

CSAE Working Paper WPS/2013-05

Does Social Judgment Diminish Rule Breaking?*

Timothy C. Salmon[†]
Southern Methodist University

Danila Serra[‡]
Southern Methodist University

March 12, 2013

Abstract

We experimentally investigate the extent to which social observability of one's actions and the possibility of social non-monetary judgment affect the decision to engage in rule breaking behavior. We consider three rule breaking scenarios – theft, bribery and embezzlement – in the absence of any formal enforcement mechanism. By involving a student sample characterized by cultural heterogeneity due to immigration of ancestors to the US, we are able to investigate whether the effectiveness of informal social enforcement mechanisms is conditional on the cultural background of the decision-maker. A total of 52 countries are represented in our sample, ranging from Low Rule of Law countries such as Liberia and Nigeria to High Rule of Law countries such as Sweden and Norway. Our data provide evidence that people with different cultural backgrounds do respond differently to increased social observability of their actions. In particular, while subjects that identify culturally with a High Rule of Law country respond to social observability and judgment by lowering their propensities to engage in rule breaking, subjects that identify with Low Rule of Law countries do not. Our findings suggest that development policies that rely purely on social judgment to enforce behavior may not work with Low Rule of Law populations.

JEL Codes: C90; D73; K42; Z10

Key Words: Theft; Corruption; Social Enforcement; Culture; Experiments

*We thank seminar participants at the University of East Anglia, the University of Bologna, the University of Verona, LUISS University and Appalachian State University for useful comments on an early draft of the paper. We also thank participants at the 2012 Southern Economic Association Conference and the 2013 Social Dilemma Conference. Finally, we thank David Johnson for excellent assistance with the programming of the experiments.

[†]Southern Methodist University, Department of Economics, 3300 Dyer Street, Suite 301 Umphrey Lee Center, Dallas, TX 75275-0496. tsalmon@smu.edu, Phone: 214-768-3547, Fax: 214-768-1821.

[‡]Southern Methodist University, Department of Economics, 3300 Dyer Street, Suite 301 Umphrey Lee Center, Dallas, TX 75275-0496. dserra@smu.edu, Phone: 214-768-4298, Fax: 214-768-1821.

1 Introduction

In all societies norms exist to guide the actions of the members of the society. In many cases these norms are enforced by formal laws that associate explicit material incentives with norm conformity. Examples are of course plentiful, as most societies rely on legal and judicial systems to proscribe behaviors like murder or theft, and impose specific penalties should individuals violate the law. While formal enforcement mechanisms are certainly important for ensuring conformance with norms, informal enforcement mechanisms relying on social sanctions and rewards are also an important way in which norm compliance is encouraged.¹ The nature of the behavioral norms that are formally or informally enforced in any society are of course defined by the institutional environment and, crucially, by social and cultural contexts. Societal views on the degree of importance of different behaviors also determine how severe the violation of any given rule is perceived and judged. In some societies it may be the case that petty crimes, such as running a red light or downloading pirated digital products, may not be viewed harshly or subject to much social disapproval, even though in other societies they could be seen as more serious infractions warranting some sort of social sanction (in addition to any legal sanctions that might also be in place). Even more serious crimes, such as embezzling resources from the workplace or stealing from a neighbor or the government, may be harshly condemned, formally and informally, in one country while being widely accepted or even informally rewarded, in another.

It is clearly the case that societies with high levels of norm violations in the form of petty or more severe crimes pay a price for these violations in terms of growth and development. Designing enforcement mechanism to counter such behaviors is consequently an important goal for policy makers interested in encouraging economic development. Traditionally, the focus has been on the design and implementation of formal mechanisms relying on top-down monitoring and detection. In the last decade, however, mechanisms relying purely on social enforcement have attracted increasing attention among academics and practitioners.² This is because formal institutions involving law enforcement and judiciary agencies often lack the necessary physical and human resources to be fully functional and effective; moreover, in countries where corruption is pervasive, the possibility of escaping monitoring or punishment through bribery severely limits the effectiveness of any top-down mechanism. Even in countries where formal institutions operate efficiently it is still the case that social enforcement can be useful and effective since individuals engage in many interactions on a day to day basis that are too small or too frequent to rely on formal enforcement institutions.

A number of empirical evaluations of social enforcement mechanisms aimed at limiting violations of societal norms such as corruption, absenteeism and poor performance of service providers have been recently conducted in developing countries. The results are mixed, ranging from successes in the monitoring of teacher attendance in Kenyan (Duflo, Dupas and Kremer, 2009) and Indonesian (Pradhan et al., 2011) schools, and of health professionals in Uganda (Björkman and Svensson, 2009), to the failures of similar mechanisms in the context of Indian schools (Banerjee

¹For a recent analysis and discussion of the relationship between formal laws and social norms see Benabou and Tirole (2012). For a theoretical model of how formal institutions influence the inter-generational transmission of values, see Tabellini (2008). For definitions and discussions of social norms see Bicchieri (2006); Elster (1989) and Cialdini, Demaine, Sagarin, Barrett, Rhoads, and Winter (2006).

²A social enforcement mechanism that is especially gaining popularity is the “I paid a bribe” website, first launched in India and subsequently replicated in Kenya, Indonesia, Zimbabwe and Pakistan. See: <http://www.ipaidabribe.com/>. The website gives citizens the opportunity to anonymously report their bribery experiences, hence increasing the observability of acts of corruption on the part of public officials and civil servants. Although the I Paid a Bribe websites are highly used, their effectiveness in the reduction of corruption is still to be tested.

et al., 2010), and Indonesian road construction programs (Olken, 2007). The reasons for the contrasting results obtained in those different societies are not made clear in those studies. We hypothesize that one possible source for the different outcomes might lie in differences in how the different societies view the violation of these social norms, how willing are individuals to engage in social sanctions against the rule violators, and how responsive to social sanctions possible rule violators actually are.

In this paper, we ask whether the effectiveness of institutions relying purely on social observation, interaction and judgement is conditional on the sociocultural background of the decision-makers. Addressing this question is necessary in order to gain a better understanding of whether social enforcement mechanisms would be effective in preventing rule breaking in a given context, and whether different mechanisms should be implemented in different sociocultural environments. The current approach to this question taken in the development literature is to adopt a trial and error approach, consisting of replicating the same mechanism in different societies using randomized control trials and noting whether it succeeds or fails in each. While this can provide an answer to the question, it is a very expensive and time-consuming approach. Each trial in a new country can take years to evaluate, and obtaining enough samples to determine which sociocultural factors are important to the success of a mechanism requires many samples with the possibility that many interventions will generate a null result. Our approach will be to take a sample of individuals from many different sociocultural backgrounds, place them all in exactly the same formal institutional context, give them the chance to engage in different forms of rule breaking and investigate how they respond to the same social enforcement mechanism. To this end, we conduct a specially designed economic experiment with a sample of individuals who grew up and currently live in the US yet identify culturally with different countries, corresponding to the countries of origin of their ancestors prior to migration to the US.

We focus on individuals' willingness to engage in three forms of rule-breaking behavior, theft, bribery and embezzlement, in an attempt to determine the robustness of our findings across different contexts and situations. While the games differ in the number and nature of the parties involved and the potential monetary benefits, they have two common features: in each setting a clear behavioral rule exists, and the violation of such rule benefits the decision-maker at the expense of one or more other individuals. We have subjects engage in these games under three treatments in which we manipulate the degree of social observability of the rule breaker's actions. These treatments include a baseline case in which the rule breaker's behavior is completely hidden from the victim, a treatment in which the victim is informed of the behavior, and then a treatment involving social judgment in which the victims of the rule breaking behavior are allowed to send social messages to the rule breakers. Our aim is to investigate whether those in the potential rule breaking role respond differently to knowing that their action will be hidden from others, knowing that it will be visible to only the victim or knowing that those in the victim roles will be sitting in judgment of their behavior.

We conduct our study with a student subject pool at a US University but in a way that allows us to exploit variation in the cultural heritage of the experimental participants. In particular, due to first-, second- or third-generation immigration to the US, 215 of our 432 experimental participants answered a survey question saying that they culturally identify with a country other than or in addition to the US. A total of 52 countries are represented in our sample, ranging from countries characterized by poor institutions and low rule of law, such as Liberia, Nigeria and Colombia, to countries characterized by well-functioning institutions and high rule of law, such as Sweden and Norway. By combining our experimental data with information about the cultural heritage of the experimental participants we are able to investigate whether individuals'

willingness to engage in the three forms of rule-breaking – theft, bribery and embezzlement – might vary across cultures and whether the effectiveness of institutions relying on social enforcement to limit this behavior might vary in a systematic way across cultures.

Our results suggest that the effectiveness of institutions relying on social observation and judgement does depend on the cultural background of individuals. We do find that overall rule breaking generally decreases as social observability increases and is lowest when victims are given the chance to express social approval or disapproval against the rule breakers. In a more detailed look at the data we find that individuals who identify with low rule of law countries tend to respond differently to social observability than individuals who identify with high rule of law countries. The latter group responds to the social observability treatments, while the former is rarely found to respond to the possibility of social observability and peer judgement. Our findings suggest that development policies that rely on social judgments to prevent rule breaking behavior may work with high rule of law populations but they may be less likely to work with low rule of law populations. We discuss this issue more in the conclusion.

The paper is organized as follows. Section 2 provides a review of the related literature. Section 3 presents our design, our theoretical framework and hypothesis, and describes the implementation of the experiments. Section 4 reports our results and Section 5 concludes.

2 Related Literature

Our study relates to two distinct bodies of work: 1) the literature on the impact of social observability and informal sanctions and rewards on individual behavior, and 2) the literature on the relationship between cultural background, preferences and behavior. In what follows we review these two volumes of work separately.

2.1 Observability and Social Enforcement

There exist a number of explanations, spanning a wide range of literatures, for why social observability of one's actions may act as an enforcement mechanism. The underlying theme is that there exist social norms prescribing what is considered good behavior and individuals have a preference for appearing to follow those norms. Early theoretical examinations of this issue focused on labor and insurance markets, as in Arnott and Stiglitz (1991) and Akerlof (1980), while other early studies provided a more philosophical and sociological perspective on the nature of social norms, as described in Bicchieri (2006) and Elster (1989). Within the economic literature, some models of the impact of social observability on behavior are based on the notion that people value fairness in itself, yet they also value social reputation (Benabou and Tirole, 2006, and Andreoni and Bernheim, 2009).³ Others suggest that pro-social behavior can emerge even when individuals care nothing for fairness in itself but do care about being perceived as caring about fairness (Hollander, 1990, and Dana, Weber and Kuang, 2007).

