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Coming home without supplies:
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Edward Asiedu

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Coming home without supplies: Impact of household needs on bribe involvement and gender gaps

Edward Asiedu*

Abstract

Using a unique data on sub-Saharan Africa, we show that even though in absolute terms men pay more bribes, in relative terms, women are more likely to be involved in bribery or do favors that benefit the household. Additionally, running country specific regressions shows that for 65% of the countries gender differences when household needs are at stake disappear. These results underscore the importance of household needs to the woman, and that the effect of gender on corruption may well be context specific.

Keywords: service delivery, gender, bribe-involvement, household needs, Africa

JEL classification: D1, J16, H10, K42

*Asiedu, E (edward.asiedu@uni-passau.de): Georg-August Universität Göttingen Germany – GlobalFood RTG 1666 and Chair of Development Economics, the University of Passau, Germany. Previous drafts of this paper have been circulated under the title "Revisiting the role of Gender, Education and Situational Effects in Corruption Behavior: Evidence from sub-Saharan Africa." We are thankful for comments from participants at the 12th Midwest International Economic Development Conference at the University of Wisconsin-Madison (2015). Feedbacks from Jeremy Foltz and Stanislao Maldonado from the University of

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1. Introduction

Since the early 1980s, there has been considerable research into economic activities taking place outside the market. Gronau (1980) noted that the emphasis in the literature about such activities has particularly been on activities taking place at home. Undeniably, the home is one important institution of life. However, little is known about how household needs impact bribe involvement. In addition, research has also shown that fewer women are involved in corruption, leading many economists in the field to highlight gender empowerment intervention as one potential solution for corruption. The focus on gender empowerment as a corruption reduction strategy could be an exercise in futility without detailed empirical examination.

In this study, specifically we attempt to examine the effect of household supplies on bribe involvement. In this regard, we also examine whether the gender differences in bribe involvements hold when household supplies are at stake. We focus on household supplies such as water and sanitation services. The choice of these services is based solely on the availability of data on the subject. The key feature associated with corruption is that individuals differ in their relative interactions with government officials. We distinguish between the degrees of interactions: high interaction and low interaction.

A look at the empirical literature clearly indicates a surge in studies that exploits home production and home outcomes (see Browning et al., 1992; Fitzgerald et al., 1996; Landefeld and McCulla, 2000; Gorbachev, 2011). Despite the renewed interest in the area, less is known about corruption and household outcomes, and also the different actors in the household. Specifically, less is known about how situational factors impacts individuals bribe involvement. Until recently, most of the empirical research on corruption or bribe involvements have focused on the macro-drivers of corruption (see Fisman and Gatti, 2002;

Graeff and Mehlkop, 2003; Brunetti and Weder, 2003). For example, Fisman and Gatti (2002) have explored the impact of decentralization on country level corruption. Brunetti and Weder (2003) observed at the country level, the impact of free-press on corruption. The difficulty of collecting good empirical data is often cited for this state of the literature on corruption (Bardhan, 1997). However, recently new micro-data information has been made available that allows for a more in-depth analysis.

The existing empirical evidence suggests that females are less likely to be corrupt than men (Swamy et al., 2001; Dollar et al., 2001; Gatti et al., 2003). However, majority of the few studies that explore the micro-drivers of corruption at the individual agent level mostly relied on hypothetical questions.[1] For example both micro-data studies by Gatti et al. (2003) and Swamy et al. (2001) on individual level behavior towards corruption have respondents answer the question on how justified someone accepting a bribe is in the course of their duty. They find significantly fewer women justifying the acceptance of bribes compare to men. Mocan (2008) in examining bribery behavior and involvement across 49 countries across the world find women, the rich and the educated more likely to be involved in corrupt practices. The aggregate nature of cross-country studies tells us little about the relationship between corruption behavior and individual agents, whereas the hypothetical measures employed at the individual level may also suffers from perception biases and plausible elements of 'cheap-talk' (Svensson, 2003).

Thus, we ask whether facing the possibility of not providing for the household alters bribe involvements of men and women.[2] In other words, do women easily engage in

[1] The exception being Mocan (2008) who examine bribe involvement at the individual level and a host of others such as Swamy et al. (2001) and Clarke (2011) at the firm level.

[2] Gyimah-Brempong (2002) showed that corruption impacts inequality in Africa.

corruption when household needs are at stake? To examine our conjecture we use data on sub-Saharan Africa which captures *bribe-giving* and *gift-giving* for over 24,000 respondents across 20 countries. Unlike previous studies on the topic, this study involves a bigger sample of sub-Saharan African countries where corruption is extremely predominant.

Analyzing corruption behavior is very difficult. While some people will be explicitly asked for bribes, others ex-ante will voluntarily give bribes or do favors as a form of speed money or speed favor. We do not hope to disentangle these effects. What we examine similar to other studies such as Swamy et al. (2001) (at the firm level) is the involvement in bribery. To some extent we are able to correct for differences in the individuals interactions with government officials. As noted by Bursztyn and Cantoni (2015) consumption is not only one of the most fundamental economic decisions but it is also a defining feature of life. We posit that, the possibility of coming home without home supplies could modify people's involvements in bribery. To evaluate this question, first we estimate the probability of bribe payments for different types of services using probit and linear probability models. Based on a number of approaches correcting for omitted variable problem, we use the Heckman 2-stage procedure to address the first-stage selectivity problem (i.e., differences in exposure to government official). We then use the Lee bounds estimator to trim the data by matching men who are exposed to government officials to women who are equally exposed. Finally, we examine heterogeneity of our results across the individual countries.

Using these approaches, we observe that ceteris paribus at the aggregate level women are less likely to indulge in corrupt activities. This is consistent with evidence by Swamy et al. (2001) from their study on gender and corruption. We find however that basic household needs do narrow the magnitude of the gender differences in bribe involvement (paying bribes or giving gifts or doing favors). One interesting result is that even before properly accounting for the differences in exposure to government officials, the gender differences when

household outcomes are at stake seem to be very small. Accounting for differences in exposure using the Heckman procedure, we find no gender differences. This contrasts with approximately between 3 – 6 percentages points significant gender difference in the involvement in other types of services that are not household related. Turning to country regressions and examining heterogeneity, we show that in a number of countries (roughly 65 percent) women are not dissimilar from men in their involvement in bribery when services that have potential benefits to the household such as water and sanitation are at stake. This evidence contrasts with 25 percent of countries in the case of the other types of corruption (i.e., getting documents or dealing with the police). Also, for some countries the sign on the female dummy though not significant positive when basic household needs are at stake.

