3 = somewhat common 4 = very common
In the country <u>where you grew up</u>, when trying to resolve a problem in hands of the police, was it common for people to contact a relative, friend, or friend of a friend working in the police force and/or offer favours/gifts to police officers?	corruption in police	
Do you think that each of the following actions can always be justified, never be justified, or something in between?		
Jumping a queue in a public office by giving a "gift" to a public officer…	bribe giving justifiable	1 = never
Someone accepting a bribe in the course of their duties…	bribe taking justifiable	2 = rarely 3 = sometimes 4 = always

Source: Questions on perceptions of corruption in different spheres of life are drawn from Transparency International's Corruption Barometer. Questions on indirect experiences of corruption in the public job market and in the police follow a format originally developed by Vicente (2005). Questions about willingness to justify bribery are drawn the World Value Survey.