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Intelligence and bribing behavior in a one-shot game

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ABSTRACT

We investigate the relationship between intelligence and bribing behavior in a simple one-shot game of corruption. We find a robust relationship between intelligence and the probability of bribing in which a higher intelligence quotient (IQ) leads to a lower probability of bribing in the game. This result holds after controlling for other determinants such as gender, attitude toward corruption, and perceptions of corruption. By revealing the gender of the matched player, we also show that gender perceptions of corruption are strong determinants of bribery.

1. Introduction

Corruption often plays a hand in the allocation of scarce resources throughout the world, usually in the form of government contracts. The implications of corruption on economic outcomes may depend on who participates in corrupt behavior. If a low ability agent is more likely to bribe for a contract as compared to a high ability agent, and corruption has a substantial role in the outcome, then an agent with low ability might have control over the resources assigned under that contract thus leading to a suboptimal outcome. On the other hand, a high ability agent can correct pre-existing government failures by acquiring control over resources, even if such transactions are facilitated by corrupt behavior (see Aidt, 2003 for a detail discussion of 'efficient corruption'). Therefore, it is relevant to identify the level of ability of agents who are more prone to engage in corrupt behavior.

In this paper we asked a very simple question that has received little attention in the economic literature until now: Is corrupt behavior related to intelligence? Such relationship may exist if there is some degree of substitutability (or complementarity) between ability and corruption, which may vary across different contexts. For instance, a positive relationship between corruption and intelligence could be expected if more intelligent agents come to understand a corrupt system more than less intelligent people. Given that agents with higher ability are more likely to understand how a corrupt system works, they may be more willing to participate in corrupt activities. Furthermore, if higher ability agents can operate in a corrupt system with a lower probability of getting caught, then the expected cost from engaging in a corrupt activity would be lower, therefore inducing agents to participate in corrupt acts more often. On the other hand, agents with a higher level of intelligence might be less inclined to participate in a corrupt system as they may prefer a system that rewards individual ability. A system based on individual merit in which bribing and ability are close substitutes comes with a higher payoff for high ability agents (see Kahana and Qijun, 2010).

If the opportunity cost is the same for high-ability and low-ability agents as in a highly corrupt country, then there should be no relationship between corruption and IQ. However, if high-ability agents are more likely to internalize the negative impacts of corruption, then the opportunity cost of bribing will be higher for high-ability types resulting in a negative relationship between IQ and corruption even in highly corrupt environments. Furthermore, if we view non-corrupt activities as altruistic, then we might could follow the argument presented in Millet and Dewitte (2007) in which they show that more intelligent people tend to be more altruistic. This view would be consistent with our game because when agents decide not to bribe they are willing to accept a lower personal payoff but benefit from the positive externality created from not bribing. If they bribe, they receive a higher personal payout

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but give up the benefit created by the positive externality. We could then view bribery as a selfish act and not bribing as an altruistic act.

Although the question we ask is simple, finding an answer may be extremely difficult. Ideally we would like to observe agents' behavior in some sort of corrupt activity and have a measure of their intelligence along with other controls to empirically measure the impact intelligence has on corrupt behavior. Measuring either one of these variables is difficult as corrupt behavior is typically not observed on a frequency sufficient to generate a useful amount of data. In fact, most studies that look at corruption at the individual-level generally rely on either perceptions of corruption (e.g. Dimitrova-Grajzl et al., 2012) or at best the data is self-reported (e.g. Svensson, 2003). Therefore, a natural step to study our question of interest would be in a lab setting. Using a simple game framed as a game of corruption and a well-established measure of intelligence, we investigate the empirical relationship between measured intelligence and corrupt behavior. We show that there is a robust, negative relationship between intelligence and bribing behavior after controlling for attitudes toward bribery, perceptions of corruption, and gender.

2. Determinants of bribery: a brief review of the literature

The link between corrupt behavior and cognitive ability has received little attention in the literature. Among the few exceptions, Potrafke (2012) is one of the only papers that looks at the relationship between corruption and intelligence. He estimates a cross-country model between corruption perceptions and an estimated measure of IQ. He finds a negative relationship between corruption and IQ after controlling for some common determinants of corruption including income and legal origins. He argues that the reason for the negative relationship stems from the fact that more intelligent people have longer time horizons and are thus more inclined to internalize the harmful long run effects of corruption.