These results are further confirmed by our non-parametric estimates using the Lee bounds estimator. Our results suggests that, even though Swamy et al. (2001) (and a host of others) find significantly larger gender differences in bribe involvements, in relative terms women are more likely to be involved in bribery (give a bribe or give a gift or do a favor) when such an act benefits directly the household. Altogether, our findings underscore the importance of household outcomes to the woman. It also provides empirical evidence that the effect of gender on corruption may well be context specific.

As a side note on the broader policy front, the results suggests that by only pushing the lever on gender empowerment will not automatically give impetus to the cause of reducing corruption. There is the need for more purposeful policies targeted at corruption.

This paper adds to the literature on corruption and anti-social behavior. It also adds to the broader literature on enhancing service delivery in developing countries (for overview see World Bank, 2003).

The rest of the paper is organized as follows. Section 2 presents a review of the studies on corruption. Section 3 presents a description of the data. In section 4, we present the empirical results and test their robustness, including also country specific regressions. Finally, section 5 concludes.

2. Gender and Corruption

Several studies have highlighted the factors that influence corruption both at the individual level, as well as at the aggregate country-level. Using data from Georgia (formerly part of the Soviet Union), Swamy et al. (2001) shows that officials in firms owned or managed by men in Georgia are significantly more likely to be involved in bribe-giving than firms managed by women. Dollar et al. (1998) shows corruption to be less severe in countries where women held a large share of parliamentary seats and senior positions. However, Swamy et al. (2001) acknowledged that the gender differences they observed does not mean that they claim to have discovered some essential, permanent, or biologically determined differences between men and women. Freille et al. (2007) observed that there still remains little systematic research on the robustness of the drivers of corruption and in that regards on gender.

The theoretical argument made about the link between gender and corruption is two-fold: (1) women have lower preference for criminal activities than men, (2) women are less likely to be involved in corrupt practices not because they have a lower preference for it but because they are less exposed, i.e., less likely to be employed, or less likely to interact with government officials. The data so far have not allowed for a more detailed examination of whether the systematic differences between men and women in terms of bribe exposure accounts for the differences in their behavior towards corruption.

In this paper, we also focus on sub-Saharan Africa. It is well-known that corruption is widespread in most developing countries particularly in Africa. This is true in terms of petty corruption but also institutional-level corruption. Using data from the World Bank, Clarke (2011) observed that firms and households paid bribes between $0.6 trillion and $1.5 trillion each year between 1999 and 2003. Despite corruption being a more serious problem in Sub-Saharan Africa, most of the micro-studies on corruption experiences includes a very small sample of African countries.[3] We therefore argue that the issue of corruption in sub-Saharan Africa seems to be incompletely dealt with in the literature. In this vein, we contribute to the broader literature on corruption, but also help to bridge the gap in research on corruption in Sub-Saharan Africa. Key to our analysis is the large micro data available on Sub-Saharan African countries where deficits in households needs are predominant.

In terms of other drivers of corruption, Treisman (2000) and Chowdhury (2004) observed at the country level the impact of democracy on corruption. They find that the effect of democracy on corruption even though small in the case of Treisman (2000), are robust to the inclusion of controls for economic development and openness to trade. In this paper, we include as an additional control the role of democracy at the individual level i.e., the effect of individual's preference for democracy on corruption behavior. Also, consistent with the debate on political connections and economic outcomes (see Li et al., 2008), we also include

[3] Mocan (2008) included four African countries (Uganda, South Africa, Zimbabwe and Botswana), Swamy et al. (2001) included two African countries (South Africa and Nigeria), Gatti et al., (2003) included one African country (Nigeria). The number of African countries thus has risen from two in 2001 to four in 2008, signifying an ever increasing importance of Africa in the literature on corruption. This indicates the void in research and the need for further research.

as a control a dummy for political affiliation. Corruption behaviors are most often cited to depend on gender, age, employment status, economic situation, educational attainment and the location of residence (see Mocan, 2008: Gatti et al., 2003; Dollar et al., 2001; Swamy et al., 2001; Treisman, 2000; and Chowdhury (2004). Using these covariates we examined our research question.

3. Data and Descriptive Statistics

The Afrobarometer Data

The data used in the analysis is from the 2008 Afrobarometer survey for Africa.[4] The data is a national representative sample of adult respondents across 20 sub-Saharan African countries. The list of countries in the sample and used in our analysis are Benin, Botswana, Burkina Faso, Cape Verde, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. In total, 27,713 individuals were interviewed for their involvement in three different categories of bribes (bribe for documents, bribe for household needs such as water and sanitation, and bribe for the police). For the purpose of our current econometric analysis we are able to use a total of 24,277 of the respondents.[5]

Table 1 provides descriptive statistics of the main variables used in the analysis. The Afrobarometer survey asked the question: '*In the past year, how often (if ever) have you had to pay a bribe, give a gift, or do a favor to government officials in order to: (A) Get a document or a permit? (B) Get water or sanitation services? (C) Avoid a problem with the police*?' Responses to this question 'I had to ... [give a bribe, or a gift or do a favor]' is

[4] This round of the data is the latest for all 20 countries that has publicly been released.

[5] This is as a result of non-responses. Empirical test shows that the excluded sample does not differ from the included sample on the main key variables used in the analysis.

interpreted as involvement in bribery.[6] In many sub-Saharan African countries, involvement in bribery may have potential benefits by way of shortening the waiting period or reducing the uncertainty associated with getting the service.[7]

Even though we agree that people may understate their involvement in corruption due to its illegality, we argue this may hold true particularly for western countries where institution and sanctions for norm violation is strongly enforced. We believe the data for sub-Saharan Africa reflects close to the true involvements of people in bribery. The possible responses for the self-involvement in corruption variable are: (1) No experience with this in the past year; (2) Never; (3) Once or twice; (4) A few times; (5) Often; (6) Don't know. Due to the ambiguity of the last option 'don't know', the option is dropped in our analysis. This is because it is not very clear whether the respondent doesn't know the number of times they had to or doesn't know of any experience. The proportion of respondents who answered 'don't know' are however quite small in all three cases (<1%). The initial corruption response categories in the Afrobarometer survey are rescaled for simplicity to take on the values 1 (bribe-giving) if the respondent has a positive experience of giving a gift or a bribe or doing a favor, and 0 otherwise.

