

## PERCEPTIONS OF CORRUPTION: AN EMPIRICAL STUDY CONTROLLING FOR SURVEY BIAS

There is a large literature documenting the adverse effects of corruption on the entire economy (Jain, 2002; Jensen et al., 2010; Serra, 2006). Yet, corruption remains a key issue in economic development, perhaps because macro determinants cannot sufficiently explain within-country variance of corruption (Reinikka & Svensson, 2002). Available data show that not only certain countries, but also industries, types of firms and individuals are more exposed to corruption than others (Clarke, 2011; Fried, Lagunes, & Venkataramani, 2010; Goel et al., 2015; Jensen et al., 2010; Svensson, 2003). However, the aggregate nature of the data tells little about the relationship between corruption and individual agents (Reinikka & Svensson, 2002). Even in highly corrupt environments not everybody engages in corruption, is exposed to it, or even perceives it as an obstacle. The fight against corruption requires knowledge about the individuals involved. While a lot is known about the contextual factors explaining corruption, little is known about the individuals that pay bribes. Corruption can only exist if people are willing to engage in it. Hence, we are interested in the perception of corruption as an obstacle to the business operations of the person that is exposed to it.

The present study analyses business leaders and their experience with government corruption. We propose that whether corruption is viewed as an obstacle depends on factors specific to the respondent: the respondent's prior experience with corruption and his or her work dedication. The latter is a central element of work engagement. These terms will be used interchangeably in the subsequent text. We expect that these factors are relevant over and above the organizational and environmental context. Understanding the conditions under which corruption is perceived as an obstacle is a precondition for the acceptance of systemic changes for which wider business climate reforms aim (Jain, 2002). This research has practical implications, since it contributes to the anti-corruption agenda of development policies. Survey data are used in the development of country-level corruption indices. Although difficulties in the design of such indices have been documented (Andersson & Heywood, 2009), they continue to be used in a rather reflected manner. This implies that corruption indices are biased and their results may therefore be misleading (Galtung et al., 2013; Olken, 2009).

This paper's contribution to the literature will be threefold. First, we will provide a multi-layered perspective on corruption. Aside from contextual factors, we include the respondent's prior exposure to corruption and individual work attitudes to predict the perception of corruption as an obstacle to doing business. While previous experiences with corruption have been considered in experimental studies about corruption (Barr & Serra, 2010), studies relying on survey data – to our knowledge – typically do not consider past experiences of the respondents. Second, field research on corruption often faces a major impediment. It relies on corruption data that is self-reported, which may suffer from answer biases (Coutts & Jann, 2008). Respondents are unlikely to admit engaging in sensitive behaviors. To address this issue the present paper will control for possible survey response bias using a randomized response technique. We use this method not only to control for bias affecting the key variable of interest, but also to control for possible measurement bias affecting prior exposure to

corruption as a key independent, yet endogenous, variable. Third, aside from a handful exceptions (Thau et al., 2014; Umphress et al., 2010), very few studies have looked into individual employees' attitudes towards unethical behavior that is potentially beneficial for the organization. Investigating the role of work dedication in this context, will contribute to a relatively novel field of research.

### **What explains attitudes towards corruption?**

We explore when corruption is perceived to be an obstacle for business operations. Most studies focus on contextual factors at the country and firm level. We will argue that individual effects, such as prior exposure to corruption and the dedication of the respondent, also affect how corruption is perceived.

What do we mean by 'corruption'? According to common definitions (e.g., Miriam Webster online), corruption is described as dishonest or illegal behavior by someone in power (e.g., government officials), directed at another person for personal gain (e.g., bribes).<sup>i</sup> Academic definitions similarly stress the power-misuse element of corruption (Bendahan et al., 2014).

Hence environmental factors that shape power-relationships will also influence the likelihood of corruption. Many economic studies focus on such contextual factors. For instance, country level evidence shows that corruption is lower in wealthier, more democratic societies, whereas political instability increases the levels of corruption. In addition, corruption tends to be higher in rural areas in which government officials are harder to supervise than in urban areas with a more developed institutional infrastructure (Elbahnasawy & Revier, 2012; Serra, 2006). These country level findings are complemented by firm attributes, which have also been associated with corruption. For instance, larger firms pay bribes not only more often, but the bribes are also higher in their amount compared to smaller firms. The same holds for younger firms relative to older firms. Exporting firms are more likely to be exposed to corruption than firms that serve the local market, and firms that are foreign and/or privately owned have been reported to pay fewer and less bribes than state-owned enterprises (Clarke, 2011; Jensen et al., 2010; Svensson, 2003).

In addition to contextual factors, we assume that the perception of corruption as an obstacle differs across respondents. We argue that it is likely that a person's opinion about corruption depends on their prior exposure to corruption. This idea originates in the behaviour-to-attitude link, which has been a long standing strand of research in social psychology (Holland et al., 2002; Zanna et al., 1980). It is generally accepted that attitudes might not only guide future behavior, but can also be inferred from past behavior. This mechanism can be found in the area of corruption (Lee & Guven, 2013). In a study investigating attitudes towards corruption in over 20 countries, they found that past experience with bribery predicted how people perceived bribery. People who had in the past been offered or requested bribes also perceive bribes as more justified than people who had not. Then again, one may assume that perceiving bribes as justified equates to perceiving bribes as not harmful and therefore not as an obstacle to business operations. Hence, this results goes against the notion that exposure to bribery might have a revealing effect on the perceptions of the related costs.