One of the earliest experimental investigations of how behavior might depend on the observability of actions by others is found in Hoffman, McCabe, Shachat, and Smith (1994) and Hoffman, McCabe, and Smith (1996) where the authors show that the offers made in bargaining games respond dramatically to changes in the degree to which the experimenter is able to observe such offers. In dictator games, subjects who knew the experimenters could observe their choice

³Related to social reputation is the concept of “guilt” introduced by Charness and Dufwenberg (2006) and developed by Battigalli and Dufwenberg (2007), defined as an intrinsic cost that an individual may suffer if his action falls short of what he believes others' expectations of his behavior are.

made much more generous splits than subjects who knew their choice could not be linked back to them. There have been many subsequent studies showing in various ways that individuals appear to care about how others perceive their actions and so behave differently when those actions are or are not observable to others. For instance, in the context of a dictator game with a charity as a recipient, Karlan and McConnell (2012) find that donations significantly increase when donors are told that their names and donations would be posted on a board for all participants to see. Interestingly, in a similar experiment where subjects engage in a real-effort task to generate donations to a charity, Jones and Linardi (2012) find that making contributions observable to future participants increases the effort of male participants but decreases the effort of female participants. Other related studies include Rege and Telle (2004), Dana, Weber, and Kuang (2007), Andreoni and Bernheim (2009), Ariely, Bracha, and Meier (2009), Xiao and Houser (2011), Pan and Houser (2011), Carpenter and Myers (2010), Linardi and McConnell (2011), and Tadelis (2011).⁴ Further evidence can be found in field studies on household energy consumption (Schultz et al, 2007), charitable giving (Della Vigna et al., 2011) and voter turnout (Gerber et al. 2008).

This volume of prior work shows that observability can matter in enforcing pro-social behavior and that this is likely the result of individuals caring about whether they are perceived as adhering to conventional social norms. A few additional studies test the effectiveness of social enforcement based on informal sanctions and/or rewards, in the context of public goods games (Maschet et al., 2003; Dugar, 2010; Noussair and Tucker, 2005; Carpenter and Seki, 2011), ultimatum games (Xiao and Houser, 2005) and prisoner dilemma games (Lopez-Perez and Vorsatz, 2010). The experimental results show that informal nonmonetary sanctions are often unable to sustain pro-social behavior, especially in the long run. The findings of Maschet, Noussair, Tucker, and Villeval (2003) seem to suggest that contrary to formal punishment, nonmonetary sanctions might be effective in sustaining cooperation only when the sanctioned subject receives a high enough level of disapproval – equal at least 50% of the maximum possible amount of disapproval points in their study. Moreover, Carpenter and Seki (2011) find that different populations might respond differently to social disapproval. In particular, in their sample of Japanese fishermen, those who do not pool their catch at the end of the day (i.e., the non-poolers) responded negatively to social sanctions by lowering their contributions, whereas poolers responded positively by increasing their contributions.

Our study contributes to this literature in a number of ways. First, the existing studies are framed as determining whether or not social observability and informal sanctions can enforce pro-social behavior. We are interested in determining whether observability and social judgement are effective at limiting anti-social behavior in the context of stealing, bribery and embezzlement games. While there is certainly a near mathematical equivalence between pro-social and anti-social behavior, one of the clear messages that has arisen out of the very vast literature on pro-social behavior is that context matters.⁵ There are no experimental studies, to the best of our knowledge, investigating the impact of observability and social enforcement on individuals' willingness to steal or act corruptly.⁶ Moreover, due to the fact that social norms are by definition a product of the culture of specific societies, it is important to understand if norms proscribing the behaviors of interest – i.e., theft, bribery and embezzlement – are common across different

⁴For studies attempting to identify social norms in various pro-social games see Krupka and Weber (2013), Reuben and Riedl (2013) and Schram and Charness (2012)

⁵See for instance Bardsley (2008) and List (2007).

⁶Experimental studies of bribery and embezzlement have investigated the effectiveness of exogenous formal punishment (Abbink et al., 2002; Armantier and Boly, 2011), monetary punishment from victims of corruption (Cameron et al. 2009; Banuri and Eckel, 2010) or from elected or appointed monitors (Azfar and Nelsen, 2007; Barr et al., 2009), and combined monitoring systems (Serra, 2012).

cultures and if the response to observability and social enforcement differs across cultures.

2.2 Cultural background, preferences and behavior

In recent years, a number of studies have investigated the impact of cultural factors on a variety of economic behaviors and outcomes. Measuring culture and estimating cultural effects is challenging. 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 as the World Values Survey as proxies for culture (La Porta et al., 1997; Knack and Keefer, 1997; Knack and Zak, 2001; Tabellini, 2008). Recently a few studies have attempted to better isolate the role of cultural factors from that of country-specific institutional settings by comparing the behavior and outcomes of immigrants from different countries who are currently living in the same environment. For instance, Fisman and Miguel (2007) compare parking violations of diplomats in New York City and find that, when granted immunity, diplomats from highly corrupt countries were significantly more likely to violate parking laws, providing evidence of the role that culture might play in corruption decision-making. Comparing behavior and preferences of immigrants may be problematic due to self-selection into migration and the possible effects of migration on individual preferences and behavior; this problem is attenuated when considering second-generation immigrants. Fogli and Fernandez (2009), for instance, provide evidence of a strong positive correlation between labor participation of female US second-generation immigrants and female participation in the country of origin of their mothers; Giuliano (2007), also looking at behavior of second-generation immigrants in the US, shows that young adults' tendency to live or not live with their parents has significant cultural roots.⁷

Starting from Roth, Prasnikar, Okuno-Fujiwara, and Zamir (1991), a growing number of experimental studies have tested the impact of cultural variables on behavior by conducting the same economic experiment in different societies and comparing participants' behavior. The advantage of experimental settings lies in the possibility to control the economic incentives and the "formal institutions" within which individuals make their decisions; differences in behavior across countries or societies can therefore be confidently attributed to social norms and cultural values. Cross-cultural experimental studies have provided evidence of the impact of cultural factors on individuals' willingness to punish unfair behavior (Heinrich et al., 2006), trust (Bohnet et al. 2008, 2010), and cooperate with others (Gächter et al. 2010).

While most of the existing experimental studies focus on cultural differences in pro-social preferences and behavior, a few exceptions exist. Herrmann, Thoeni, and Gächter (2008) examined cross-cultural differentials in individuals' willingness to engage in anti-social punishment, i.e. punishment of cooperators in a public goods game. Cameron, Chaudhuri, Erkal, and Gangadharan (2009) investigated cultural difference in the propensity to engage in and punish bribery involving a large sample of students in Australia, India, Indonesia, and Singapore. Banuri and Eckel (2010) compared individuals' tendency to act corruptly and willingness to punish corrupt behavior in the US and in Pakistan. Finally, rather than conducting their bribery experiment in low and high corruption countries, Barr and Serra (2010) employed an international sample of Oxford University students – i.e., first-generation immigrants to the UK – and, similarly to Fisman and Miguel (2007), tested whether corruptibility in a simple bribery game could be predicted by the level of corruption in the participants' countries of origin.

⁷For a comprehensive review of the existing empirical literature on culture and behavior, based on cross-country studies or investigations of first- and second-generation immigrants, see Fernandez (2008), Guiso, Sapienza, and Zingales (2006) and Algan and Cahuc (2010).

There are no cross-cultural investigations, to the best of our knowledge, of the effectiveness of social enforcement mechanisms relying on informal rewards and sanctions. We contribute to the literature by conducting such an investigation. We employ a sample of US citizens that includes individuals who, due to their ancestors' immigration to the US from a number of different countries, identify culturally with a country other than or in addition the US. Our methodology is therefore in line with the body of work on second-generation immigrants, yet we employ economic experiments to directly measure individuals' preferences and attitudes toward rule breaking. Our approach overcomes a number of possible disadvantages of cross-country experimental studies, such as biases due to the adoption of different languages in the game instructions, different experimental stakes, and usually different experimenters in each of the countries involved in the study (see Roth et al., 1991). However, it poses other limitations. In particular, the exposure of our subjects to the formal institutions, culture and norms prevailing in the US is likely to weaken the impact of their inherited cultural background on behavior. This reduces the likelihood of finding significant cultural effects, hence making our results conservative.

3 Experiment Design

3.1 Rule breaking games and observability treatments

We investigate how observability and social judgement affect a broad range of rule-breaking scenarios as a way of determining the consistency individuals' responses to social enforcement. To this end, we designed an experiment incorporating three different situations, each involving anti-social behavior and constructed three different treatments in which we vary the degree of social observability. The three rule-breaking games simulate theft, bribery and embezzlement respectively. In order to have subjects perceive the decision-making contexts as clear rule breaking scenarios, we presented the games using the corresponding frames referring to the actions as stealing, bribery and embezzlement, rather than employing neutral language. Each game consists of two phases. In the first, all subjects engage in some task to earn an endowment. In the second, some of the subjects are given the opportunity to enrich themselves at a cost to someone else. Each rule-breaking game is a one shot interaction.

In the stealing game, subjects first answer SAT math questions with the top 50% of performers receiving a high endowment and the bottom 50% receiving a low endowment. Then, they are randomly matched in pairs such that there is always one high endowment subject and one low endowment subject in a pair. Both subjects are referred to as private citizens in the game. One of the subjects in each pair is then randomly chosen and given the opportunity to steal from the other; he or she can choose not to steal at all, steal a small portion or a high portion of the other subject's earned endowment.

In the embezzlement game, subjects are randomly placed into groups of four. Three members of each group are labeled as private citizens while the fourth is labeled as a public official. In the first phase of the game, citizens engage in a letter encoding task similar to that used in Erkal, Gangadharan, and Nikiforakis (2011) and Ku and Salmon (2012) that generates private earnings for each correct encoding. The task also generates money into a public fund for each correct encoding. The official can engage in the encoding task if he/she wants to but the task does not generate earnings. The official is instead paid a fixed wage chosen to be higher than the amount the citizens should be capable of earning. After the citizens are finished, the official is told that it is his/her job to redistribute the public funds to all the citizens equally but is allowed to embezzle some of the fund if he/she choose. The official can choose not to embezzle, to embezzle a small or

to embezzle a large portion of the fund. Any non-embezzled funds are automatically redistributed among the citizens. The game is intended to mimic the notion of individuals earning income that is taxed for the purpose of redistribution. The amount available to the thief/government official to embezzle is the public fund generated by the tax.

In the bribery game, all subjects earn the same endowment for going through the Kandinsky and Klee painting preference elicitation module developed in Tajfel, Billig, Bundy, and Flament (1971). After that task is completed subjects are randomly matched into groups of three with one subject being labeled a private citizen, one a public official and the third an other member of society. The rule-breaking decision-making phase allows the citizen to choose whether to offer a fixed bribe to the official and the official to simultaneously decide whether he would accept a bribe if it were offered. If the bribe is offered and accepted, citizen and official each gain money at the expense of the other member of society; indeed the other member of society suffers a loss equal to the net gain enjoyed by citizen and official.