[6] We do not separate being asked for a bribe or freely giving a gift, as one cannot tell whether a person was asked or voluntarily gave a gift to speed the process knowing very well that the only way to receive the service is to be 'nice' to the officials.

[7] In most developing countries, institutionalized corruption has evolved so much that bribe payment or gift giving has become a norm. A person knows ex ante prior to been asked for bribes that in order to shorten the waiting period, they have to give a bribe or a gift or do favor.

As mentioned earlier, Table 1 contains our descriptive statistics. Of 24,277 respondents, females account for 49.57% and males account for 50.43%. Thus, we have close to the same proportion of male and females in our sample. In terms of comparing the levels of bribery within gender using the t-test, within males, we find the average level of bribe involvement significantly higher for the other types of corruption (that are not household related) compared to bribery for household needs. Overall we find corruption significantly higher for men compared to women. However, when it comes to household needs the descriptive results shows that the difference between women and men are much more narrow. This is documented in Figure 1 that displays the average corruption in the three categories of bribery.

Figure 1 here

Note that the level of bribery for household needs, even though it decreases for both men and women, the drop is significantly higher for men.[8] The overall decrease could be a signal that the demand-side recognizes how important household needs are to people's survival.

We also observe differences in the distribution of respondent across the different response categories. For example, we find that whereas 40% of all the respondents who have given a gift or a bribe (or done a favor) for documents 'a few times' are women, women account for 48 % in the case of household needs (not shown in table). Also, whereas 35% of all respondents who have been involved in bribery for documents 'often' times are women, women account for 43 % in the case of household needs. Thus the results even though descriptive show higher involvement of women in paying bribes for household needs.

[8] The drop could be a signal that the demand-side recognizes that they could not ask for bribes for things that are at the very core of human survival.

Looking at within gender (as well as across gender), Table 1 shows close to equal distribution of women and men in bribe involvements for household needs than for the other types of services. For example, whilst 4.79% of men have given bribes for household needs 'a few times', 3.55 % of women have also given bribes for household needs 'a few times' times. In the same vain, whilst 2.43% of men have given bribes for household needs 'often', 2.29 % of women have also given bribes for household needs 'often times'. In terms of differences between men and women across the different types of bribes, for example, whereas the difference in bribery for getting a document or a permits 'often' is more than 1%, the difference for getting households 'often' is less than 1% (0.5%). Even though the overall gender differences in bribe involvements are small even for the other types of bribes, we find that they are much smaller for household needs.

Table 1 also reports summary statistics on other personal characteristics. We find the average age of the population to be approximately 36 years. In terms of education, the educational variable in the Afrobarometer survey takes on numerical values assigned to each level of education, ranging from 0 "no formal education" to 9 "post-graduate education". From the data, 19% have no formal education, 18% have some primary education, 15% have completed primary school, 22% have some secondary education, 15% have completed secondary school, and 11% have post-secondary education. The sample is also distributed across both urban and rural areas: 38% reside in urban areas and 62% reside in rural areas. Religion appears important to majority of the interviewees. Responding to the question on religion "*How important is religion in your life?":* 3% answered "not at all important"; 3% answered "not very much important"; 10% answered "somewhat important"; and 84% responded "very important". Moreover, Table 1 shows that 41% of men in the sample are employed as against 28% of women. Finally, we include two political economy variables: individual's support for democracy and political affiliation. Seventy one percent of the

respondents have a preference for democracy over any form of national governance. 60% of the respondents have a political affiliation.

Table 1 here

4. Empirical Results

4.1 Severity of different types of corruption across sub-Saharan Africa

As a first step, we begin our analysis by first presenting information on the severity of the three types of bribes in each country in the sample (i.e., the proportion of individuals who reported paying bribes or giving gifts). This is important for individual country specific policy-targeting. We also rank the countries from most corrupt to least corrupt based on each of the three bribe categories. Specifically, column 1 of Table 2 presents the severity of bribery in getting a document or permit in each of the sampled countries. Column 2 presents bribery levels in getting basic home needs such as water and sanitation. Column 3 presents the involvements in bribery to the police. And column 4 presents the country average corruption level; which is a weighted mean of all three types of bribery for all the individuals in the country.

Results from Table 2 show dissimilarity in the severity of the different types of bribes across the countries. For example, in Senegal whilst getting a document or government permit is a big problem without paying a bribe, the problem is not that severe for basic home needs and bribes to the police. In Cape Verde however, it is more difficult getting basic household needs like water and sanitation services without paying a bribe compared with dealing with police. In Uganda, the payments of bribes for basic home needs are as high as the payment of bribes for government documents or permits as well as bribes to the police. For policy

targeting, the data shows that Uganda must target with equal measure all the 3 types of corruption. The data shows that, the biggest challenge for Nigeria for example is to reduce bribery in the police service.

Overall, whilst Kenya, Uganda and Mozambique recoded the highest bribe payments for government's documents or permits; Uganda, Nigeria and Mozambique recorded the highest bribery for basic household needs like water and sanitation. The data shows that bribery to the police is more predominant in Kenya, Uganda and Nigeria in that order. The least corrupt country in terms of getting a government document or permit, and in terms of basic household needs or bribery to the police is Botswana. The data also indicates that bribery in the most corrupt country (Uganda) is more than 16 times that of the least corrupt (Botswana) signaling high variability in corruption within Africa.

Table 2 here

4.2 Regression results

Our empirical section is divided into three parts. The first part examines the relationships between gender and bribery (or giving gift) without including controls for bribe exposure. Evidence suggests that omitted variables could be problematic in some of these regressions. For example some people are more exposed to government official than others. In the second part, we first examine the relationships between gender and bribery, just as before, but in this case including variables to control for differences in bribe exposure. Thus, we check if additional insights can be gained by including controls for differences in exposure to government officials. This approach is a little bit ad hoc. There are a variety of techniques that we use also in addressing the omitted variable problem. In the third part, we model bribery (gift giving) behavior as a two-step process taking into account a first-stage of selection to

exposure to government officials. We adopt the Heckman procedure in this regard (see Heckman, 1979). And finally in the third part we use matching estimators to match male and females who are equally exposed to government officials.