When it comes to assessing exposure to corruption outside the laboratory, most studies use survey data (Bendahan et al., 2014; Lee & Guven, 2013). Corruption questions are typically embedded in business climate surveys that aim at generating estimates of the impact of corruption. This concerns the differences in the effect of corruption on firms, industries and countries. However, relying on survey data has drawbacks. Corrupt behavior can be a highly sensitive issue, which is why respondents may not answer survey questions truthfully (Coutts & Jann, 2008). False responses and non-responses are indeed a critical source of bias in corruption data (Jensen et al., 2010). Estimates suggest that survey responses underreport the commission of sensitive acts by 45 per cent on average (Lensvelt-Mulders, 2005).

The third factor that will be looked at to explain the perception of corruption as an obstacle to business operations are the individual levels of work dedication of the survey respondent. Specifically, it will be investigated how corruption affects 'work engagement', a key psychological characteristic of the manager (Christian et al., 2011; Kahn, 1990). Personal work engagement describes a state in which employees 'bring in' their personal selves during work role performances, investing personal energy and experiencing an emotional connection with their work (Christian et al., 2011; Kahn, 1990). Even though work dedication has been linked to individual performance outcomes and to various attitudes related to doing business, nothing is yet known about how work engagement interacts with corruption and whether more dedicated respondents would see corruption as more or less of an obstacle. Two different predictions can be made.

For one, we might presume a positive relationship between the level of managerial work engagement and the willingness to give in to corrupt demands. Accepting corrupt demands of tax officials, or even offering bribes, could be seen as a particular form of extra-role pro-organizational behavior, as 'unethical pro-organizational behavior' (Thau et al., 2014; Umphress et al., 2010). While ethically questionable, giving in to or committing corrupt acts may benefit the organization from a pragmatic point of view. People who are highly engaged in their job are also more willing to go the extra mile for their organization to 'gets things done' (Harter, et al., 2002; Jensen & Rahman, 2011; Rich et al., 2010; Xanthopoulou et al., 2009). Hence, more dedicated respondents might be more likely to respond to corrupt demands for the benefit of their business. Empirical evidence points in this direction: Umphress et al. (2010) find that people who highly identify with their organization were more likely to engage in unethical pro-organizational behavior. In this case, corruption would be an alternative route towards organizationally beneficial outcomes. More dedicated respondents would be less likely to perceive corruption as a particular obstacle.

Then again, work engagement could also be negatively related to giving in to corrupt requests. Dealing with corrupt requests, bribing an official to gain unfair advantages is generally considered to violate societal moral norms and is regarded as unethical (Kish-Gephart et al., 2010). Work engagement is unlikely to enhance unethical behavior. Following Kahn's (1990) original understanding, work engagement can be seen as a way to express the self at work. Unethical behaviors are rarely in line with an authentic display of the self (Kahn, 1990; Toffler, 1986) and would hence be less probable among highly engaged individuals. Furthermore, work

engagement is understood to be a positive emotional state (Den Hartog & Belschak, 2012). Positive emotional states are likely to increase awareness of potentially unethical situations, as well as enable people to make optimal use of their cognitive resources in ethically challenging situations (Gaudine & Thorne, 2001). In other words, work engaged individuals would navigate more effectively in a corrupt business climate, without needing to compromise their ethical standards by giving in to unethical requests. Both of these mechanisms suggest a negative relationship between work engagement and corruption. More dedicated respondents might hence perceive a corrupt environment, i.e. a culture of bribery and corruption, more as an obstacle rather than as an additional route to ‘get things done’

### **The present study**

This study investigates the effect of context, exposure, and work dedication on attitudes towards corruption. We use representative data from two establishment level surveys conducted in Sri Lanka and Bangladesh by the World Bank in 2011. These samples provide a unique opportunity to study the link between work engagement and corruption in a developing country context. Both surveys included questions on individual work engagement in the World Bank Enterprise Surveys. Moreover, both countries suffer from corruption, meaning they provide viable settings for studying it. For instance, Transparency International rankings confirm the notion that the public sectors in both countries are highly corrupt. In Transparency’s 2015 *Corruption Perceptions Index*, corruption values are assigned to 175 countries and territories, ranging from 0 (highly corrupt) to 100 (very clean). With a score of 25, Bangladesh was ranked 139<sup>th</sup>, while Sri Lanka’s ranking was slightly better (83), its score of 37 was similarly low.

One of the difficulties of measuring corruption in surveys is that questions about corrupt behavior are susceptible to answer bias. Respondents may be reluctant or unwilling to answer sensitive questions, and if they do, they might not answer truthfully. Using such information in regressions is therefore problematic. The estimated coefficients may be distorted, which needs to be controlled for in order to obtain reliable regression results (Coutts & Jann, 2008; Jensen & Rahman, 2011).

The survey implemented a forced response variant of the random response method. This method was originally designed to encourage survey respondents to answer sensitive questions truthfully (Warner, 1965). We use it in a different way, originally proposed by (Azfar & Murrell, 2009), to identify respondents who do not answer sensitive questions truthfully. Previous studies have shown that answer bias affects sensitive questions, particularly referring to corruption and performance (Azfar & Murrell, 2009; Clarke et al., 2015; Clarke, 2011, 2012; Clausen et al., 2012; Friesenbichler et al., 2014; Jensen & Rahman, 2011). We discuss the method in greater detail below.

The novelty of this paper is threefold. First, we consider work dedication as an explanatory factor for reported corruption as a business obstacle. Second, we use the dataset to construct a variable indicating prior exposure to corruption, which to the knowledge of the authors is new to the corruption literature. Third, the data

offers a bias control method that has been established in the literature. The bias control method is not applied directly to the corruption questions, but is used to construct a proxy for external factors that serve as instrumental variables capturing measurement bias of the variable for prior exposure to corruption.