In each game, we investigate whether the potential rule breakers respond differently to different levels of observability, corresponding to our three treatments, which will label Hidden Action, Victim Knows and Social Judgment. In the Hidden Action treatment a potential rule breaker is told that his or her victim would never know that there was the possibility of anti-social behavior in the game, or that he or she suffered monetary losses as a result of the decision-making of other subjects. We accomplish this by not telling subjects exactly how much they could earn from each endowment-earning task while they are engaging in the task. We tell them they will earn money for the tasks and they will be informed how much they make at the end. As an example, in the stealing game under the Hidden Action treatment the only thing that a victim knows is his or her final earnings and not if someone stole from them or what the potential earnings could have been in the absence of stealing. In the Victim Knows treatment, a potential rule breaker is informed that the victim would know that there was the possibility to engage in the bad behavior and whether or not they were victims of such behavior and we do in fact inform the victim of the action by the rule breaker. In the Social Judgment treatment, the potential rule breaker is told that all subjects in the victim role would be able to observe his or her choice and they would be given the chance to send messages to him or her consisting of happy, indifferent or sad faces with no message also being an option.⁸ This mechanism is similar to the mechanisms used in Masclet, Noussair, Tucker, and Villeval (2003), Carpenter and Seki (2011) and Dugar (2010) in the context of pro-social games. Note that by conducting each game as a one shot interaction we are not attempting to test whether subjects change their behavior after observing how people judged their prior actions in the Social Judgment treatment, but rather whether the knowledge that their action would be scrutinized by others would alter behavior.

In order to identify differences in the cultural backgrounds of our subjects we asked the experimental participants to complete a questionnaire at the end of the experiment consisting of several standard demographic questions as well as several other questions aimed at gathering information about their cultural heritage. The most important of these questions asked subjects whether they and their families identified culturally with a country other than or in addition to the US. In our empirical analysis we use subjects' answers to this question as a means of identifying potentially important differences in the cultural background of the subjects. In particular, we associate to each country of cultural heritage the corresponding value of the Rule of Law index produced by the World Bank, which "captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property

⁸ A complete set of instruction screens demonstrating exactly what is shown to subjects and when is available as an Appendix to the paper.

rights, the police, and the courts, as well as the likelihood of crime and violence.”

3.2 Theory and Parameters

As our baseline model of behavior we adopt the theory presented in Cox, Friedman, and Gjerstad (2007) (CFG) and we also use parameter estimates from their data to assist us in parameterizing our games. In order to conduct the tests of interest we need to find parameters for the games such that some, but not all individuals would engage in rule-breaking in each treatment. We adopt the CFG model because it was designed to deal with other-regarding preferences where the degree to which an individual cares about the welfare of others depends upon his emotional state. The situation we are investigating also involves state-dependent other regarding preferences though in our case the emotional state of the individual is not based on the prior actions of others but rather on the degree to which the decision maker’s actions are observable to others. Our games are most similar to the version of the CFG model designed to capture the effects of status in a dictator game and so we adopt the specification for this game as our baseline. The utility function supposed by the model is defined as

$$u(m, y) = \begin{cases} (m^\alpha + (\theta_0 - as)y^\alpha) & \alpha \in (-\infty, 0) \cup (0, 1] \\ my^\theta & \alpha = 0 \end{cases} \quad (1)$$

where m represents the individual’s own earnings, y the earnings of the other person, α refers to the elasticity of substitution between own and other payoffs while $(\theta_0 - as)$ captures the weight of the other persons payoff in in the decision maker’s utility. θ_0 is assumed to be baseline weight placed on the welfare of the other while the as term captures the impact of shifts in the emotional state with s representing the state variable and a being a preference parameter indicating the impact of state changes. Adapting this utility function to our situations requires various modifications to the base function which we will explain as we also explain how we used this model to design the parameters of the different games.

3.2.1 Stealing Game

The Stealing Game is essentially a dictator game with a negative frame. In the game, the thief is allowed the option of stealing some amount of money from someone else, the victim. One issue that may be important to this interaction is the relative size of endowments that both players possess and so we have designed the experiment to allow for examining this. Let w_1 be the endowment of the thief and w_2 be the endowment of the victim. The thief has to choose the fraction, p , of the victim’s endowment to steal. This leads to a maximization problem for the thief of the form

$$\max_{p \in [0,1]} (w_1 + pw_2)^\alpha + (\theta_0 + bv) ((1 - p) * w_2)^\alpha \quad (2)$$

. The term $(\theta_0 + bv)$ captures the possibility that the weight placed on the welfare of the victim can be shifted. We specify θ_0 as capturing the base degree of caring about the welfare of others. The variable v represents the observability condition where $v = 0$ reflects no observability while higher levels of v would reflect differing levels of increased observability. The parameter b measures the importance of those changes in observability states. Here we have supposed a linear structure to any state changes which is obviously not required or necessarily valid but specified for simplicity.

For the experiment we need to find values of w_1 and w_2 such that an average person should be expected to make interior choices of p . CFG estimate values of the key parameters to be $\alpha = .075$

and $\theta_0 = .337$ in their data taken from dictator games. If we use those values in this model assuming $v = 0$ and $w_1 = 50$ and $w_2 = 100$, or that the endowment of the thief is the lower of the two, then we can get a prediction for the values of p that will lead to stealing. For values of $p \in [0, 0.54]$ stealing yields at least as much utility as not stealing while for $p > 0.54$, not stealing at all yields higher utility than stealing. In the experiment we give subjects the option to steal nothing or to steal at specific values of p rather than have them choose their own p . This analysis suggests that, when the act of stealing is unobservable to others, i.e. $v = 0$, an average person should be willing to steal at values of p up to 0.54. We therefore allow thieves to choose from the set $\{0, 0.35, 0.70\}$ as this should lead to a baseline prediction that in the default case of $v = 0$, we should observe relatively few choices of the high level of stealing but a relatively substantial amount of individuals willing to choose the lower value of stealing. If $b > 0$ and large enough, then as we increase v we should observe a decrease in stealing which would take the form of individuals being even more likely to choose not stealing or the low level of stealing than the high level. We also need to consider the case in which the thief has the smaller endowment, i.e. $w_1 = 50$ and $w_2 = 100$. For the CFG estimated preference parameters and these specific endowments, the thief should prefer stealing at values of $p \leq 0.97$. This situation is useful in that it provides a tougher test of the effect of increases in v as it should require the shift in v to have a large effect on the weight placed on the victim's welfare for the thief to choose anything other than to steal the high level.

As a result of our parameterization, in the Stealing Game individuals earn either a low endowment, equal to 50 ECU, or a high endowment, equal to 100 ECU based on their performance on the SAT questions. Then, high and low performers are matched, and one of the two subjects in each pair is randomly selected and given the chance to steal either 35% or 70% of the endowment of the other subject.

3.2.2 Embezzlement Game

The Embezzlement Game is similar to the Stealing Game in that it is also a form of negative framed dictator game but it involves more people being harmed. The multiple victims aspect causes complications with respect to the CFG model as there are no situations in the original paper involving more than two parties. In the conclusion, the authors suggested that any additional individuals should just be treated additively. We adopt this specification when adapting the CFG model to the Embezzlement game, along with the assumption that the decision-maker places equal weight on the welfare of each of these additional individuals.

We again let w_1 refer to the endowment provided to the potential thief, i.e. the public official, and assume that there are 3 potential victims in the role of private citizens. The citizens earn money according to a piece rate wage that is divided into private income and public funds with any non-embezzled public funds being redistributed to the victims in equal proportions. The official is assumed to know the total amount in the public pool, G , but does not know the contribution of that from each individual victim and so he is unconcerned about any heterogeneity in the victims' individual contributions or private earnings. We also assume that the official knows the production function that relates the size of the public funds to the individual earnings and so he is able to infer the average private earnings of the citizens. Let g be the piece rate at which individual productivity leads to contributions to G and r be the piece rate at which individual productivity leads to individual earnings. Knowing g, r and G , the official therefore estimates the average individual earnings to be $\frac{G}{3g}r$. If we again let p be the fraction of the total possible public

funds that is embezzled by the official then we get a maximization problem of

$$\max_{p \in [0,1]} (w_1 + pG)^\alpha + 3(\theta_0 + as + bv) \left(\frac{G}{3g}r + (1-p)\frac{G}{3} \right)^\alpha \quad (3)$$

with θ_0 again representing the base weight the official places on the welfare of others, bv representing the same shift term as before regarding observability and as presenting a new status shift term which might exist in this environment corresponding to the official's responsiveness to the total productivity of the citizens. Let a reflect the extent to which an official might value the welfare of the citizens differently based upon their productivity and let $s = 0$ represent some baseline level of productivity, with positive levels indicating higher productivity.⁹ We have no *a priori* expectation on the sign of a or how to specify s . An official might consider higher productivity citizens to be more deserving of their earnings and therefore $a > 0$ while alternatively an official could consider higher productivity citizens to need the public funds less, $a < 0$. We note this as a possibility and later we will evaluate empirically whether we can detect a shift in behavior due to such an effect.

While this game still has the strategic structure of a dictator game, the additional victims and other elements could certainly lead to a shift in preference parameters. For our baseline predictions we assume a modest increase in θ_0 based on the fact that in this environment the citizens have earned their endowments while the official has done nothing to earn his position. Consistent with the findings of CFG, that difference should lead to a higher weight placed on the utility of the citizens. We therefore use $\theta_0 = .5$ but keep $\alpha = 0.075$. We set piece rate wages at $g = 5$ and $r = 8$. Based upon the observed productivity in this task observed in Ku and Salmon (2012) we expect an approximation of G to be around 150. We set the endowment for the public official at $w_1 = 195$. With these parameters, assuming $s = 0$, an average person would prefer embezzling to not embezzling up to approximately $p = 0.64$ of the public fund while at higher values of p , not embezzling is preferred. We therefore chose to allow embezzlement choices from the set $p \in \{0, 0.45, 0.80\}$ according to similar reasoning as before. In the Hidden Action treatment, i.e. when $v = 0$, we should expect to see most individuals choose to embezzle the smaller proportion of the public fund with a few choosing the higher proportion and in the other two treatments, representing higher values of v , we should expect decreasing fractions of people embezzling.

As a result of our parameterization, in the Embezzlement Game, a subject is allocated the role of public official and given a wage of 195 ECUs, whereas three citizens complete the encoding task and earn 5 ECUs for each correct word. The encoding task also generates 8 ECU in a public fund, for each correct word encoded by a citizen. The official is then given the task to redistribute the public fund equally among the three citizens. However, before redistributing the money he or she can embezzle 45% or 80% of the fund. Whatever is not embezzled is distributed equally to the citizens.

3.2.3 Bribery Game

In the bribery game there are three individuals involved: a private citizen who has the option to bribe a public official or not, a public official who can accept the bribe or not and an other member of society that suffers the externalities generated by a corrupt agreement. This setting requires a strategic analysis since it involves two decision makers. This requires us to solve for

⁹We could just replace s with G as s is a function of G and it could be specified as linear. We see no need to specify that s must be linear and mostly use this notation for convenience.

Citizen \ Official		Accept	Not Accept
		Offer	$(w_c - d - b + m)^\alpha + \theta_p(w_p + b)^\alpha + \theta_s(w_s - l)^\alpha,$ $(w_p + b)^\alpha + \theta_c(w_c - d - b + m)^\alpha + \theta_s(w_s - l)^\alpha$
Not Offer	$(w_c)^\alpha + \theta_p(w_p)^\alpha + \theta_s(w_s)^\alpha,$ $(w_p)^\alpha + \theta_c(w_c)^\alpha + \theta_s(w_s)^\alpha$	$(w_c)^\alpha + \theta_p(w_p)^\alpha + \theta_s(w_s)^\alpha,$ $(w_p)^\alpha + \theta_c(w_c)^\alpha + \theta_s(w_s)^\alpha$	

Table 1: Bribery game.