We now proceed to present the empirical evidence. As a first step, we regress:

(1)

$$Corrupt_i = \alpha + \beta_1 female_i + \gamma X_i + \delta_{ic} + \varepsilon_i$$

Where i denotes individual respondent, $gender$ is a dummy equal to one if the individual is female. X refers to the usual controls in the literature on the micro-level determinants of corrupt behavior (see Swamy et al., 2001; Gatti et al., 2003; Mocan, 2008). The control variables are age, education employment, religiosity, indicator variable that equals one if the respondent lives in a rural location, a variable that captures economic situation of the individual, preference for democracy and political affiliation. Finally, we also include 20 country fixed effects, δ. The regressions are weighted and stratified on the female-male level.

We begin by examining the relationship between gender and bribe involvement without controlling for the differences in exposure to government officials. Table 3 reports marginal effects from Probit estimations using the sample of 24,277 sub-Saharan African population.

In the first column, we estimated equation (1) using whether or not the respondents paid bribes (0= no bribe-payment, 1= paid bribes) to get a document or permit as the dependent variable. The estimated coefficient for the female dummy variable is observed to be negative and significant at all conventional levels of significance. Specifically, the marginal effect for the female dummy variable is -4.6 percent; indicating that a woman's likelihood of paying bribes for a government document or permit is 4.6 % points less than that of the likelihood for a man.

In the second column, we estimate a similar equation to equation (1), but this time using whether or not the respondents paid bribes (0= no bribe-payment, 1= paid bribes) to get basic household needs such as water and sanitation. The estimated coefficient for the female dummy is still negative and significant at conventional levels of significance. However, we find the marginal effect for the female dummy variable here as presented reduces to -1.3 percent. This is somehow consistent with the hypothesis that human needs or household needs could alter individuals' pro-social behavior. However the evidence shows that household needs do not completely crowd-out women intrinsic motivation to act pro-socially.

In the third column, we estimate equation (1) using whether or not the respondents paid bribes (0= no bribe-payment, 1= paid bribes) to avoid problems with the police. The results are similar to the case of paying bribes for documents and permits i.e., a woman's likelihood of paying bribes to the police is 4.6 % points less than that of the likelihood for a man. Thus the main result that arises from these estimations are that females are negatively associated with corruption. This is consistent with the earlier findings on the topic.

To delve more into these results, we examine next how the gender differences in bribe involvement are altered by including controls for exposure to government officials.

So far our results as presented are consistent with earlier findings in the literature (see Swamy et al., 2001, Dollar et al., 2001; Gatti et al.,2003; Mocan, 2008) . But the earlier findings do not control for differences in exposure. Thus, in addition to differences in employability, specifically we control for whether or not in the past year the individual made any of the following payments: (1) payments of fees for government services, (2) payment of fees for government licenses, (3) payments of property rates and taxes, and (4) payments of public utility fees. The resulting estimated coefficients from these regressions are reported in Table 4.

Table 3 here

In all the specifications in Table 4, we find that all the coefficients for the control variables that proxies exposure follows their *a prior* expectations i.e., they are all positive and highly significant at all conventional levels in all the models. This implies that the inclusion of these exposure covariates in the corruption equation has empirical support and is quite justified.

Comparing the marginal effects for the female dummy variable with and without controlling for bribe exposure, three main sets of results arise. First, we find that whilst in column (1) of Table 3 woman's likelihood of paying bribes for a government document or permit is 4.6 % points less than that of the likelihood for a man, we observe that this likelihood drops to 4.1 % after controlling for differences to exposure. We also find that, once we control for bribe exposure in Table 4 of column (2) woman's probability for paying bribes for household needs which is 1.3 % points less than that of the likelihood for a man in Table 3, drops to 1.0 %. These coefficients are however small in absolute size. In column (3), the coefficient of the female dummy, similar to column (1) drops to 4.1% from 4.6%. Similar results from linear probability models are obtained for both Table 3 and 4 are presented in the appendix.[9] The significance of the exposure variables and the reduction in magnitudes of the coefficients across the different models imply that selection could be a problem in most of these models.

This leads us to account properly for first stage selection bias.

Table 4 here

Two-stage Heckman Model

[9] The results are qualitatively similar to the probit regression results presented.

Alternatively, and as an additional robustness check for our previous results we formulate the final corruption outcome as a two-stage process and then estimate using the Heckman procedure (see Heckman, 1979). Thus, we suggest here that indulging in corrupt practices is non-random, and as such an individual's corruption behavior or outcome will first depend on the person's exposure to a government official.

To acknowledge the selection bias, we employed the two-stage Heckman procedure. The Heckman approach employed involves the estimation of a 'corruption-exposure' selection model (i.e. which captures the probability of exposure) at the first stage and then a corruption equation at the second stage. Since both the first and second stages are probability models, we estimate a special application of the Heckman model (heckprob). To implement the procedure we construct an individual level index for the level of exposure to government official based on our initial four exposure variables i.e. payment of fees for government services, payment of fees for government license, payments of property rates and taxes, and payment of public utility fees. Since each exposure variable is a dummy, our index ranges from 0 for no exposure to 4, exposures to all four variables. This is normalized to range between 0 and 1 (dummy). The dummy for the level of exposure to government officials takes on the value 1 if the index is greater or equal to 0.5 (i.e., exposure to two or more of the four exposure variables) and 0, otherwise.[10]

The first-stage selection model can be specified as:

$$P(E_i > 0) = F(\gamma Z_i + u_i) \quad (2)$$

[10] Also note that the threshold yields greater exposure overall to government officials i.e., 53%. If the threshold is increased to greater than two (three and four), exposure is 25% which is quite low compared to the incidence of corruption in sub-Saharan Africa. We feel the threshold of >= 2 is appropriate.

where E_i is a dummy variable denoting the level of interactions with government officials: $E_i = 1$ if an individual has a higher level of interaction (>= 0.5) and $E_i = 0$, otherwise. Z is a vector of regressors, γ is a vector of parameters, u is the error term. $F(\cdot)$ refers to the cumulative distribution function. Variables captured in the exposure model include age, education, gender, support for democracy, political affiliation, urban area (similar to the covariates used in the outcomes equation) and household head (exclusion restriction). We believe this is a reasonable restriction: the variable is reflective of the responsibility placed on household heads to provide for their households, and as such should have a direct effect on exposure to government officials and much less clear-cut direct effect on bribe involvements other than through the effect of exposure.[11] The definition and summary statistics of the individual characteristics used in the model are the same as define in Table 1.