## **Method**

This study uses a regression analysis relying on survey data. The dataset contains a total of 836 establishments in Sri Lanka and 1,001 establishments in Bangladesh. Establishments were selected according to a stratified random sampling strategy. The stratification considered three dimensions: i) firm size classes (micro: 1-5 employees, small: 6-19, medium: 20-99, large: >99; large firms were oversampled), ii) regions within the country at the district level, and iii) industry affiliation (ISIC Rev. 3.1, 2-digit industries). The sample included all manufacturing sectors (group D of ISIC Rev. 3.1), construction (group F), Services (groups G and H), transportation, storage and communications (group I), and information technology (sub-sector 72 in group K). Further information about the implementation, the sampling methodology and the datasets are available from the World Bank on the World Bank's *Enterprise Survey* website.<sup>ii</sup>

The questions were answered by senior officials of the establishment, who could have been the owner, the CEO or a senior employee. Some surveys were answered by more than one person. These were excluded from subsequent analysis. In addition, establishments with missing observations of other variables were dropped, leaving a total of 1,140 observations of which 376 were in Bangladesh and 764 in Sri Lanka. Most respondents were male – only 11.7 per cent in Sri Lanka and 0.9 per cent in Bangladesh were female. In Sri Lanka, 47.9 per cent of the respondents owned the establishment, 37.5 per cent were CEOs and 14.6 per cent were other senior employees. In Bangladesh, 27.2 per cent of the respondents were owners, 59.6 per cent were answered by CEOs and 13.2 per cent by senior employees.

### **Dependent variable**

The dependent variable is the degree to which corruption is perceived as an obstacle to their establishment's operations. The interviewer listed factors that can affect the current operations. Among other factors, respondents were asked to rate corruption as such an obstacle. The choices given were No Obstacle, a Minor Obstacle, a Moderate Obstacle, a Major Obstacle, or a Very Severe Obstacle.

### **Exposure to corruption**

The implemented questionnaire did not contain a direct question about whether respondents have had prior exposure to corruption. We therefore use answers on three different items to construct a dummy variable indicating respondents' prior experience with corruption. These items measure corruption at an increasing degree of sensitivity. Two questions refer to requests for informal payments and one question concerns the expected amount of the informal payment.

The first question was only posed to respondents that were visited by a tax official. It asked if in any of the inspections or meetings a gift or informal payment was expected or requested. The second question was posed to respondents that have not been visited by a tax official. It asked whether such requests are typically made.

The third, rather general, item used to construct the exposure variable asked respondents to quantify the amount that establishments 'like this one pay in informal payments or gifts to public officials'. The underlying act can refer to various types of interaction with government officials, such as customs, taxes, licenses, regulations or services. We assume that respondents who provide figures were actually making informal payments at some stage.

For each of these three items we create yes-no variables, which we use to construct a dummy for exposure to corruption. If a respondent answers any of these three questions with yes, we label her to have had prior exposure to corruption. Also, labels for missing values were generated for respondents who did not answer any of these questions. In total, 10 per cent of the respondents indicated they have been exposed to corruption in one or more ways.

### **Work dedication**

To measure work dedication, the survey used a sub-scale of the Utrecht Work Engagement Scale (Schaufeli et al., 2006). Respondents were asked to answer how often they experience a given state on a Likert-scale ranging from 1 (never) to 7 (always). For instance, one item is 'I find the work that I do full of meaning and purpose'. Table 1 shows the internal consistency of this scale is good, with a Cronbach's alpha of 0.83.

Table 1 about here

### **Individual and contextual variables**

Position of respondent in the firm. These are dummy variables that denote whether the respondent is the CEO or a senior employee of the firm. The group of firm owners served as the comparison category.

Gender. A dummy variable denotes a female respondent.

Firm age. This variable is defined as the survey year minus the year the establishment began its operations.

Size. The number of full time employees (in nat. logs).

Export. A dummy variable denotes whether firms export either directly or indirectly (i.e., sold domestically to a third party that exports products).

Family business. Constructing an ownership variable would have reduced the sample size significantly, because ownership information was only available for 498 of the 1,837 observations. However, we were able to construct a dummy denoting if a firm is a family business, which were identified by the question 'Does this establishment

rely on one or more family members in decision-making?'. This indicates firms that are strongly embedded in their respective locality.

Country. A dummy variable denotes firms that are in Sri Lanka.

Industry. A dummy variable denotes manufacturing firms.

Table 2 about here

### **Identifying answer bias**

We identify answer bias using data from a forced response variant of a random response technique.<sup>iii</sup> This method was originally designed to induce honest answers to sensitive questions (Warner, 1965). In this technique, the interviewer asks a respondent ten sensitive questions unrelated to corruption (e.g., 'Have you ever inappropriately hired a staff member for personal reasons?'). After each question, the respondent is asked to toss a coin out of sight of the interviewer. If the coin shows heads the respondent is supposed to answer 'yes'. If the coin shows tails, the respondent is supposed to answer the question truthfully. If the respondent answers 'yes', no one (not even the interviewer), knows whether the respondent is saying that he or she committed the sensitive act or if the coin just showed heads.

This approach was intended to encourage truthful answers and reduce underreporting of sensitive behaviors (Lensvelt-Mulders, 2005). In practice, however, the approach often does not work very well. One problem is that many people whose coin showed heads (i.e., who should answer 'yes') ignore the instructions and answer 'no' instead of yes. Even if no one has ever committed any of the sensitive acts (i.e., everyone is an 'angel'), at least half of the answers should be 'yes.' That is, in a large sample, we would expect at least half of the coin tosses to show heads. If some people are not angels, then more than half the answers should be 'yes.' In practice, we see far fewer 'yes' answers than would be expected (Azfar & Murrell, 2009; Clausen et al., 2010).