Nash equilibria of the game rather than simply analyzing the choice behavior of an individual as before. Moreover, we need to specify a version of the utility function where there are three individuals involved and, unlike the Embezzlement game, the decision maker does not see the other two individuals as equivalent. The utility function needs to be specified for both the citizen, who has the option to offer a bribe, and the official, who has the option to accept or reject the bribe.

The game is played with simultaneous choices being made by the citizen and official, meaning that the choice by the official is whether or not to accept the bribe should the citizen have offered it. The most straightforward way to represent the game is to provide the normal form of the game and this is shown in Table 1.¹⁰ We let w_c, w_p and w_s represent the endowments of the citizen, public official and the other member of society respectively. If the citizen offers a bribe, we assume he pays a cost of d regardless of whether the bribe is accepted or not. If the bribe is accepted then the other member of society suffers some loss, l , the public official receives the bribe amount, b , and the citizen receives a benefit equal to m . We let θ_c, θ_p and θ_s represent the weight placed on the citizen's welfare by the public official, the weight placed on the public official's welfare by the citizen and then the weight placed on the other member of society's welfare by both the citizen and the official. For simplicity we assume that the last parameter is held in common by the two decision makers, though it need not be. Further, we assume that θ_c and θ_p do not vary with whether the other member of society can observe the actions but θ_s does, so $\theta_s = \theta_{s0} + bv$ where θ_{s0} is the base value and bv represents the same shift term as above regarding the observability of actions by the victim.

So long as $d > 0$ or the cost of offering a bribe is positive, it is trivial to see that the strategy pair (Not Offer, Not Accept) is a Nash equilibrium regardless of the other parameters of the game. If we want to potentially observe outcomes in which successful bribery occurs then we need to find parameters such that (Offer, Accept) is also an equilibrium or the parameters must satisfy the conditions

$$(w_c - d - b + m)^\alpha + \theta_p(w_p + b)^\alpha + \theta_s(w_s - l)^\alpha \geq (w_c)^\alpha + \theta_p(w_p)^\alpha + \theta_s(w_s)^\alpha \quad (4)$$

$$(w_p + b)^\alpha + \theta_c(w_c - d - b + m)^\alpha + \theta_s(w_s - l)^\alpha \geq (w_p)^\alpha + \theta_c(w_c - d)^\alpha + \theta_s(w_s)^\alpha \quad (5)$$

. There is a difficulty here in specifying appropriate values θ_c, θ_p and θ_s since there is no similar situation from CFG in which such parameters are estimated. We consider two extreme cases so that we understand the range of possibilities.

One extreme assumption is that corruption partners are not valued or $\theta_c = \theta_p = 0$ while the other member of society is valued as in the dictator game, $\theta_s = 0.337$. This is an extreme version

¹⁰We have chosen not to represent the payoffs of the other member of society in the game matrix since that player makes no strategic choices. The extent to which that player's welfare is important strategically is taken into account in the utility functions of the other two players.

of the case in which an individual values someone who is in a position to look out after their own welfare less than they value the welfare of an innocent bystander. We set all of the endowments to be equal so that we do not complicate this analysis with any further status comparisons and so $w_c = w_p = w_s = 100$. We set a nominal cost of attempting the bribe at $d = 5$ and a loss to the other member of society in the event of a successful bribe to be $l = 40$. This leaves m , or the benefit to the citizen from a successful bribe, and b , the amount paid, as free parameters. It can be shown that with $m = 40$ and $b = 20$, both inequalities approximately bind leaving the average citizen and official indifferent between their choices. A higher m would lead to the citizen strictly preferring to bribe (conditional on the offer being accepted) while a higher b will lead to the public official strictly preferring to accept (conditional on the bribe being offered).

It would also be reasonable to assume that coconspirators and innocent bystanders are considered to be equivalent; $\theta_c = \theta_p = \theta_s = 0.337$. Under this assumption we can observe two comparative static effects from the previous case. Offering the bribe becomes marginally less attractive to the citizen but accepting a bribe becomes substantially more attractive to the public official. The minimal m necessary to make bribing worthwhile increases slightly while the bribe necessary to induce acceptance falls dramatically.¹¹

To balance these concerns, we have chosen parameter values of $m = 45$ and $b = 20$. At these values (Offer, Accept) should be supportable as an equilibrium for a substantial fraction of the population under either assumption though (Not Offer, Not Accept) is still an equilibrium for everyone. What we are really interested in though are the treatment effects regarding what happens as v rises. An upward shift in v leads to an increase in θ_s which makes the successful bribe outcome less attractive to both the citizen and the official as they now care more about the harm done to the other member of society. Thus we have a comparative static prediction that the propensity of offering and being willing to receive a bribe should be decreasing in v .

As a result of our parameterization, in the Bribery Game private citizen, public official and other member of society all earn an endowment of 100 ECUs from completing the Kandinsky and Klee painting preference elicitation module. Then, the private citizen is given the chance to offer a bribe of 20 ECUs to the public official, while the public official has to decide whether to accept or reject the bribe, should the citizen offer it. If the bribe is accepted, citizen and official gets 120 ECUs each, whereas the other member of society loses 40 ECUs and therefore earns 60 ECUs from this task.

3.3 Hypotheses

We can now explicitly state the hypotheses that the experiments were designed to allow us to test which are also consistent with the theory described above. Our main interest is in the effectiveness of the observability treatments on the propensity to engage in anti-social behavior and in determining whether cultural background affects behavior. Our first and central hypothesis is as follows:

Hypothesis 1 *In all three games the propensity to engage in rule-breaking should be decreasing in the amount of observability, i.e., the treatments should be ordered with respect to the observed amount of rule breaking as Hidden Action > Victim Knows > Social Judgment.*

¹¹There is another case we could have also considered due to the fact that accepting/offering a bribe could be considered a positively reciprocal choice by the other party. In this case the values of θ_c and θ_p might rise in the event that a bribe has been accepted or offered. This makes the (Offer, Accept) payoff even better than the deviation possibilities and so if preference parameters shift in this way it increases the likelihood of that pair of strategies being an equilibrium. The comparative static we are interested in regarding observability still holds though.

The support for this hypothesis is provided in the theoretical analysis in section 3.2. The hypothesis rests on the idea that the weight a decision maker will place on the welfare of a victim will be increasing in the observability of the decision to engage in anti-social behavior. If that weight does vary with the observability condition then, as shown above, this comparative static should be observed in all three games.

Hypothesis 2 *The propensity of an individual to engage in rule breaking is decreasing in the Rule of Law measure associated with the cultural heritage of that individual.*

While this hypotheses was not addressed directly in the models developed in section 3.2 for each game, the rationale behind it is that the culture with which individuals identify is likely to shape the degree to which they perceive the acts of stealing, bribing or embezzling as actual “rule breaking”. Since the Rule of Law index captures attitudes toward formal institutions and general tendency to abide by rules, individuals that indicate a cultural connection to a society with a low Rule of Law score might have internalized at least some of the values and norms prevailing in their countries of origin. Consequently, their perceptions of what constitutes acceptable behavior and what constitutes rule breaking might differ from the perceptions of individuals that associate culturally to high Rule of Law countries. Hence our prediction that, in the absence of any formal enforcement, the former might be more likely than the latter to engage in stealing, bribery and embezzlement. Theoretically this can be represented by a positive correlation between the Rule of Law measure and the value of θ_0 . If inherited culture also affects the weight that individuals place on the possibility of being observed and judged by others, we might also find differential effects of our observability treatments on the decision to engage in rule-breaking. Theoretically this can be represented by a correlation between the Rule of Law measure and the value of b . Due to the exposure of our experimental participants to the formal and informal institutions prevailing in the US, which is a high Rule of Law country, these correlations are likely to be weaker than if we involved individuals that actually grew up and currently live in countries characterized by different Rule of Law scores. This should be expected to make observing any effect of the Rule of Law measure very difficult in our data.

There are other ancillary hypotheses that we can also investigate with our data. In the Stealing game, as described in section 3.2.1 we might observe a differential tendency to steal from others based on relative endowments. Our prediction is that a thief is more likely to steal when they have the lower endowment. In the Embezzlement game, we could also observe differential tendencies to embezzle resources based on the size of the public fund. However, as discussed in Section 3.2.2, we do not have a clear prediction on the direction of such an effect.

3.4 Implementation

Each experimental subject participated in all three rule breaking games but only one treatment regarding the observability of actions. While we wanted to observe individuals making choices in all the rule breaking games, we did not want the results from one rule breaking game affecting the results of the others and we also wanted to ensure that experimental participants would not see the experiment as simply providing multiple opportunities for anti-social behavior. To deal with those issues, we included three other games in the experiment as distractor tasks. The distractor tasks included a module based on a shortened version of the risk aversion assessment module from Harrison and Rutström (2009) with 15 pairwise lottery choices as well as a second instance of this task where the decisions were made on behalf of another subject. The third task had subjects participating in a series of 5 auctions bidding against the computer for the right to win a lottery.

	RA Self	Bribery	Auction	Stealing	RA Other	Embezzlement	# Subjects
Hidden Action			6 Sessions / 24 Subjects Each				144
Victim Knows			6 Sessions / 24 Subjects Each				144
Social Judgment			6 Sessions / 24 Subjects Each				144
# Subjects			18 Sessions/ 24 Subjects Each / 432				432

Table 2: Summary of experiment design.

The intention of these games was to provide some mentally demanding tasks that might allow subjects to forget about the previous anti-social tasks and thereby disguise the objective of the experiment. The game involving lottery choice on the behalf of another subject also provides what might be considered a positive frame about making choices for others which should further cloud any demand effects from subjects seeing three games with anti-social behavior components. Given these tasks and the first phases of the anti-social games where the endowments were earned, there was actually a very small portion of each session in which an opportunity for rule breaking would arise.

Table 2 provides a summary of the design of the experiment. We conducted 6 sessions per treatment, involving a total of 432 subjects. In half of the sessions for each treatment, participants went through the games in the order indicated by the table while in the other half participants played the embezzlement game first and the bribery game last. We kept the order of the distractor tasks unchanged. While this does not allow us to eliminate all ordering effects from the data it does allow us to correct for some in a way that is feasible given the sample size.

Our sample consists of Florida State University students. We conducted the experiment using software programmed in z-tree, Fischbacher (2007), with subjects recruited using ORSEE, Greiner (2004). The exchange rate used in the experiment to exchange ECUs for dollars was 1 ECU=\$0.01 resulting in an average per subject payout of \$21.

After the completion of the experimental tasks, subjects filled in a questionnaire that registered their demographic characteristics, including their cultural heritage. As mentioned before, subjects were asked whether they and their families identify culturally with a country other than or in addition to the US. In our empirical analysis we associate to each country of cultural heritage the corresponding value of the Rule of Law index produced by the World Bank, which measures the quality of legal and judicial institutions, as well as individuals' attitudes towards the rules of society and, more generally, the likelihood of crime and violence.