Kahana and Qijun (2010) present a theoretical model of promotion to investigate the link between ability and bribing decisions. They show that if ability and bribes are perfect substitutes in the promotion decision, then higher ability agents pay lower bribes if at all. Their model has the ability to produce a negative relationship between ability and bribing behavior. Armantier and Boly (2011) find experimental evidence that suggests that ability significantly impacts the probability of accepting a bribe. They measure ability as how precise a participant is in completing the task of grading exams. The more mistakes a participant makes grading exams, the lower their ability. One problem with their measure of ability is that it is task specific. This makes comparisons with future studies difficult. Our measure of ability is more general and independent of the task at hand which allows for a more uniform and thus comparable measure of ability. We discuss our measure of intelligence in the next section.

Existing experimental studies indicate that bribing behavior is partially based on attitudes and perceptions, which may vary across different contexts. For instance, Barr and Serra (2010) investigate whether the perceptions of corruption in a player's home country is related to bribing behavior in a game. Using the Transparency International's Corruption Perceptions Index (CPI) in the year the student left their home country; they find that a higher level of corruption in a student's home country leads to a higher probability of engaging in bribery in the game after they include an interaction effect for graduate students.

Armantier and Boly (2011) identify some universal determinants of bribery finding that age, ability, and religiosity significantly impact the probability of accepting a bribe in both a developed and developing country. Their result lends support to the idea that there exist common factors of corrupt behavior.

A topic that has recently received some attention is the relationship between gender and corruption. Using two independent data sources, Swamy et al. (2001) show that women are less involved in corruption as well as less likely to condone bribing when compared to men. This result seems to hold across different countries suggesting that it is not necessarily a country specific relationship. They also show that at the macro level, countries with a higher share of women in parliament and in the labor force have lower levels of corruption. In an experimental study, Rivas (2008) also finds that women are less likely to bribe when compared to men. In contrast, Armantier and Boly (2011) find no relationship between gender and corruption. It should be noted that in all the studies to date, the papers look at how gender effects corruption directly. Following Lambsdorff et al. (2010), we also look at how gender perceptions of corruption impact the decision to engage in corrupt behavior. Put simply, if the gender of the counterpart is revealed, does this impact the decision to engage in corruption?

3. IQ test

Measuring intelligence is extremely difficult task as it depends on the very type of intelligence one is interested in. Once you settle on the type of intelligence you wish to measure, you are then faced with a plethora of tests each having their own line of critics.[2] As a measure of IQ, we employ the Raven's progressive matrix (RPM) test. This test has the advantage of being nonverbal so that it can be used in a wide variety of situations and therefore has a relatively low cultural bias. This is a desirable trait of an IQ test because it makes it applicable to a wide variety of countries (for an in-depth discussion of the RPM test see Raven, 1989).

The critical issue surrounding the validity of the RPM appears to be what type of intelligence the matrices are measuring. Raven (1989) examines the stability of RPM scoring across both time and cultures, and concludes that the test provides a consistent measure of educative ability. The author notes that average scores have been increasing over time, and that this may be due to both the teaching of more material that mimics the Raven's test, as well as better overall physical health of the population. Salthouse (1993) examines how age affects working memory, and concludes that the RPMs provide an accurate measure of working memory and subsequent cognition. Carpenter et al. (1990) specifically examine what is being measured by the RPM test. They conclude that the matrices measure the ability of an individual to partition a question into discrete workable steps that require reasoning beyond a person's knowledge base, so-called fluid intelligence.

More recent evaluations of the Raven's tests, such as Stankov and Schweizer (2007) and Frisby and Traffanstedt (2003) also support the predictive ability of the RPM test. The former notes that RPM testing captures that aspect of fluid intelligence that arises from decomposition of a problem into various steps. Frisby and Traffanstedt (2003) measured the importance of non-verbal reasoning ability, as measured through progressive matrices. Their results found that performance on the matrices were the best predictor of subsequent performance on critical thinking tests (specifically the California critical thinking skills test). Furthermore, McLaurin et al. (1973) and Paul (1986) show that the RPM scores correlate strongly with the Weschsler Adult Intelligence Scale (WAIS), a longer and more in-depth intelligence test.

We largely chose the RPM test because of its low cultural bias and its ease of implementation. Other measures of intelligence, such as those listed above, could have been used however our main goal was to choose a simple reliable IQ test. Since the RPM measures

[2] For a comprehensive list of advanced intelligence and achievement tests see Naglieri and Goldstein (2009).