Assuming that all respondents are angels (i.e., they have never done any of the sensitive acts), the expected number of yes's can be derived from a binomial distribution with seven coin tosses as the events, a 50 per cent probability of success for each coin toss, and the respective number of successful cases. The likelihood that any individual would toss seven heads is less than one in a hundred. In practice, 12 percent of the respondents answered no seven times. This strongly suggests that many respondents ignore the instructions and answer 'no' even when the coin shows heads. Figure 1 illustrates the distribution of responses that would occur under the angel assumption (i.e., that no one has committed any of the acts) and compares it to the actual distribution of negative responses. As can be seen, even under the angel assumption, many people are completely or selectively ignoring the instructions. If some people had committed the sensitive acts (i.e., the angels assumption is incorrect), we should observe even more 'yes' answers and even fewer 'no' answers.

Although this method does not appear to encourage truthful answers, (Azfar & Murrell, 2009) proposed that it could be used to identify dishonest, or reticent, respondents. They argued that people who ignore the instructions might also answer other non-random response questions dishonestly (see Figure 1). Many previous papers have shown that this is the case. People who ignore the instructions to the random response questions also appear to misreport other information from non-random response questions (Azfar & Murrell, 2009; Clarke, 2011, 2012; Clausen et al., 2012; Friesenbichler et al., 2014; Jensen & Rahman, 2011).

Figure 1 about here

One concern about this approach is that some respondents may show sophisticated answer behavior and seek to avoid long and unlikely sequences of no's. To give these respondents a chance to answer 'yes' without losing face, three less sensitive random response questions were included. Following (Azfar & Murrell, 2009), we exclude these questions when calculating the answer bias index. This is methodologically corroborated by (Edgell et al., 1982) who find that the forced response method works better with moderately sensitive questions that most people are expected to give a positive answer to. In practice, however, including these questions does not qualitatively affect the obtained results (results available on request).

A second concern is that there may be bias also on the other side of the distribution, i.e. the number of positive responses. In other words, some respondent may answer strategically and over-report bad behavior, i.e. answer yes when they should answer no. It is not possible to identify those respondents, since there is no information about actual conduct. There are, however, two reasons to think this is not very important. First, few respondents answered all (2.6 per cent), or all but one (4.8 per cent) questions with a yes. This suggests that even if all people are angels, the bias is likely to be small. Moreover, if some people actually have committed these acts (i.e., all respondents are not angels) and some of these people answer truthfully, we would expect more than 1 per cent of respondents to answer 'yes' to all the questions. That is, this might just be confirming that not all our respondents are angels.

We use data from the random-response technique to create a variable indicating 'answer bias'. To do so we calculate the sum of negative answers as a measure of the likelihood that a respondent misreports. In other words, respondents with more negative answers are more likely to show answer bias affecting the estimated coefficients of the key variables (Clarke et al., 2015; Friesenbichler et al., 2014).

### **Estimation strategy**

We use regression analysis to examine how individual characteristics affect reports of corruption as a factor that hampers business operations. The key variables are job dedication and prior exposure to corruption. These variables are used in the first regression. In the second regression we include the reticence indicator to



control for possible answer bias. Next, we use the individual characteristics and the contextual setting as control variables. The next three estimations use the same variables as the previous ones, but are estimated as ordered logit regressions with robust standard errors. This method serves as a robustness check that controls for possible distortions of OLS coefficients due to the data structure. The regression outcome is not continuous, but an ordinal variable ranging from 0 (no obstacle) to four (severe obstacle).

The regressions control for answer bias that affects the reported severity of corruption as an obstacle for business operations. However, also the variable that indicates whether respondents have been exposed to corruption might be distorted. This introduces an endogeneity problem due to measurement bias, which we seek to control for with an instrumental variable estimation that can recover causal parameters (Antonakis et al., 2010).

The idea is to use an external factor, an instrumental variable, that affects the endogenous variable (i.e. prior exposure to corruption) but not the dependent variable ‘corruption as an obstacle’. The instrumental variables purge the coefficient of reported exposure to corruption from possible answer bias. We use a two-stage-least-squares estimator (2SLS). In the first stage, we predict the values of the endogenous variable using all other explanatory variables over and above the instrumental variables. In the second stage, we re-estimate the equation of interest, using the predicted values of the endogenous variable.

How do we identify instrumental variables that affect reported exposure to corruption, but not corruption as an obstacle? It is likely that the bias is larger for the exposure variable, since the questions that were used to construct the exposure indicator are more sensitive. While the dependent variable is a general question, the exposure variable concerns the respondent directly, which is likely to trigger a greater degree of answer bias. This notion is confirmed by missing values. Survey respondents may choose non-response as an answer strategy when questions are sensitive (Jensen et al., 2010). This implies that more sensitive questions have a higher non-response rate. If both questions were equally sensitive, the share of missing reports should be the same. However, only 2.5 per cent did not rate the severity of corruption as an obstacle to their business operations, while 13.1 per cent did not provide sufficient information to construct the exposure variable. We seek to exploit these differences in the sensitivity of the underlying questions to construct instrumental variables.

Why can we not simply use the indicator for answer bias from the previous regressions? One may assume that the indicator for answer bias also affects the endogenous variable ‘prior exposure to corruption’, perhaps to a different degree. By definition, the instrumental variable must only affect the endogenous variable and needs to be independent from the regressand. Hence we cannot simply use the answer bias indicator as an instrument. While this procedure produces qualitatively comparable results with the estimation that we ultimately chose, this procedure is indeed rejected by exogeneity tests.<sup>iv</sup>

We use the data generated by the random response technique to create an instrumental variables measuring answer tendencies that do not consider the individual respondents’ answer. The method therefore shifts the focus from self-reported data towards contextual factors. It is also conceivable that external factors also

affect the answer bias. While using the instrumental variables described below on the answer bias indicator is statistically viable, the results remain qualitatively the same.