The bribe equation at the second-stage can be specified as:

(3)

$$Corrupt_i = \beta X_i + v_i$$

$$(u_i v_i) \sim N(0, 0, \sigma_u^2, \sigma_v^2, \rho_{uv})$$

where X_i is a vector of regressors, β is a vector of parameters, v is the error term, and $v\ and\ u$ are assumed non-independent. The vector of regressors in the bribery model includes variables also specified in the selection model but with the exception of the household head variable which is specific to the selection model.

[11] Formal empirical test using a regression equation shows a strong correlation between exposure to government officials and household head. We do not find significant correlation between the household head variable and corruption. The predicted residuals from the corruption models, in addition, are also not observed to correlate with household head.

We also include religion, economic condition and country specific dummies as additional explanatory variables in the bribery equation. We assume that the Heckman provides a better fit for our data than without accounting for selection bias. We implement the full-information maximum likelihood estimator.[12]

Table 5 presents the Heckman results. From columns (1) – (4) of Table 5, we find that when we explicitly account for first-stage selectivity bias, the coefficient of the female dummy remains negative and significant at conventional levels for documents and services from the police as previously observed. However, we do not observe gender differences when household outcomes are at stake. In summary, two main results arise from this correction. First, the gender differences in bribe involvement hold in general as observed in other studies. However, we find that when household needs are at stake there are no such gender differences.

Table 5 here

Lee Bounds

We also carry out other tests. In addition to controlling for differences in exposure using the Heckman (1979), we finally address the differences in exposure also using the Lee's (2009) bounds. Thus, besides correcting the point estimates from potential bias as done using the Heckman procedure, the Lee bounds estimator uses a trimming procedure that provides us with an interval for the true effects of our main gender variable (see also Blundell et al., 2007; Tauchmann, 2013). The procedure trims observations from groups that are more frequently observed which in our case the group that is more exposed. Thus, the resulting effects are

[12] The full-information maximum likelihood method of Heckman has the desirable both large-sample and small sample property of consistency. This contrasts with the limited-information two-step method.

based on comparing equal share of exposed individuals in both groups (i.e., male and female).[13] In principle, the gender effects for only those who are exposed are subjected to estimation (see Tauchmann, 2013).[14] For more details on the trimming procedure see Lee (2009). The estimation of the bounds as a result relies on an extreme assumption of the impact of selection on the estimated effects. The Lee bounds in this regards provides us with some form of a safeguard for our previous estimates.

In following Lee (2009) and other examples in the literature such as Blundell et al. (2007), we tighten the bounds (adjusted bounds).[15] Lee (2009) demonstrates that the adjusted bounds are a lot tighter. Results from the Lee bounds estimations are presented in Table 6.

Worth noting from Table 6 is that the estimated interval for the female effect when basic household needs are at stake is more consistent with positive rather than negative effects, with an interval of -3.6 to 7.4 (based on a 95% confidence interval). For the other types of bribes, the female effect is more consistent with negative rather than positive effects.

Also, comparing the Lee bounds estimates for household needs with the other type of bribes where the female effect is more consistent with negative rather than positive effects (as shown in column 1 and 3 of Tale 6), the positive effect for household needs is significant at the 1% level. Our estimated intervals from the Lee bounds cover both Probit(s) and the

[13] For example, in practice, supposed that 60 percent of men have been exposed but only 40 percent of women, then the trimming fraction is given by $P_0 = \frac{0.6-0.4}{0.6} = 0.33$. Our trimming fraction is $P_0 = 0.12$.

[14] The procedure does not require an exclusion restriction and also depends on a few assumptions.

[15] We used the covariate that predicts exposure i.e., being the head of the household, to tighten bounds.

Heckman point estimates. Overall the evidence points to a more positive effect of female on bribe-giving or gift-giving when household needs are stake. Lastly, it also shows that by pushing the lever on empowerment alone will not reduce corruption.

Table 6 here

As an additional sensitivity check for our Lee bounds estimates, as a side note we also examined the impact of a change in the exposure threshold from greater or equal to 0.5, to greater than 0.5 (exposure to three or all four of the exposure variables). Table 7 presents the estimated Lee bounds estimates for the higher threshold. The Lee bounds in this regards compares men and women who are highly exposed. The results from this check, as presented in Table 7, shows that at a much higher exposure level, the positive upper bound gender effects are all significant. This result suggests that, females are indeed more likely to be involved in bribery at higher levels of interactions with government officials. We also continue to observe the female effect when basic household needs are at stake to be more consistent with positive rather than negative effects.

Table 7 here

Lastly, we then examine heterogeneity across countries. One way to assess this issue is to run country-specific regressions (including dummies controlling for unobserved regional characteristics). Table 8 reports such results.

Table 8 here

In doing so, we find that for 65% of the countries the gender differences when household needs are at stake are not significant. This contrasts with 25% of countries where we do not find gender differences in the case of other types of corruption (i.e., getting

documents or dealing with the police). In 25% of countries, the directional impacts of the female dummy even though not significant are positive when household needs are at stake.

5. Conclusions

In recent times, the issue of corruption has become very important especially for developing countries. Recent studies have shown that corruption poses a critical impediment to economic growth and development. Gyimah-Brempong (2002) has also shown that corruption leads to inequality. This paper adds to the increasingly growing literature on the drivers of corruption around the world. We estimate the effect of household needs on bribe involvement.

Our data allows us to examine household needs in environments of high corruption and also allows us to control for differences in the degree of exposure using different approaches. In addition to estimating parametric models such as the Heckman (1979), we also use the Lee (2009) bounds approach to address the issue of differences in exposure to government officials. We find that the gender gap in bribe involvement is much more narrow when household needs are at stake and at the country level, for more than half of the countries, such difference does not exist. Evidence from the Heckman (1979) estimates shows that, after addressing the problem of selection bias, even though the gender differences still exists for the other types of services that are not household related, the observed gender differences when household needs are at stake do not exist. The Lee bounds results re-affirm our earlier results. Interestingly, based on our Lee bounds estimates we find a consistently more positive than negative effect of female on bribe-giving (or gift-giving) for basic household needs.