4 Results

4.1 Summary Measures

We begin this results section with a few quick summary looks at the data. The first important point to establish is that we observed a great deal of heterogeneity in the responses to the key question on our survey regarding a country (other than or in addition to the US) with which our subjects identified. In Figure 1 we provide a graphical view of this data. Along the x -axis we have ordered each of the countries mentioned by the students according to their score on the World Bank's Rule of Law index, which we have rescaled over a 0 – 5 range,¹² and along the

¹²In order to capture values and norms associated with the Rule of Law that the subjects' ancestors brought with them when they migrated to the US, we take the oldest Rule of Law index which is from 1996, i.e. the first year

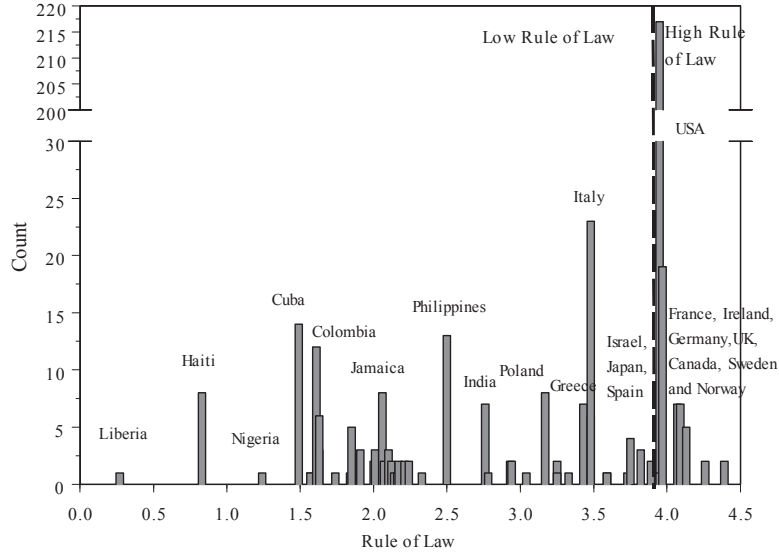


Figure 1: Histogram indicating number of subjects identifying with each of the countries mentioned in our sample ordered along the x-axis according to their Rule of Law score.

y -axis we report the number of subjects who identify culturally with that country. While all of the subjects were students at Florida State University and so lived in the US, 215 out of the 432 subjects in the sample indicated that they identified culturally with a country other than the US. As the figure demonstrates our sample is quite diverse, with a total of 52 countries being represented spanning almost the entire range of the Rule of Law index.¹³

For much of the empirical analysis below we will want to separate the sample into Low and High Rule of Law (L/H RoL) groups. Given that the Rule of Law score for the US is the median in the sample and that all of the study participants have spent substantial time in the US, we have chosen this as the split point. We have also chosen to place the US in the high Rule of Law category given that otherwise the sample size in that group would have been very low. This division is marked on the graph. Splitting the sample around the US makes it more difficult on us to find evidence of significant cultural differences in subjects' behaviors. This is because everyone in the Low RoL group has been influenced to some degree by the formal and informal norms prevailing in the US, making it less likely for us to observe behavioral differences from those who identify solely with the US. Any result we might find should therefore be seen as a conservative estimate of the effect of culture on behavior.

Figure 2 provides a first summary of our experimental data. The figure shows the overall tendency of individuals to engage in rule breaking behavior in each game, broken out by observability treatment. The formal test of Hypothesis 1 will be provided in the next section but the

the World Bank compiled the index.

¹³Our survey allows us to check whether the countries of cultural heritage mentioned by the students are indeed the countries of origin of their ancestors. Of the 215 students who identify with a country other than (or in addition to) the US 35% have at least one parent who emigrated from that country, 20% have at least one grandparent that emigrated from that country, 34% have ancestors older than grandparents who emigrated from that country. Finally, 10% spent 10 years or more in that country and can therefore be considered first-generation immigrants.

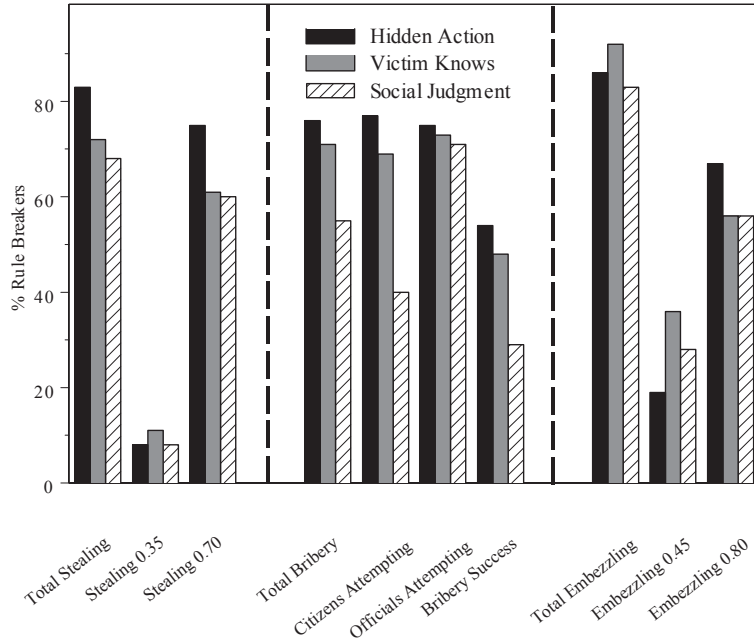


Figure 2: Summary of anti-social behavior by game and treatment.

figure demonstrates that we do regularly observe that the most anti-social behavior is observed in the Hidden Action treatment while the least is observed in the Social Judgment treatment as expected. The ranking of the Victim Knows treatment is less clear. One point to note from this figure is that in both the Stealing and Embezzling games we observe many more individuals choosing to steal or embezzle the large amount rather than the small amount despite the fact that the parametric prediction made from the CFG estimated preference parameters was the opposite, i.e. we should have seen relatively fewer choices to steal the large amount than the small amount in each game. This suggests that the actual values of θ_0 for the subjects that participated in our games were lower than the values estimated in CFG. This difference is not necessarily surprising due to the differences in the subject pools, and more importantly, in the experimental contexts. Nevertheless, we note this difference from our baseline prediction.

4.2 Analysis of Rule Breaking

Our first hypothesis is concerned with the degree to which the different observability treatments affect the behavior of subjects in the rule breaking position. Tables 3-5 provide the statistical tests of this hypothesis for each game. We employ specifications that look at a binary version of the decision, i.e. to break the rule or not, as well as specifications examining the severity of the decision, i.e. whether a bribe was attempted vs. successful and the percentage stolen/embezzled. The explanatory variables used in each regression include the dummy variables for the Victim Knows and Social Judgment treatment leaving the Hidden Action treatment as the baseline. We also include a standard set of simple controls including gender, whether the subjects said they were raised religious and the score on the Rule of Law measure for the country with which they identify. We also include the dummy variable *BribeFirst* to control for/detect ordering effects which is equal to 1 for the sessions in which the Bribery Game was played first and it is equal to 0

for the sessions in which the Embezzlement game was played first. For the stealing and embezzling games there were other contextual variables hypothesized as being important, i.e., the relative endowment status for the stealing game and the size of the public fund in the embezzlement game; we include those variables in order to test for those effects. Finally, for each regression specification we show the results for three different populations: 1) the entire sample, 2) the subset of subjects that identify culturally with Low Rule of Law countries, and 3) the subset of subjects that identify culturally with High Rule of Law countries. This brings us to our first result, generated by our test of Hypothesis 1.

Result 1 *The amount and/or severity of rule breaking behavior is robustly lower in the Social Judgment treatment than the Hidden Action treatment for the High Rule of Law subjects. The effect of Social Judgement is less robust for the low Rule of Law subjects as they typically fail to respond to the possibility of being judged by others. The Victim Knows treatment is mostly ineffective in reducing rule breaking behavior and when it is effective, it is only for the High Rule of Law subjects.*

Tables 3-5 provide support for this result. We start by examining the estimates obtained for the full sample, reported in the first and fourth columns of each table. In the Stealing game, the frequency of stealing and the severity of stealing drop in both the Victim Knows and the Social Judgment treatments relative to the Hidden Action treatment.¹⁴ In the Bribery game, we find a significant effect only for the Social Judgment treatment and only in the decision to Offer a Bribe, not in the decision to Accept. Finally, in the Embezzlement game we find no significant effects in the overall sample for either treatment.

In an attempt to better understand these results we then examine whether subjects' responsiveness to treatments differed according to whether they identified with a high or low Rule of Law country. Rather than providing regressions with a large number of interaction terms we have chosen to present these results by showing separate regressions for each sub-sample. These regressions show that pooling the high and low Rule of Law subsamples constituted a specification error as the two subgroups tend to respond quite differently to the treatments. In the Stealing game the differences between the two groups are not substantial, even though it is only for the High RoL subjects that the downward shift in the severity of stealing caused by the observability treatments is large enough to be statistically significant. In the other two games the differences are more pronounced. In the Bribery game the response of the High RoL subjects to the Social Judgment treatment is much stronger than the (statistically insignificant) response of the Low RoL subjects. This applies to both the decision to offer and the decision to accept a bribe. In the Embezzlement game, both groups are not less likely to embezzle under the observability treatments relative to the Hidden Action treatment; however, when looking at the severity of the embezzlement decision we find that the high RoL subjects do respond to both treatments, while the low RoL do not.

The low RoL subjects fail to respond to either social observability treatment in a robust way across the Bribery and the Embezzlement games, and to a less extent in the Stealing game. The clear picture from these results is that individuals who associate with cultures characterized by a relatively high respect for the rule of law tend to respond to the possibility of social observability and judgement as hypothesized, while those who associate with countries with a lesser respect for the rule of law tend not to respond to these treatments. There are several possible explanations for why these populations might have responded differently and we will return to this discussion in a later subsection.

¹⁴The coefficients on the dummy variables for the Victim Knows and Social Judgment treatment are not significantly different in either specification.

	Logit: Steal or Not			Ordered Logit: Percent Stolen		
	All	Low RoL	High RoL	All	Low RoL	High RoL
Victim Knows	-0.606** (0.282)	-0.810 (0.572)	-0.466 (0.492)	-0.590** (0.230)	-0.585 (0.413)	-0.796* (0.432)
Social Judgment	-0.829*** (0.201)	-1.539* (0.804)	-0.667* (0.388)	-0.707*** (0.231)	-0.621 (0.528)	-0.979*** (0.369)
BribeFirst	0.363* (0.209)	1.754*** (0.611)	-0.356 (0.376)	0.309* (0.185)	1.041*** (0.377)	-0.112 (0.331)
Larger Endowment	-0.448 (0.366)	-0.756 (0.598)	-0.205 (0.467)	-0.138 (0.314)	-0.0950 (0.547)	0.0371 (0.448)
Male	0.119 (0.309)	0.656 (0.651)	-0.302 (0.420)	0.219 (0.293)	0.498 (0.525)	-0.108 (0.363)
Raised Religious	-0.569 (0.351)	0.189 (0.656)	-1.209** (0.519)	-0.188 (0.302)	0.552 (0.631)	-0.547 (0.423)
Rule of Law	-0.143 (0.174)	-0.618* (0.375)	-7.837** (3.601)	-0.0805 (0.121)	-0.535** (0.256)	-7.798** (3.847)
Constant	2.429*** (0.743)	2.567 (1.654)	33.85** (14.80)	-	-	-
Obs	216	82	134	216	82	134

Robust standard errors in parentheses, clustered at session level. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Logit and Ordered Logit regressions examining stealing behavior.