The instrumental variable captures regional effects. Some regions are likely to be less reticent than others, reflecting unobserved institutional and cultural differences. We omit the respondent's own answer and compute a leave-one-out-mean of the negative answers at the regional level. This value does not include the respondent's answer, and therefore captures regional characteristics rather than the respondent's. The dataset covers a total of 13 regions, of which four were in Bangladesh and nine in Sri Lanka. If there were no region specific effects, there should be no variance across either dimension. However, there is a considerable amount of variance. The mean of the regional indicator is 4.2, with a standard deviation of 0.53, ranging from 2.44 to 5.47.

### **Estimation results**

Three different types of regression estimation (OLS, ordered logit and 2SLS) are used to examine how individual characteristics and exposure affects reports of corruption as a factor that hampers business operations. All analyses include answer bias as one of the predictor variables. For both the OLS and the ordered logit regression, we present three specifications. First we estimate the unconditional effect of job dedication and prior experiences with corruption on corruption as a perceived obstacle to business operations. Second, we include the indicator for answer bias. In a third regression, we add control variables considering the specific context. These context variables were also used in the 2SLS regression.

The results from all estimated regressions confirm the notion that more dedicated respondents are more likely to report corruption as a severe problem. This effect becomes slightly bigger when the indicator capturing answer bias is included, and increases substantially when firm and individual level control variables are added. Over and above the respondent's job dedication, prior exposure to corruption of the respondent has a positive and significant effect on seeing corruption as an obstacle to business operations. The coefficients for prior exposure are larger than the effects for work dedication. Also the effect for prior exposure becomes larger with the inclusion of answer bias and contextual variables.

In line with previous research (e.g., Azfar & Murrell, 2009; Clausen et al., 2010), we find a negative effect of the answer bias indicator on corruption reports, suggesting that respondents who are likely to have an answer bias are less likely to see corruption as an obstacle (see Table 3). The inclusion adds approximately one percent of the explained variance, and also affects the estimated coefficients of the key variable. Including the bias control variable increases the magnitude of the effect of work dedication by between four and five per cent. The results for the control variables are in line with our expectations. Respondents in Sri Lanka were less likely to report corruption as an obstacle than those in Bangladesh. Respondents in firms located in urban areas report corruption as a smaller obstacle.

Table 3 about here

### **Controlling for endogeneity**

Not only the assessment of corruption as an obstacle, but also the variable ‘prior exposure to corruption’ is susceptible to answer bias. The descriptive statistics indicate that merely 11 per cent of all respondents have had prior experiences with corruption, which is surprisingly low given the environments from which the sample was drawn. It is likely that past experiences with corruption are also under-reported. This indicates omitted variable bias, for which the 2SLS regressions can control. We use answer tendencies specific to regions as an external determinant of the exposure variable.

The picture changes insofar as the coefficient for prior exposure to corruption now dwarfs the effect of the other variables (p-value: 0.052). This indicates that individual experiences with corruption shape much of the corruption data that is available from surveys once answer bias is taken into account. The instrumental variable used is statistically significant with a negative sign, which again indicates an under-reporting of prior exposure to corruption.

While dedicated managers are less likely to be exposed to corruption, they are more likely to report corruption as an obstacle. In addition, the coefficient for answer bias in the second stage regression turns insignificant. This is plausible, since the questions used to construct the exposure variable are likely to be more sensitive than the general question about corruption as a business obstacle. The effect of the re-estimated values of prior exposure, i.e. the values that have been purged from answer bias, is likely to override the effect of answer bias that applies to the general question.

The post-estimation statistics confirm the validity of the instrumental variable regression. We reject the null hypothesis that exposure is exogenous (p-value: 0.022). The instruments seem to be sufficiently strong, i.e. they affect the endogenous variable. The Kleibergen-Paap rk LM statistic is significant (p-value: 0.006). The Cragg–Donald Wald F statistic is 5.6, which is above the Stock-Yogo critical test value for the 25 per cent maximal instrumental variable size. The specification is exactly identified, which is why we cannot test whether the instruments are valid.

### **Discussion and conclusions**

This paper analyzed individual characteristics that may affect reports about the severity of corruption. While corruption reports have been linked to contextual factors, not all respondents in corrupt environments engage in corrupt behavior. We study the effect of work dedication and prior experiences with corruption on the perception of corruption as an obstacle to business operations. Since corruption is illegal and might be perceived as unethical by some respondents, questions about corruption are sensitive. Respondents may be reluctant or

unwilling to answer, and if they do, they might not answer truthfully. Cognizant of possible answer bias from which sensitive survey questions suffer, we used data from a random response technique as a control. We used various regression techniques on survey data provided by the World Bank which was collected in 2011 in Sri Lanka and Bangladesh. Both countries pose a viable environment to study corruption.

We find that individual as well as contextual characteristics play a role in how corruption is perceived, but that prior exposure has the biggest influence. The results indicate that respondents who are more dedicated to their job criticize corruption as a bigger obstacle than others. Corruption, it seems, is certainly not seen as an easy, alternative route to ‘getting things done’. Work engagement is signified by a state of positive emotional effects and consists of being authentic, expressing the self at work (Bakker & Demerouti, 2008; Kahn, 1990). These two processes in concert might explain why corruption was perceived as a greater obstacle by more work engaged managers. For one, the positive emotional state associated with work engagement frees up more cognitive resources – thereby creating more awareness of corruption and the potential obstacles for business processes it creates (Gaudine & Thorne, 2001). For the other, more work-engaged managers might also perceive a higher degree of inauthenticity when dealing with corrupt requests; leading them to perceive corruption as a greater obstacle. Furthermore, having more cognitive resources available also enables work engaged managers to navigate better within corrupt environments: they are more likely to find alternative ways of acting, to solving ethical dilemmas (Gaudine & Thorne, 2001). The present study also found a negative relationship between work engagement and the exposure to corrupt requests, which is in line with this assumption. Certainly more evidence, especially on emotional states, would be needed to confirm this hypothesis.