In terms of policy, our results have implications for institutional design. The results underscore the need for structural change or modernization in service delivery (i.e., water and sanitation services) to help combat corruption in sub-Saharan Africa. In addition, whereas the

results overall shows the importance of household outcomes to the woman, it also provides the first indication that the effect of gender on pro-social behavior such as bribe-giving may well also be context-specific and as such the emphasis in terms of reducing corruption should be on strong institutions. Thus, taking together, one policy conclusion we draw is that the emphasis on reducing corruption (particularly for sub-Saharan Africa just as it has been done in other parts of the world) should be on strengthening institutions against corruption. Whilst gender empowerment (increasing women's visibility or economic exposure) is exigent, it should be pursued for its merits but not rely on women pro-sociality alone to solve the problems of corruption.

One caveat to our findings is that we do not explicitly look at bribe demand. Despite, even though we focus on bribe involvement (on the supply-side) and not on bribe demand, we conjecture that placing women in positions of authority or increasing the share of women in the labor force without the salaries to meet their basic household needs may lead to the status quo. Thus, if the woman hasn't paid her child's school fees or provided food at home or water at home, working at a high office may have little impact on lowering corruption. Obviously, this is an empirical question that may need further exploration and will be worthwhile for future research.

References

Bardhan, Pranab, "Corruption and development: a review of issues," *Journal of Economic Literature* 35 (1997), 1320–1346.

Blundell, Richard, Amanda Gosling, Hidehiko Ichimura, and Costas Meghir, "Changes in the distribution of male and female wages accounting for employment composition using bounds," *Econometrica* 75 (2007), 323–363.

Browning, Martin, "Children and household economic behavior," *Journal of Economic Literature* 30 (1992), 1434 – 1475.

Brunetti, Aymo, and Beatrice Weder, "A free press is bad news for corruption," *Journal of Public Economics* 87 (2003), 1801–1824.

Bursztyn, Leonardo, and Davide Cantoni, "A tear in the iron curtain: The impact of western television on consumption behavior," forthcoming *Review of Economics and Statistics* (2015) doi: 10.1162/REST_a_00522.

Chowdhury, Shyamal K., "The effect of democracy and press freedom on corruption: an empirical test," *Economics Letters* 85 (2004), 93–101.

Clarke, George R. G., "How petty is petty corruption? Evidence from firm surveys in Africa," *World Development* 39 (2011), 1122–1132.

Dollar, David, Raymond Fisman, and Roberta Gatti, "Are women really the "fairer" sex? Corruption and women in government," *Journal of Economic Behavior & Organization* 46 (2001), 423–429.

Fisman, Raymond, and Roberta Gatti, "Decentralization and corruption: evidence across countries," Journal of Public Economics 83 (2002), 325–345.

Fitzgerald, John M., Mathew S. Swenson, and John H. Wicks, "Valuation of household production at market prices and estimation of production functions," *Review of Income and Wealth* 42 (1996), 165–180.

Freille, Sebastian, M. Emranul Haque, and Richard Kneller, "A contribution to the empirics of press freedom and corruption," *European Journal of Political Economy* 23 (2007), 838–862.

Gatti, Roberta, Stefano Paternostro, and Jamele Rigolini, "Individual attitudes toward corruption: do social effects matter?," *World Bank Policy Research Working Paper* Washington, DC 3122 (2003).

Gauthier, Anne H., Timothy M. Smeeding, and Frank F. Furstenberg, "Are parents investing less time in children? Trends in selected industrialized countries," *Population and Development Review* 30 (2004), 647–672.

Gorbachev, Olga, "Did household consumption become more volatile?," *The American Economic Review* (2011), 2248–2270.

Graeff, Peter, and Guido Mehlkop, "The impact of economic freedom on corruption: different patterns for rich and poor countries," *European Journal of Political Economy* 19 (2003), 605–620.

Gronau, Reuben, "Home production--a forgotten industry," *The Review of Economics and Statistics* (1980), 408–416.

Gyimah-Brempong, Kwabena, "Corruption, economic growth, and income inequality in Africa," *Economics of Governance* 3 (2002), 183–209.

Heckman, James J., "Sample selection bias as a specification error," *Econometrica: Journal of the Econometric Society* (1979), 153–161.

Landefeld, J. Steven, and Stephanie H. McCulla, "Accounting for nonmarket household production within a national accounts framework," *Review of Income and Wealth* 46 (2000), 289–307.

Lee, David S., "Training, wages, and sample selection: Estimating sharp bounds on treatment effects," *The Review of Economic Studies* 76 (2009), 1071–1102.

Li, Hongbin, Lingsheng Meng, Qian Wang, and Li-An Zhou, "Political connections, financing and firm performance: Evidence from Chinese private firms," *Journal of Development Economics* 87 (2008), 283–299.

Mocan, Naci, "What determines corruption? International evidence from microdata," *Economic Inquiry* 46 (2008), 493–510.

Svensson, Jakob, "Who Must Pay Bribes and How Much? Evidence from a Cross Section of Firms," *The Quarterly Journal of Economics* 118 (2003), 207-230.

Swamy, Anand, Stephen Knack, Young Lee, and Omar Azfar, "Gender and corruption," *Journal of Development Economics* 64 (2001), 25–55.

Tauchmann, Harald, "LEEBOUNDS: Stata module for estimating Lee (2009) treatment effect bounds," *Statistical Software Components* (2013).

Treisman, Daniel, "The causes of corruption: a cross-national study," *Journal of Public Economics* 76 (2000), 399–457:

World Bank, "World Development Report 2004: Making Services Work for Poor People," (2003). Washington DC, Oxford University Press.