	Logit: Offer Bribe			Logit: Accept Bribe			Logit: Success
	All	Low RoL	High RoL	All	Low RoL	High RoL	All
Victim Knows	-0.371 (0.439)	-0.336 (0.464)	-0.481 (0.687)	0.0715 (0.402)	0.380 (0.944)	-0.356 (0.700)	-0.251 (0.443)
Social Judgment	-1.608*** (0.498)	-1.141 (0.707)	-2.021*** (0.706)	-0.278 (0.458)	0.667 (0.866)	-1.051* (0.630)	-1.056* (0.634)
BribeFirst	0.608 (0.409)	0.951** (0.476)	0.223 (0.532)	-0.175 (0.298)	-0.0374 (0.735)	-0.491 (0.444)	0.178 (0.430)
Male	0.639** (0.322)	0.379 (0.467)	0.477 (0.497)	0.675* (0.362)	1.326** (0.573)	0.379 (0.442)	-
Raised Religious	-0.151 (0.360)	-0.020 (0.614)	-0.188 (0.424)	-1.083*** (0.393)	0.055 (0.738)	-1.542*** (0.543)	-
Rule of Law	0.230 (0.195)	0.108 (0.426)	3.550 (8.917)	-0.330 (0.281)	-0.890*** (0.339)	-1.909 (4.345)	-
Constant	-0.106 (0.809)	-0.170 (1.532)	-12.71 (35.43)	2.666** (1.254)	2.133 (1.344)	10.23 (17.48)	0.0786 (0.384)
Obs	144	59	85	144	57	87	144

Robust standard errors in parentheses, clustered at session level. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Logit regressions examining bribe offering/accepting behavior.

	Logit: Embezzle or Not			Ordered Logit: Percent Embezzled		
	All	Low RoL	High RoL	All	Low RoL	High RoL
Victim Knows	0.734 (0.646)	1.568 (1.226)	0.541 (1.121)	-0.195 (0.384)	1.311 (1.112)	-1.458** (0.697)
Social Judgment	-0.247 (0.614)	0.134 (1.575)	-0.122 (1.042)	-0.434 (0.268)	0.242 (0.808)	-1.135** (0.459)
Public Fund	0.011 (0.009)	-0.006 (0.025)	0.050*** (0.019)	0.007 (0.007)	0.006 (0.012)	0.007 (0.010)
BribeFirst	0.304 (0.541)	0.606 (1.790)	-1.495 (1.290)	0.389 (0.297)	-0.006 (0.885)	0.374 (0.548)
Male	-1.218 (0.992)	-0.003 (1.348)		-0.245 (0.361)	0.885 (0.629)	-1.186*** (0.444)
Raised Religious	-0.780 (0.508)	1.648* (0.934)	-3.769*** (0.790)	-0.348 (0.340)	1.097* (0.605)	-0.997* (0.557)
Rule of Law	-0.472 (0.343)	-1.517** (0.645)		-0.113 (0.181)	-0.242 (0.526)	-3.405 (2.934)
Constant	2.245 (2.028)	5.545 (4.961)	-6.511* (3.453)			
Obs	108	40	34	108	40	68

Robust standard errors in parentheses clustered at session level. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Logit and Ordered Logit regressions examining embezzling behavior.

Result 2 *We find that individuals who identify with higher Rule of Law countries tend to engage in slightly less rule breaking behavior and break the rules with less severity than individuals who associate with lower Rule of Law countries. The strength of the relationship seems to depend on the rule breaking game.*

The support for this result is also found in Tables 3-5. In each of the regressions we include the Rule of Law value for the country with which the individual identifies.¹⁵ We find that across the regression specifications the coefficient on this variable is almost always negative and intermittently significant. While we hypothesized that this effect would be present as the Rule of Law score might serve as a proxy for the θ_0 of an individual, the effects we find are perhaps not as strong or robust as one would have expected. Indeed, while these effects seem to exist in the decision to steal, the decision to embezzle and the decision to accept a bribe (in the latter two only among the low RoL subjects, where we have more variation in the RoL continuous variable), they are not present in the decision to bribe and the severity of rule-breaking in both the Stealing and the Embezzlement game. This might seem surprising given the previous result showing the relatively robust differences in response to treatments by the low and high RoL samples. As to why the low RoL subjects might not have been found to more robustly engage in a higher degree to rule breaking behavior there are several possibilities. One is that the propensity by the low RoL subjects was already high and so observing an even higher level was empirically difficult. A

¹⁵In the regression in Table 5 we note that the Rule of Law variable drops out of the regression for the Steal or Not Steal decision among the high RoL sample. The reason is a lack of variability in the actions chosen by that group in that treatment, as virtually everyone in this subsample chose to embezzle at least the small amount. There was variation in the decision to embezzle the small or large amount and thus the variable did not drop out of that regression.

second is that the cultural impact of growing up and living in the US might have homogenized the general propensity of individuals to engage in at least some forms of rule breaking behavior even if it did not homogenize their response to the treatments. We discuss this more later in the conclusion.

We had noted in the theoretical section above that other contextual variables in the Stealing and Embezzlement games might have impacted the behavior of the rule breakers and we can examine these same specifications to determine if those effects were realized. In Table 3, the relevant coefficient to examine is the one on the variable Larger Endowment. This is a dummy variable equal to 1 if the potential thief had a larger endowment than the potential victim. In the model presented before, this difference in relative endowments was expected to make a substantial difference in the tendency to steal but we find the variable to be statistically insignificant for all samples. In the theory section we also discussed that it might be reasonable for the size of the public fund in the Embezzlement game to affect the decision to embezzle but we noted that there were offsetting forces that precluded us from making a clear directional prediction. In Table 5 we include the size of the public fund in all of the regression specifications and find it to only be significant for the High RoL subjects in the decision to steal or not. We do not interpret this as a robust finding and conclude instead that the effect of this variable is not substantial.

4.3 Behavior Across Games

Given the substantial differences between the games themselves, we are not really interested in comparing results in different games to suggest in which one we observe more or less rule breaking behavior. The games were not constructed to conduct such a comparison in a meaningful way. They were constructed in an attempt to examine the response to the observability treatments in a broad range of rule-breaking situations to determine the robustness of that response. While we don't find it reasonable to pool the data across games to examine issues along those lines, there are some important questions regarding the design of our experiments we should examine across games. These questions relate to the possibility of cross game contamination. One might consider it ideal to have only had subjects engage in a single rule breaking game per session. Doing so though would have led to a tripling of the cost of the experiments or to a reduction in our ability to provide an investigation of the robustness of our results across situations. We therefore chose to have subjects engage in all three games inside of a session. As mentioned in the design section, we also had subjects engage in other tasks between rule breaking games in order to distract them or keep them from focusing on the rule breaking decisions and thereby minimize any cross game contamination. Here we investigate the degree to which the design was successful in that respect.

The first source of evidence on this issue is contained in Tables 3-5. In each of those regressions we included a variable called Bribe First which is a dummy variable equal to 1 in the sessions in which the Bribery game was the first of the three played and equal to 0 when the Embezzlement game was the first played. One demonstration of a lack of ordering effects would be to see that this coefficient is insignificant as that indicates that we observe no differences in the propensity to engage in rule breaking depending on whether the Bribery or Embezzlement game were played first. Indeed we find that this coefficient is typically insignificant in the Bribery and Embezzlement regressions. We do however find that it is significant and positive in some of the specifications for the Stealing game. A direct interpretation of this is that we observe more stealing behavior when subjects played the Bribery game first than when they played the Embezzlement game. We have no reasonable explanation for this phenomenon but we note that it exists and that the treatment effects of interest still hold with it is controlled for.

	Logit: Rule Break	
	Rule Break Option at Least Twice	Rule Break Option 3 Times
Number Neg Messages $t - 1$	0.060 (0.081)	0.020 (0.092)
Prior Choice	1.400 (0.880)	2.486** (1.085)
Stealing Game	1.035** (0.508)	-0.635 (0.867)
Embezzle Game	0.932 (0.789)	-0.130 (1.112)
Male	0.893** (0.419)	1.037 (0.675)
Raised Religious	-1.019** (0.484)	-0.128 (0.721)
Rule of Law	-0.00527 (0.240)	0.147 (0.351)
Constant	-0.703 (1.057)	-1.172 (1.092)
Observations	126	72

Robust standard errors in parentheses clustered at subject level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6: Logit regressions examining how individuals in the Social Judgment treatment responded to messages.

Of greater potential concern is the implementation of the Social Judgment treatment, as one might imagine that individuals who engage in anti-social behavior early on and receive negative messages might be less likely to engage in such behavior in following games. Thus this treatment more than the other two might be expected to suffer from such ordering effects. To examine this issue we provide Table 6 that contains logit regressions to determine if subjects in the Social Judgment treatment respond to the messages received in previous rule-breaking games. This regression considers only data from the Social Judgment treatment and we pool the choices of the subjects in the rule breaker positions across all games. We include dummy variables for each game to account for any differences in behavior across games as well as the demographic variables we included before. We also include two other variables which are the number of negative messages the person received the last time they were in the rule breaker role and the choice they made (a binary variable indicating whether they broke the rule or not). Given the design of the experiment, we had some individuals in the rule breaker role 3 times (108 total or 36 per treatment), some twice (108/36), a few once (72/24) and then many not at all (144/48). For this regression we can obviously exclude those who were never in the rule breaker role or were in it just once as they had no opportunity to respond to prior messages. We have provided the regression conducted with only the people who were in the rule breaker role in all 3 games as well as those who were in that role at least twice.

The regressions demonstrate the while the prior choice of the individual figures into future decisions, indicating perhaps that there are rule breaker types and non-rule breaker types, the number of negative messages received by an individual in one round does not affect future decisions. This might seem surprising based on prior studies showing that formal and informal

sanctions can impact behavior in repeated games. Given the differences in our one-shot rule breaking games and the inclusion of distractor tasks between those games, we do not view our results as contradicting those of prior studies. Rather we view this as evidence that the distractor tasks of having subjects make choices in many different lotteries and bid in auctions for lotteries diminished the impact of the results from prior games.¹⁶

4.4 Explaining the Differential Response to Treatments

The difference in response to the treatments by the different subject groups is intriguing and warrants further investigation as to why the difference might be there. There are certainly many possible explanations. One is that perhaps the subjects who identify with the low Rule of Law countries do not expect others to view the decisions to steal/bribe/embezzle as violating any social norms. That is, they might think that others will not disapprove, and might even approve, of these behaviors. If so, then whether or not others viewed the actions should have no impact on the behavior. As a way of investigating the validity of this possible explanation we can examine the messaging data from the Social Judgment treatment. In that treatment, subjects in the victim roles were able to send messages of approval or disapproval. Therefore, we can examine the messaging data to see if the tendency to disapprove of stealing, bribery and embezzlement varies with the Rule of Law score of the victims.