The largest explanatory factor appears to be past experiences with corruption. We expected that prior exposure also influences respondents’ attitude towards corruption. We used an indicator of prior exposure as a predictor of the attitude towards corruption, which differs from the previous economic corruption literature that considers answer bias, but treats these two factors as independent from each other. According to a social-psychological understanding, this assumption would not be correct. Rather, exposure and experience with certain behaviors is likely to have a major influence on people’s attitude towards them. Our results confirm this - prior exposure *increases* the perception of corruption as an obstacle to operations. Although previous findings (Lee & Guven, 2013) indicate that in cultures with more exposure to corruption paying bribes is generally perceived as more justified, we find that even if corruption in a country is high, it is still perceived as an obstacle, even more so if people are more exposed to it.

This study therefore not only adds to economic corruption literature by considering prior exposure to corruption, but adds to previous research on exposure to corruption (Lee & Guven, 2013) by controlling for possible answer bias. This answer bias might come from issues concerning measuring corruption. Possible bias affects both ‘corruption as an obstacle to business operations’ and ‘exposure to corruption’. Corruption is likely to be underreported, because people might be hesitant to admit that they have been exposed to a bribe request, or are familiar with corruption at all (Kundt et al., 2013).

To control for answer bias, the survey employed a randomized response technique that allowed us to identify records with a likely answer bias. We constructed an indicator that controlled for answer bias in the reports about the severity of corruption as an obstacle to business operations. The results confirmed previous findings from other countries that corruption is on average underreported (e.g., Azfar & Murrell, 2009; Clausen et al., 2010; Clarke, 2011). However, the explanatory variable that measures prior exposure to corruption might also suffer from an answer bias, which leads to statistical challenges. We implemented a 2SLS regression to purge the coefficient for previous exposure from possible bias over and above answer bias that affected attitudes towards corruption.

By definition, instrumental variables need to be uncorrelated with the dependent variable (perceptions of corruption as an obstacle), but determine the endogenous variable (reported prior exposure to corruption). However, both of these variables are likely to be affected by answer bias, which was empirically approximated by the indicator based on the random response technique. To identify a viable instrumentation strategy, we draw on differences in the sensitivity of the underlying questions. Prior exposure possibly concerns sensitive, personal behavior. Hence it seems that ‘prior exposure’ is more susceptible to answer bias than the general question about ‘corruption as an obstacle to business operations’. Exploring these differences to control for endogeneity issues, we argued that regional response characteristics identify differences in the answer behavior. This causes non-random measurement error and results in an endogeneity problem. In a 2SLS regression, we used leave-one-out-averages of the answer bias indicator at the regional level as an instrumental variable. After controlling for answer bias in the variable ‘prior exposure to corruption’, its effect becomes much larger, and also over-rides the effect for answer bias concerning the dependent variable.

The 2SLS results address the relationship of corruption as an obstacle with prior exposure to corruption and work dedication. More dedicated managers are less likely to be exposed to corruption, which may suggest that they are less likely to pay bribes. At the same time, they are more likely to report corruption as an obstacle. This may suggest that more dedicated managers are less likely to volunteer bribes, and might be more concerned about the consequences of getting caught. This not only shows that corruption is a problem to both firms that pay and firms that do not pay bribes, but also contrasts the notion that engaged managers might not be willing to go the ‘extra mile to get things done’.

Interestingly, the effects of some control variables changed in the instrumental variable approach. For instance, initial results showed that CEOs and senior employees perceived corruption as a lesser issue, even though this was statistically insignificant. However, this effect turned significant in the first stage of the instrumental variable estimation. This indicates that owners are more likely to be exposed to corruption than others, which is in line with previous findings that not all individuals are equally exposed to corruption (Fried et al., 2010). Once this is controlled for, the differences in corruption reports between the respondents’ positions in the firm disappear. A similar effect is obtained for exporting firms, which are more exposed to corruption, but seem to report corruption as a lesser obstacle.

Controlling for the context of the interview showed that respondents in Sri Lanka were less likely to report corruption as an obstacle than those in Bangladesh, which also reflects their respective standings on the 2015 world corruption index by Transparency International.<sup>v</sup>

Certainly, there are a number of limitations to the present findings. We are aware that by looking at dedication and exposure as predictors of whether corruption is an obstacle, we only illuminate cornerstones of a multidimensional process. Still, our study shows that including aspects such as individual respondent's attitudes and his or her prior exposure play an important role in people's attitudes towards corruption. Future studies might want to explore the limits and conditions of these relationships. A second limitation of this study concerns the measurement of corruption as a reported obstacle, which was captured by a single item measure only. While this allowed for a general estimate of how people think about corruption, it does not inform about the specific areas affected by it. A more detailed enquiry into the multifaceted phenomenon of corruption would be an important way forward. Eventually, it needs to be pointed out that the present results stem from a single measurement occasion. In this sense, the present study cannot draw conclusions about causality using differences over time. We confront this limitation by applying instrumental variable regressions for the relationship between perceived corruption and prior exposure. In addition, we control for answer bias, and use two different country samples to illustrate the robustness of our findings. Even though the analysis relies on data collected in Bangladesh and Sri Lanka, we provide a general relationship that we believe is transferable to other countries. This notion is supported by our results for the survey bias indicator, which are in line with findings from other countries.