Table 1: Descriptive Statistics

	All (%)	Male (%)	Female (%)
Panel A: Descriptive on corruption activities			
Get a document or a permit			
No experience	21.97	20.86	23.10
Never	63.50	61.79	65.23
Once or twice	8.47	9.90	7.02
A few times	3.58	4.27	2.87
Often	2.48	3.18	1.77
Dummy for bribe payment	0.145[#]	0.173[#]	0.117[#]
	(0.352)	(0.379)	(0.321)
Get water or sanitation service (Household needs)			
No experience	23.29	22.69	23.89
Never	68.22	67.86	68.59
Once or twice	4.18	4.79	3.55
A few times	2.36	2.43	2.29
Often	1.98	2.22	1.68
Dummy for bribe payment	0.085[#]	0.095[#]	0.075[#]
	(0.279)	(0.293)	(0.264)
Avoid a problem with the police			
No experience	23.23	22.01	24.47
Never	65.07	63.42	66.74
Once or twice	5.64	6.78	4.49
A few times	3.20	3.96	2.43
Often	2.85	3.82	1.87
Dummy for bribe payment	0.117[#]	0.146[#]	0.088[#]
	(0.321)	(0.353)	(0.283)
Panel B: Descriptive on other characteristics[a#]			
Female (Dummy for female respondent)	0.496		
	(0.499)		
Age (Years)	36.274	37.720	34.801
	(14.404)	(15.097)	(13.494)
Education (0-9)	3.214	3.436	2.988
	(1.996)	(2.004)	(1.962)
Employed (dummy)	0.343	0.408	0.277
	(0.474)	(0.492)	(0.448)
Household head (dummy)	0.485	0.644	0.324
	(0.500)	(0.479)	(0.468)
Rural (Dummy)	0.620	0.620)	0.618
	(0.485)	(0.485)	(0.486)
Religion (Dummy for very important)	0.862	0.820	0.862
	(0.345)	(0.384)	(0.345)
Economic Situation (compared to others, 0-5)	2.790	2.806	2.773
	(1.013)	(1.016)	(1.010)
Support for democracy (Dummy equals to one for preference for democracy, zero otherwise)	0.708	0.745	0.671
	(0.455)	(0.436)	(0.470)
Political Affiliation (Dummy for having a political affiliation, zero otherwise)	0.596	0.632	0.559
	(0.491)	(0.482)	(0.497)
Bribe exposure variables			
Payment of fees for a government service such as education or health care (dummy)	0.701	0.713	0.689
	(0.458)	(0.452)	(0.463)
Payment of license fees to local government, e.g., for a bicycle, cart, or market stall (dummy)	0.261	0.301	0.220
	(0.439)	(0.459)	(0.414)
Payments of property rates or taxes (dummy)	0.251	0.286	0.215
	(0.433)	(0.452)	(0.411)
Payment of public utility fees, e.g., for water, electricity or telephone (dummy)	0.471	0.485	0.457
	(0.499)	(0.500)	(0.498)
N	24,277	12,242	12,035

Notes: [#] Mean values with standard deviations in parentheses are shown. [a] Female denotes whether respondent is female or male; age denotes chronological age in years; Education denotes whether the respondent has No formal schooling, Informal schooling only, Some primary schooling, Primary school completed, Some secondary school / high school, completed secondary school, Post-secondary qualifications (other than university e.g. a diploma or degree from a polytechnic or college), Some university, Completed university or Post-graduate; employed denotes whether the individual is employed (either part-time or full-time), religion denotes whether religion is very important or not; economic situation denotes whether compared to others the individual is much worse, worse, same, better or much better.

Table 2: Severity of different bribes across countries

	Mean (Rank)			
Country	Getting a Document or Permit	Water & Sanitation	Police	Average corruption overall
Uganda	0.241 (2)	0.223 (1)	0.242 (2)	0.235 (1)
Kenya	0.281 (1)	0.115 (5)	0.263 (1)	0.219 (2)
Nigeria	0.214 (5)	0.154 (2)	0.236 (3)	0.201(3)
Mozambique	0.229 (3)	0.142 (3)	0.154(6)	0.175 (4)
Liberia	0.195 (7)	0.126 (4)	0.174 (5)	0.165 (5)
Zimbabwe	0.228 (4)	0.080 (9)	0.187(4)	0.165 (6)
Burkina Faso	0.148 (8)	0.081 (7)	0.103 (9)	0.110 (7)
Ghana	0.115 (12)	0.086 (6)	0.107 (8)	0.103(8)
Zambia	0.132 (10)	0.050 (14)	0.117 (7)	0.100 (9)
Mali	0.128 (11)	0.062 (11)	0.094 (10)	0.094 (10)
Benin	0.143 (9)	0.065 (10)	0.057 (13)	0.088(11)
Senegal	0.196 (6)	0.039 (15)	0.032 (19)	0.089(12)
Tanzania	0.086 (16)	0.037 (16)	0.094 (10)	0.072 (13)
Cape Verde	0.093 (14)	0.081 (7)	0.035 (17)	0.070(14)
South Africa	0.072 (17)	0.059 (13)	0.065 (12)	0.065(15)
Lesotho	0.102 (13)	0.027 (18)	0.047 (15)	0.059(16)
Namibia	0.067 (19)	0.062 (11)	0.040 (16)	0.056(17)
Malawi	0.067 (18)	0.033 (17)	0.050 (14)	0.050(18)
Madagascar	0.086(15)	0.003 (20)	0.034 (18)	0.041(19)
Botswana	0.014 (20)	0.005(19)	0.025(20)	0.014(20)

[a] Means are decreasing in severity from highest corruption (1) to lowest corruption (20). The indices are averaged over all respondents for each country. The corruption indices take on values between 0 and 1 with 0= least corrupt

Table 3: Individual level corruption

	Marginal Effects[16] (Probit)[b] (St.d Error)			
	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)	Average corruption overall (4)
Education	0.015***	0.005***	0.010***	0.011***
	(0.002)	(0.001)	(0.001)	(0.001)
Female	-0.046***	-0.013***	-0.046***	-0.037***
	(0.004)	(0.002)	(0.004)	(0.004)
Age	-0.001***	-0.000	-0.001***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Religion				
Very important	-0.007	-0.002	-0.012**	0.004
	(0.008)	(0.005)	(0.006)	(0.008)
Rural	-0.033***	-0.028***	-0.039***	-0.039***
	(0.006)	(0.004)	(0.006)	(0.006)
Employed	0.018***	0.012***	0.019***	0.006***
	(0.006)	(0.004)	(0.004)	(0.002)
Economic situation	0.001	0.003*	0.001	0.002
	(0.003)	(0.002)	(0.002)	(0.002)
Support for democracy	-0.013**	-0.016***	-0.009**	-0.015***
	(0.006)	(0.005)	(0.004)	(0.005)
Political Affiliation	0.018***	0.010**	0.006	0.013***
	(0.005)	(0.004)	(0.004)	(0.005)
Country dummies	Yes	Yes	Yes	Yes
# Observation	24,277	24,277	24,277	24,277
Prob > F =	0.0000	0.0000	0.0000	0.0000

[b] The coefficients are the marginal effects. They are adjusted for clustering at the country level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

[16] We also run reduced form regressions without controls for support for democracy and political affiliations and find qualitatively similar results