Table 7 presents the results of the corresponding regression analysis. There are four possible message states a subject could choose; {No Message, Unhappy Face, Neutral Face, Happy Face}. For our purposes we do not need to examine the full space of messages but rather it is more useful to analyze two binary situations of sending a message versus not sending and then sending a negative message versus any other choice, conditional on the action of the potential rule breaker. Table 7 provides logit regressions using both of those dependent variables where each data point is one decision by a victim regarding the message to send to a person in the rule breaker role. Recall that each victim could send a message to all of those in the rule breaker role, not just the one(s) in their group. We again provide regressions using the same high and low RoL subsamples as before. These regressions pool the message sending decisions of victims across games. This is done to economize on the number of tables necessary and because our focus is on how the behavior changes based on the Rule of Law variable. We do include dummy variables for the Stealing and Embezzlement games leaving the Bribery game as the base category. The variable Choice is a binary equal to 1 if the relevant rule breaker chose to engage in the rule breaking behavior (at any level) and it is equal to 0 otherwise. The Severity variable is used to indicate how severe was the violation. For the Stealing and Embezzlement games this variable is equal to 1 if the rule breaker stole/embezzled the high amount. For the Bribery game this is equal to 1 if the bribe was successful. We include an indicator variable for whether the rule breaker was in the victim’s own group, i.e. was the one with whom the victim interacted, and then the standard demographic variables we employed before. This leads us to our final result.

Result 3 *Victims in the high and the low Rule of Law subsamples respond roughly equivalently to*

¹⁶As a further test for (the absence of) cross game contamination, we also investigated whether potential rule-breakers who were assigned the role of victim in a prior game were more likely to engage in rule-breaking when given the chance conditioned on their experience in the victim role. We were able to conduct this test because 108 individuals were assigned the role of rule-breaker in two games and the role of victim in the remaining game, and 72 were given the role of rule-breaker in one game and that of victim in two games. We found that having played a game in the role of victim does not have any effect on the decision to break the rule in a following game. This confirms that our distractor tasks were successful in inducing subjects to perceive the rule-breaking games as three separate scenarios.

	Logit: Message or No Message			Logit: Negative Message or Other		
	All	Low RoL	High RoL	All	Low RoL	High RoL
Choice	-0.267 (0.211)	-0.651 (0.414)	-0.125 (0.256)	2.532*** (0.438)	2.147*** (0.532)	2.922*** (0.728)
Severity	0.407** (0.194)	0.330 (0.455)	0.562** (0.242)	2.391*** (0.241)	3.078*** (0.410)	2.245*** (0.297)
Stealing Game	1.397*** (0.439)	0.953 (0.760)	1.875*** (0.605)	0.519 (0.347)	0.746 (0.590)	0.449 (0.443)
Embezzle Game	0.856*** (0.323)	0.398 (0.499)	1.229*** (0.473)	0.0974 (0.318)	0.251 (0.496)	0.0599 (0.430)
Own Group	0.399* (0.211)	0.525 (0.439)	0.436* (0.251)	0.169 (0.174)	0.0205 (0.282)	0.252 (0.215)
Rule of Law	0.705** (0.306)	1.872*** (0.677)	106.9*** (34.46)	0.402** (0.175)	0.768* (0.396)	7.543*** (2.491)
Male	0.130 (0.512)	-0.707 (0.777)	1.103 (0.725)	0.460 (0.286)	-0.483 (0.532)	0.893*** (0.342)
Raised Religious	0.958 (0.710)	2.827** (1.394)	0.469 (0.743)	0.452 (0.326)	1.445* (0.798)	0.265 (0.361)
Constant	-1.490 (1.300)	-3.828 (2.608)	-422.1*** (136.2)	-5.437*** (0.872)	-6.681*** (1.638)	-34.15*** (10.25)
Observations	2,928	1,076	1,852	2,928	1,076	1,852

Robust standard errors clustered by subject in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Logit regressions examining message sending behavior.

decisions by rule breakers. However, in both subsamples, the likelihood to send a message of any sort and the likelihood to send a bad message both increase with the Rule of Law of the country with which subjects identify.

There are two dimensions to this result. We do find that the Rule of Law variable is positive and significant in all specifications which supports the claim that the higher is the Rule of Law with which a subject is associated, the more likely that subject is to send any message and to send a negative message. On the other hand, if we examine the coefficients for how individuals respond to the Choice by the rule breaker and the severity of that choice, the coefficient values that we obtain in the two subsamples are all roughly similar. In the decision of whether to send a message or not, the primary determinant seems to be the severity of the rule violation rather than simply whether the rule is broken. For both groups the choice itself is insignificant and for the High RoL group, the severity is positive and significant. In the decision to send a negative message or not, both variables are important, showing a positive and significant coefficient in both subsamples. The values of the coefficients are slightly different, yet the important point to note is that their similarity indicates that both groups respond in a largely similar manner when disapproving of rule breaking behavior on its own, and then being more likely to disapprove of severe violations.

While we do see some differences in behavior based on the RoL in the subjects' countries of cultural heritage, it is not that we observe subjects in the low RoL group approving of bad behavior and subjects in the high RoL group disapproving of such behavior. Consequently, it is unlikely that the differential responses of high and low RoL rule breakers to the social observability

treatments are due to the low RoL individuals not expecting to be judged badly when engaging in rule breaking behavior. An alternative explanation that is consistent with our data is that while the low RoL subjects expect some disapproval, perhaps they expect to receive a lower level of disapproval as compared to the high RoL subjects and so the difference in behavior is simply due to different beliefs about the extent of social disapproval associated with each rule breaking scenario. We cannot reject this explanation without more data.

Other possibilities include a greater tendency on the part of the low RoL individuals to believe that any disapproval of rule breaking is hypocritical as they would expect victims to also break the rule if they were given the chance. It might also be that individuals who associate with low RoL countries might be less accustomed to the idea that informal social disapproval could be accompanied by some sort of formal sanctions while individuals who associate with high RoL countries are more accustomed to such a connection and respond even when the formal sanctions are not present. Our data does not allow us to test the validity of these possible explanations.

5 Conclusion

In every society, the correct functioning of economic, political and social institutions relies on the establishment and enforcement of norms guiding the behavior of the members of society. Norm enforcement is especially important in contexts where infractions of the norm caused by self-interest generate negative externalities on other members of societies. This is for instance the case of bureaucrats or politicians embezzling public resources or demanding bribes for the provision of government services, or the case of workers stealing from their employer, or more generally the case of members of societies stealing from other members of society. While norm enforcement has been traditionally based on the institution of legal and judiciary systems relying on top-down monitoring and punishment, in the last two decades there has been increasing interest in the design and implementation of enforcement mechanisms based purely on social judgment and informal fines and/or rewards. A number of social enforcement mechanisms are being tested especially in countries characterized by high levels of corruption and poor rule of law, where attempts to change formal incentive systems through top-down interventions are likely to fail.

In this paper we asked whether the effectiveness of social enforcement mechanisms in reducing rule-breaking behavior in the form of theft, bribery and embezzlement is conditional on the cultural background of the potential rule breaker. This is an important question since what constitutes a social norm, and hence what actions one expects to be socially approved or disapproved, are defined by the cultural context. Individuals who have internalized the norms prevalent in a society characterized by low rule of law and individuals who have internalized norms prevalent in a society characterized by high rule of law might respond very differently to the same social enforcement mechanism. Studying the extent to which the possibility of social judgement acts as a deterrent for individuals that identify culturally with low rule of law countries is especially important, given its implications for the design of interventions relying on social enforcement mechanisms in developing countries.

We conducted an experiment simulating three rule-breaking situations, theft, bribery and embezzlement, where we varied the extent to which the actions of the potential rule-breaker are visible to others and are subject to social judgment in the form of informal approval and disapproval messages. We involved a US student sample characterized by cultural heterogeneity due to the immigration of their ancestors to the US from a multitude of countries characterized by different levels of rule of law, as measured by the World Bank's Rule of Law index. We found significant differences in the responses of potential rule breakers to our social observability

treatments. In particular, while subjects that identify with high rule of law countries responded to the possibility of social judgment by decreasing their propensities to engage in rule breaking behavior, subjects who identify culturally with low rule of law countries did not.

Translating these results into a field context requires a careful understanding of their implications. While our findings suggest that social enforcement mechanisms aimed at curbing crimes such as corruption of public officials are likely to fail in developing countries characterized by a low Rule of Law score, it is important to recognize that countries are rarely homogenous with respect to citizens's attitudes toward the law and respect for formal institutions. Even a country scoring very low or high on the Rule of Law scale may well have sub-populations whose internalized norms do not conform with the norms prevailing in the country and reflected in the Rule of Law index. Think for instance of the variation in crime rates and, more generally, social norms and citizens' attitudes toward formal institutions in Northern and Southern Italy, or among American States. Consequently even in low Rule of Law countries there might be some regions where social enforcement mechanisms might be effective even though in others the same mechanisms would fail. The opposite can certainly be true in high Rule of Law countries. The more general message that can be taken from our findings is that when designing and implementing a social enforcement mechanism one must give very careful thought to the specific populations being targeted by the mechanism and the cultural contexts in which they are embedded.

In future research we intend to engage in further testing to determine the validity of the different hypotheses for why low rule of law subjects do not seem to respond to the possibility of being socially judged. The hope is that such research will then allow us to identify forms of social enforcement mechanisms that can be effective even among low rule of law populations.

We also note that there are other patterns in our data which suggest additional issues that might deserve further study. In particular we observe interesting differences in behavior across the rule breaking games. In the stealing game we find a weak response by the low rule of law subjects to our social judgment treatment, while such a response is absent in the bribery and embezzlement games. This suggests that there might be important differences in how different forms of rule breaking are perceived, with theft being more universally recognized as a norm violation, and potential rule breakers being more fearful to be stigmatized as thieves than as corrupt individuals. Since our experiments were not designed to test for specific differences in behavior across rule-breaking scenarios, but rather to test for consistency in individuals' response to social judgement across contexts, we cannot formally test the validity of this interpretation of our result. Future research will implement such formal tests.

References

- Abbink, K., B. Irlenbusch, and E. Renner (2002). An experimental bribery game. *Journal of Law, Economics, and Organization* 2(2), 428–54.
- Akerlof, G. A. (1980). A theory of social custom, of which unemployment may be one consequence. *The Quarterly Journal of Economics* 94(4), 749–775.
- Algan, Y. and P. Cahuc (2010). Inherited trust and growth. *American Economic Review* 100(5), 2060–92.
- Andreoni, J. and B. D. Bernheim (2009). Social image and the 50-50 norm: A theoretical and experimental analysis of audience effects. *Econometrica* 77(5), 1607–1636.