### **Practical implications and future research**

The finding that prior exposure to corruption affects the perception of corruption as an obstacle has practical implications. It seems that exposure to corruption is a bigger issue than a straightforward analysis of survey data would suggest. Respondents underreport corruption, especially exposure to it, to a substantial degree, thereby generating bias in the corruption data. The reported randomized response technique might be one way to control for that. Respondents that report not being exposed to corruption perceive corruption as a less severe obstacle. This might indicate that non-exposure leads to an unrealistically low perception of corruption as an obstacle for the overall economy. In addition, the results show that corruption seems to be a large obstacle for those who are highly dedicated to their job. Given that dedication is indicative for individual and business performance, corruption might asymmetrically affect productive, growth oriented firms more than it affects other firms. Those firms might benefit most from action undertaken towards reducing corruption.

These findings are therefore relevant to international institutions and policy makers that seek to adequately measure the intensity of corruption. Corruption indices typically rely on perception data which – if used without bias control – may give misleading results (Belousova et al., 2014; Galtung et al., 2013; Olken, 2009). For instance, the Transparency International Corruption Index (Lambsdorff, 2005) or the World Bank Governance Indicators (Kaufmann et al., 2011) heavily draw on perception data (Olken, 2009). We document

that how corruption is perceived depends on the individual characteristics of the respondent over and above contextual factors. Even though difficulties in the design of these indices have been documented (Andersson & Heywood, 2009) and caution has been advised when using survey based corruption data (Azfar & Murrell, 2009; Olken, 2009), micro-level data are still used in an unreflected way. This study adds to the literature that questions this practice.

Our findings are also relevant for other researchers interested in survey data on sensitive issues. In the present paper, we illustrate how answer biases on sensitive issues can be detected and then used to control for endogeneity issues stemming from measurement errors affecting the sensitive variable of interest - in our case, 'prior exposure to corruption'. The idea was to purge coefficients from bias affecting the variable 'prior exposure', thereby obtaining a more reliable estimate of corruption as a perceived obstacle. The more exposure in the past, the higher corruption becomes as a perceived obstacle. This finding points at a self-enforcing process. However, similar feedback effects are conceivable for work attitudes. The present results from the instrumental variable regression point in this direction. While job dedication is negatively related to exposure to corruption in the first stage, it remains positively associated with the perception of corruption as an obstacle in the second stage. We hope our contribution encourages researchers to study the repeated effect of corruption on work attitudes over time.

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## **Tables and Figures**

*Table 1 – Work dedication scale*

Question	Mean	Std. Dev.
I find the work that I do full of meaning and purpose.	5.54	1.16
I am enthusiastic about my job.	5.34	1.11
My job inspires me.	5.25	1.15
I am proud of the work that I do.	5.29	1.14
To me, my job is challenging.	4.85	1.45

Note: Utrecht work engagement scale (Schaufeli et al., 2006), N = 1,140.

Table 2 – Descriptive statistics and correlation matrix

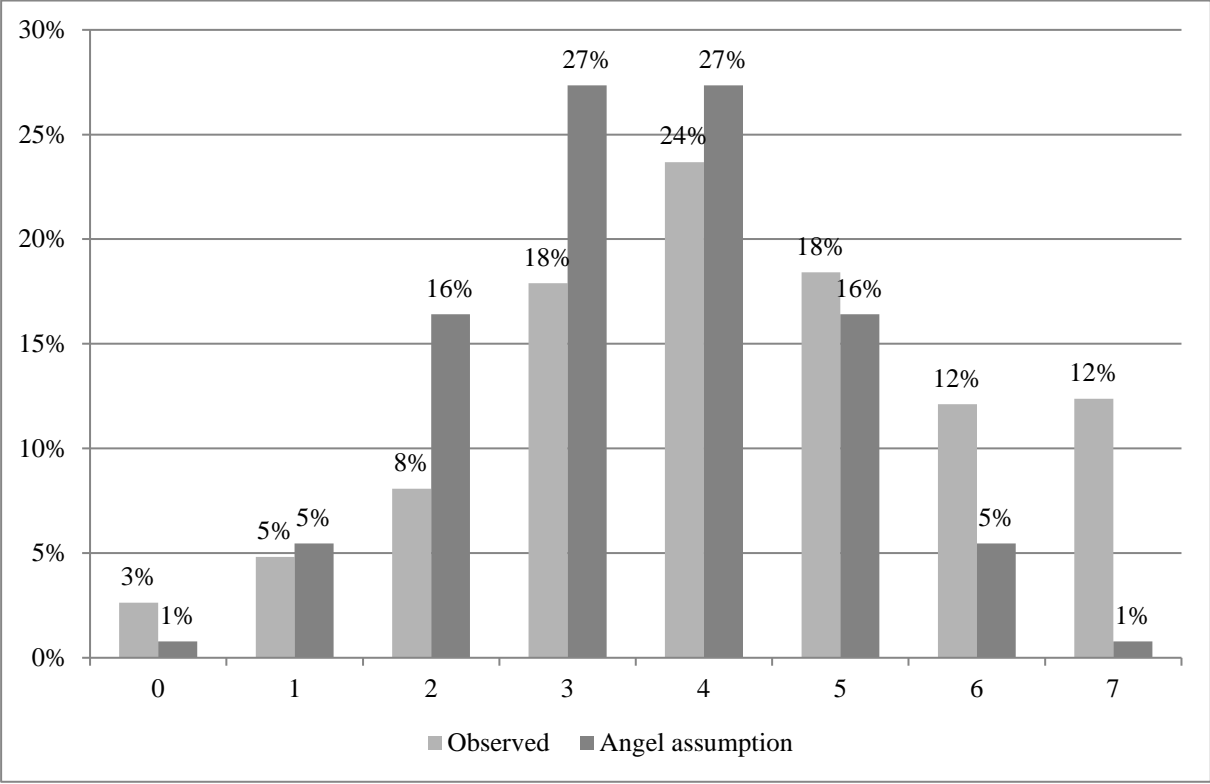
	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Corruption (0-4)	1.93	1.39	1.00													
2 Work dedication	5.26	0.92	0.08*	1.00												
3 Exposure	0.11	0.31	0.09*	-0.08*	1.00											
4 Answer Bias	4.21	1.76	-0.12*	0.03	-0.03	1.00										
5 Gender	0.04	0.21	-0.15*	0.07*	0.02	0.04	1.00									
6 Owner	0.34	0.47	-0.06	0.05	0.02	-0.08*	-0.06	1.00								
7 CEO	0.52	0.50	0.08*	-0.06*	-0.01	0.02	-0.04	-0.75*	1.00							
8 Employee	0.14	0.34	-0.03	0.02	-0.01	0.07*	0.14*	-0.29*	-0.42*	1.00						
9 Labour (ln)	2.78	1.15	-0.06*	0.11*	0.11*	0.05	0.11*	-0.23*	0.11*	0.16*	1.00					
10 Firm Age (ln)	2.49	0.78	-0.10*	0.02	0.08*	-0.04	0.12*	0.06	-0.07*	0.02	0.19*	1.00				
11 Family	0.36	0.48	-0.11*	-0.02	0.08*	-0.03	0.05	0.09*	-0.06*	-0.04	-0.05	0.07*	1.00			
12 Export	0.16	0.37	-0.03	-0.01	0.16*	0.06*	0.09*	-0.19*	0.07*	0.16*	0.34*	0.01	0.02	1.00		
13 Manuf.	0.71	0.46	0.04	-0.18*	0.01	-0.08*	-0.03	0.19*	-0.06*	-0.18*	-0.10*	0.12*	0.11*	-0.09*	1.00	
14 Urban	0.61	0.49	0.47*	-0.22*	0.08*	0.05	-0.21*	-0.29*	0.27*	0.02	-0.17*	-0.24*	-0.08*	0.02	0.02	1.00
15 Sri Lanka	0.33	0.47	-0.59*	0.16*	-0.04	0.06	0.25*	0.20*	-0.21*	0.02	0.14*	0.25*	0.15*	0.03	-0.11*	-0.88*

Table 3 – Regression results – estimating reported severity of corruption

Dep. Var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Corr.	OLS Corr.	Corr.	Corr.	Ordered Logit Corr.	Corr.	2SLS Exp.	Corr.
Dedication	0.14** (0.042)	0.14** (0.042)	0.27** (0.035)	0.19** (0.053)	0.20** (0.053)	0.50** (0.062)	-0.02* (0.010)	0.34** (0.058)
Exposure	0.42** (0.127)	0.41** (0.125)	0.34** (0.115)	0.54** (0.167)	0.53** (0.167)	0.65** (0.189)		3.43+ (1.761)
Answer bias		-0.09** (0.022)	-0.05** (0.019)		-0.12** (0.028)	-0.08* (0.032)	-0.01 (0.005)	-0.03 (0.030)
Gender			-0.04 (0.136)			0.13 (0.256)	0.04 (0.050)	-0.14 (0.194)
CEO			-0.13 (0.079)			-0.18 (0.136)	-0.06** (0.023)	0.07 (0.156)
Employee			-0.15 (0.120)			-0.21 (0.195)	-0.09** (0.032)	0.13 (0.225)
Lab (ln)			-0.00 (0.032)			-0.01 (0.055)	0.03** (0.010)	-0.10 (0.074)
Firm age (ln)			0.09+ (0.047)			0.13+ (0.079)	0.03* (0.013)	-0.00 (0.079)
Fam. Biz.			-0.05 (0.072)			0.03 (0.123)	0.04+ (0.020)	-0.18 (0.115)
Export (Dummy)			-0.03 (0.091)			-0.10 (0.145)	0.12** (0.033)	-0.37+ (0.222)
Manuf. (Dummy)			-0.06 (0.078)			-0.12 (0.134)	-0.01 (0.022)	-0.03 (0.102)
Urban (Dummy)			-0.27* (0.113)			-0.39* (0.196)	0.22** (0.040)	-0.70* (0.281)
Sri Lanka (Dummy)			-2.10** (0.119)			-3.57** (0.253)	0.15** (0.038)	-2.29** (0.179)
IV: Reg. bias							-0.06** (0.021)	
Observations	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
R-squared	0.02	0.03	0.40	0.01	0.01	0.16		

Note: Robust standard errors in parentheses; \*\* p<0.01, \* p<0.05, + p<0.1; Constants not reported; Pseudo R<sup>2</sup> for ordered logit regressions; centered R<sup>2</sup> for 2SLS regressions.

Figure 1 – Distribution of negative responses from the forced random response method



Note: This figure shows the observed distribution of negative responses and what would have been expected according to the angel assumption (people have not committed these acts).

## Endnotes

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<sup>i</sup> See <http://www.merriam-webster.com/dictionary/corruption>, retrieved on 27 June 2016.

<sup>ii</sup> See <http://www.enterprisesurveys.org>, retrieved on 27 June 2016.

<sup>iii</sup> The present description of the method draws Azfar and Murrell (2009) and Clausen and others (2010), which provide greater detail on the methodology.

<sup>iv</sup> It is also conceivable that such measurement bias affects the answer bias indicator itself. Treating the answer bias as an endogenous variable with the same instruments, we obtain statistically viable results, which however do not qualitatively change the results obtained from the OLS and ordered logit regressions.

<sup>v</sup> See <http://www.transparency.org/cpi2015#results-table>; retrieved on 30 November 2016.