- Ariely, D., A. Bracha, and S. Meier (2009). Doing good or doing well? image motivation and monetary incentives in behaving prosocially. *American Economic Review* 99(1), 544–555.
- Armantier, O. and A. Boly (2011). A controlled field experiment on corruption. *European Economic Review* 55(8), 1072–1082.
- Arnott, R. and J. E. Stiglitz (1991). Moral hazard and nonmarket institutions. *The American Economic Review* 81(1), 179–190.
- Azfar, O. and W. Nelson (2007). Transparency, wages, and the separation of powers: An experimental analysis of corruption. *Public Choice* 130(3/4), 471–493.
- Banerjee, A., R. Banerji, E. Duflo, R. Glennerster, and S. Khemani (2010). Pitfalls of participatory programs: Evidence from a randomized evaluation in education in india. *American Economic Journal: Policy* 2(1), 1–30.
- Banuri, S. and C. C. Eckel (2010). Experimental bribery in context: Comparing the u.s. and pakistan. Center for Behavioral and Experimental Economic Science, working paper 09-01.
- Bardsley, N. (2008). Dictator game giving: Altruism or artefact? *Experimental Economics* 11(2), 122–133.
- Barr, A., M. Lindelow, and P. Serneels (2009). Corruption in public service delivery: An experimental analysis. *Journal of Economic Behavior and Organization* 72(1), 225–239.
- Barr, A. and D. Serra (2010). Corruption and culture: An experimental analysis. *Journal of Public Economics* 194(11-12), 862–869.
- Battigalli, P. and M. Dufwenberg (2007). Guilt in games. *American Economic Review, Papers & Proceedings* 97(2), 170–76.
- Benabou, R. and J. Tirole (2006). Incentives and prosocial behavior. *The American Economic Review* 96(5), 1652–1678.
- Benabou, R. and J. Tirole (2012). Laws and norms. IZA Discussion Papers 6290, Institute for the Study of Labor (IZA).
- Bicchieri, C. (2006). *The Grammar of Society: The Nature and Dynamics of Social Norms*. Cambridge University Press.
- Björkman, M. and J. Svensson (2009). Power to the people: Evidence from a randomized field experiment of community-based monitoring in uganda. *Quarterly Journal of Economics* 124(2), 735–769.
- Bohnet, I., F. Greig, B. Herrman, and R. Zeckhauser (2008). Betrayal aversion. *American Economic Review* 98(1), 294–310.
- Bohnet, I., B. Herrman, and R. Zeckhauser (2010). Trust and the reference points for trustworthiness in gulf and western countries. *Quarterly Journal of Economics* 125(2), 811–828.
- Cameron, L., A. Chaudhuri, N. Erkal, and L. Gangadharan (2009). Propensities to engage in and punish corrupt behavior: Experimental evidence from australia, india, indonesia and singapore. *Journal of Public Economics* 93(7-8), 843–851.

- Carpenter, J. and C. K. Myers (2010). Why volunteer? evidence on the role of altruism, reputation and incentives. *Journal of Public Economics* 94(11-12), 911–920.
- Carpenter, J. and E. Seki (2011). Do social preferences increase productivity? field experimental evidence from fishermen in toyama bay. *Economic Inquiry* 49(2), 612–630.
- Charness, G. and M. Dufwenberg (2006). Promises and partnership. *Econometrica* 74(6), 1579–1601.
- Cialdini, R. B., L. J. Demaine, B. Sagarin, D. W. Barrett, K. Rhoads, and P. L. Winter (2006). Managing social norms for persuasive impact. *Social Influence* 1(1), 3–15.
- Cox, J. C., D. Friedman, and S. Gjerstad (2007). A tractable model of reciprocity and fairness. *Games and Economic Behavior* 59, 17–45.
- Dana, J., R. A. Weber, and J. X. Kuang (2007). Exploiting moral wiggle room: Experiments demonstrating an illusory preference for fairness. *Economic Theory* 33(1), 67–80.
- Della Vigna, S., J. List, and U. Malmendier (2012). Testing for altruism and social pressure in charitable giving. *Quarterly Journal of Economics*. 127(1), 1–56.
- Duflo, E., P. Dupas, and M. Kremer (2011). Peer effects and the impact of tracking: Evidence from a randomized evaluation in kenya. *American Economic Review* 101(5), 1739–1774.
- Dugar, S. (2010). Nonmonetary sanctions and rewards in an experimental coordination game. *Journal of Economic Behavior & Organization* 73(3), 377–386.
- Elster, J. (1989). Social norms and economic theory. *The Journal of Economic Perspectives* 3(4), 99–117.
- Erkal, N., L. Gangadharan, and N. Nikiforakis (2011). Relative earnings and giving in a real-effort experiment. *American Economic Review* 101(7), 3330–3348.
- Fernandez, R. (2008). Culture and economics. In S. N. Durlauf and L. Blume (Eds.), *The New Palgrave Dictionary of Economics, Second Edition*. Palgrave Macmillan.
- Fischbacher, U. (2007). z-Tree: Zurich Toolbox For Readymade Economic Experiments. *Experimental Economics* 10(2), 171–178.
- Fisman, R. and E. Miguel (2007). Corruption, norms, and legal enforcement: Evidence from diplomatic parking tickets. *Journal of Political Economy* 115(6), 1020–1048.
- Fogli, A. and R. Fernandez (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics* 1(1), 146–177.
- Gerber, A. S., D. Green, and C. Larimer (2008). Social pressure and voter turnout: Evidence from a large-scale field experiment. *American Political Science Review* 102(1), 33–48.
- Giuliano, P. (2007). Living arrangements in western europe: Does cultural origin matter? *Journal of the European Economic Association* 5(5), 927–952.
- Greiner, B. (2004). An online recruitment system for experimental economics. In K. Kremer and V. Macho (Eds.), *Forschung und wissenschaftliches Rechnen 2003*, Volume 63, pp. 79–93. Göttingen: Ges. für Wiss. Datenverarbeitung.

- Guiso, L., P. Sapienza, and L. Zingales (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives* 20(2), 23–49.
- Gächter, S., B. Herrman, and C. Thoeni (2010). Culture and cooperation. *Philosophical Transactions of the Royal Society B \ddot{U} Biological Sciences* 365(1553), 2651–2661.
- Harrison, G. W. and E. E. Rutström (2009). Expected utility theory and prospect theory: One wedding and a decent funeral. *Experimental Economics* 12(2), 133–158.
- Henrich, J., R. McElreath, A. Barr, J. Ensimger, C. Barrett, A. Bolyanatz, J. C. Cardenas, M. Gurven, E. Gwako, N. Henrich, C. Lesorogol, F. Marlowe, D. Tracer, and J. Ziker (2006). Costly punishment across human societies. *Science* 312(5781), 1767–1770.
- Herrmann, B., C. Thoeni, and S. Gächter (2008). Anti-social punishment across societies. *Science* 319(5868), 1362–1367.
- Hoffman, E., K. McCabe, K. Shachat, and V. Smith (1994). Preferences, Property Rights and Anonymity in Bargaining Games. *Games and Economic Behavior* 7, 346–380.
- Hoffman, E., K. McCabe, and V. L. Smith (1996). Social distance and other-regarding behavior in dictator games. *The American Economic Review* 86(3), 653–660.
- Holländer, H. (1990). A social exchange approach to voluntary cooperation. *The American Economic Review* 80(5), 1157–1167.
- Jones, D. and S. Linardi (2012). Wallflowers doing good: Field and lab evidence of heterogeneity in reputation concerns. University of Pittsburgh, Department of Economics Working Paper number 485.
- Karlan, D. and M. McConnell (2012). Hey look at me: The effect of giving circles on giving. NBER Working Papers number 17737.
- Knack, S. and P. Keefer (1997). Does social capital have an economic payoff? a cross-country investigation. *Quarterly Journal of Economics* 112(4), 1251–88.
- Knack, S. and P. Zak (2001). Trust and growth. *Economic Journal* 111, 295–321.
- Krupka, E. and R. A. Weber (2013). Identifying social norms using coordination games: Why does dictator-game sharing vary? *Journal of the European Economic Association* –(–), –.
- Ku, H. and T. C. Salmon (2012). The incentive effects of inequality: An experimental investigation. *Southern Economic Journal* 79(1), 46–70.
- La Porta, R., F. L. de Silanes, A. Shleifer, and R. Vishny (1997). Trust in large organizations. *American Economic Review* 87(2), 333–38.
- Linardi, S. and M. McConnell (2011). No excuses for good behavior: Volunteering and the social environment. *Journal of Public Economics* 95(5-6), 445–454.
- List, J. (2007). On the interpretation of giving in dictator games. *Journal of Political Economy* 115(3), 482–493.
- Lopez-Perez, R. and M. Vossatz (2010). On approval and disapproval: Theory and experiments. *Journal of Economic Psychology* 31(4), 527–541.

- Masclet, D., C. Noussair, S. Tucker, and M.-C. Villeval (2003). Monetary and nonmonetary punishment in the voluntary contributions mechanism. *The American Economic Review* 93(1), 366–380.
- Noussair, C. and S. Tucker (2005). Combining monetary and social sanctions to promote cooperation. *Economic Inquiry* 43(3), 649–660.
- Olken, B. A. (2007). Monitoring corruption: Evidence from a field experiment in indonesia. *Journal of Political Economy* 115(2), 200–249.
- Pan, X. and D. Houser (2011). Social approval, competition and cooperation. Working Paper George Mason University.
- Pradhan, M., D. Suryadarma, A. Beatty, M. Wong, A. Alishjabana, A. Gaduh, and R. P. Artha (2011). Improving educational quality through enhancing community participation: Results from a randomized field experiment in indonesia. Research Policy Working Paper 5795, The World Bank.
- Rege, M. and K. Telle (2004). The impact of social approval and framing on cooperation in public good situations. *Journal of Public Economics* 88(7-8), 1625–1644.
- Reuben, E. and A. Riedl (2013). Enforcement of contribution norms in public good games with heterogeneous populations. *Games and Economic Behavior* 77(1), 122–137.
- Roth, A. E., V. Prasnikar, M. Okuno-Fujiwara, and S. Zamir (1991). Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study. *The American Economic Review* 81(5), 1068–1095.
- Schram, A. and G. Charness (2012). Social and moral norms in the laboratory. Working Paper CREED University of Amsterdam.
- Schultz, W., J. Nolan, R. Cialdini, N. Goldstein, and V. Griskevicius (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science* 18(5), 429–433.
- Serra, D. (2012). Combining top-down and bottom-up accountability: Evidence from a bribery experiment. *Journal of Law, Economics, and Organization* 28(3), 569–587.
- Tabellini, G. (2008). The scope of cooperation: Values and incentives. *Quarterly Journal of Economics* 123(3), 905–950.
- Tadelis, S. (2011). The power of shame and the rationality of trust. Working Paper UC Berkeley.
- Tajfel, H., M. Billig, R. Bundy, and C. L. Flament (1971). Social categorization and inter-group behavior. *European Journal of Social Psychology* 1(2), 149–178.
- Xiao, E. and D. Houser (2005). Emotion Expression in Human Punishment Behavior. *Proceedings of the National Academy of Sciences of the United States of America* 102(20), 7398–7401.
- Xiao, E. and D. Houser (2011). Punish in public. *Journal of Public Economics* 95(7-8), 1006–1017.