Table 4: Individual level corruption (controlling for bribe exposure)

	Marginal Effects (Probit)[c] (St.d Error)			
	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)	Average corruption overall (4)
Education	0.011***	0.002*	0.006***	0.007***
	(0.002)	(0.001)	(0.001)	(0.001)
Female	-0.041***	-0.010***	-0.041***	-0.033***
	(0.004)	(0.002)	(0.004)	(0.004)
Age	-0.001***	-0.000**	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Religion				
Very important	-0.011	-0.005	-0.016***	-0.001
	(0.007)	(0.005)	(0.006)	(0.008)
Rural	-0.016***	-0.014***	-0.022***	-0.020***
	(0.005)	(0.004)	(0.005)	(0.005)
Employed	0.008	0.004	0.009***	0.003*
	(0.006)	(0.004)	(0.004)	(0.001)
Economic situation	-0.000	0.002	-0.000	0.000
	(0.003)	(0.002)	(0.002)	(0.002)
Support for democracy	-0.014**	-0.016***	-0.009***	-0.016***
	(0.006)	(0.005)	(0.004)	(0.004)
Political Affiliation	0.016***	0.009***	0.005	0.012***
	(0.004)	(0.004)	(0.003)	(0.004)
Bribe exposure				
Payment of fees for gov't services	0.033***	0.017***	0.024***	0.023***
	(0.005)	(0.004)	(0.005)	(0.004)
Payment of fees for gov't License	0.043***	0.018***	0.037***	0.045***
	(0.005)	(0.004)	(0.005)	(0.007)
Payments of property rates and taxes	0.044***	0.019***	0.037***	0.048***
	(0.007)	(0.005)	(0.004)	(0.008)
Payment of public utility fees	0.026***	0.036***	0.031***	0.038***
	(0.006)	(0.006)	(0.004)	(0.007)
Country dummies	Yes	Yes	Yes	Yes
# Observation	24,277	24,277	24,277	24,277
Prob > F =	0.0000	0.0000	0.0000	0.0000

[c] The coefficients are the marginal effects. They are adjusted for clustering at the country level. We also run reduced form regressions without controls for support for democracy and political affiliations and find qualitatively similar results. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table 5: Individual level corruption (Heckman-two-stage Model)

	Marginal Effects (Probit)[d] (St.d Error)			
	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)	Average corruption overall (4)
Education	0.007	-0.009	0.007*	0.007***
	(0.006)	(0.012)	(0.004)	(0.002)
Female	-0.062***	-0.020	-0.071***	-0.043***
	(0.013)	(0.019)	(0.014)	(0.006)
Age	-0.003***	-0.003**	-0.002***	-0.001***
	(0.001)	(0.001)	(0.001)	(0.000)
Religion				0.006
				(0.005)
Very important	-0.019	-0.005	-0.032**	
	(0.017)	(0.017)	(0.014)	
Rural	0.010	0.018	-0.030*	-0.011
	(0.037)	(0.060)	(0.018)	(0.008)
Employed	-0.010	-0.038	-0.002	-0.032***
	(0.022)	(0.042)	(0.015)	(0.006)
Economic situation	0.002	0.001	-0.004	0.001
	(0.006)	(0.006)	(0.005)	(0.003)
Support for democracy	-0.041**	-0.066***	-0.019	-0.025***
	(0.017)	(0.022)	(0.013)	(0.003)
Political Affiliation	0.012***	0.017	0.010	0.016***
	(0.005)	(0.011)	(0.010)	(0.006)
rho	-0.449	-0.675	-0.334	-0.091
	(0.251)	(0.280)	(0.227)	(0.022)
Country dummies	Yes	Yes	Yes	Yes
# Observation	24,277	24,277	24,277	24,277
Prob > F =	0.0000	0.0000	0.0000	0.0000

[d] The coefficients are the marginal effects and standard errors in parenthesis. They are adjusted for clustering at the country level. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table 6: Bounds on Gender using Lee's (2009) Bounds

	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)
Lower Bound	-0.095*** (0.009)	-0.036*** (0.007)	-0.089*** (0.007)
Upper Bound	0.015 (0.014)	0.074*** (0.015)	0.022 (0.014)

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Standard errors in parenthesis.

Table 7: Bounds on Gender using Lee's (2009) Bounds (higher exposure threshold)

	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)
Lower Bound	-0.139*** (0.016)	-0.076*** (0.013)	-0.138*** (0.015)
Upper Bound	0.099*** (0.026)	0.132*** (0.007)	0.100*** (0.027)

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Standard errors in parenthesis.

Table 8: Results from estimations of country specific regressions with regional dummies

	Basic Human Needs		Getting a Document or Permit		Police	
	Coefficient on gender	t-value	Coefficient on gender	t-value	Coefficient on gender	t-value
Countries with a negative and significant gender difference in bribery for basic human needs						
Botswana	-0.007966	(2.51)	-0.008261	(1.41)	-0.015360	(1.68)
Ghana	-0.021198	(2.92)	-0.050373	(2.87)	-0.089396	(5.63)
Kenya	-0.035125	(2.00)	-0.129829	(5.62)	-0.187446	(7.07)
Mali	-0.030580	(2.83)	-0.093779	(5.14)	-0.057646	(4.14)
Tanzania	-0.016832	(1.72)	-0.064075	(3.09)	-0.099265	(5.58)
Uganda	-0.059465	(3.88)	-0.091895	(5.90)	-0.088392	(6.16)
Zambia	-0.016904	(2.44)	-0.023166	(1.12)	-0.041802	(3.99)
Countries with a negative and but 'not' significant gender difference in bribery for basic human needs						
Benin	-0.006105	(0.33)	-0.038834	(2.58)	-0. 04140	(2.57)
Cape Verde	-0.019591	(1.44)	0.000125	(0.01)	-0.012650	(1.88)
Lesotho	-0.010983	(1.67)	-0.031882	(2.95)	-0.030080	(4.15)
Madagascar	-0.002347	(0.40)	0.019887	(2.63)	-0.008875	(1.16)
Malawi	-0.005365	(0.70)	-0.049198	(3.60)	-0.055402	(4.33)
Mozambique	-0.038592	(1.56)	-0.108602	(4.30)	-0.054621	(2.40)
Namibia	-0.002922	(0.33)	-0.022755	(2.99)	-0.006960	(0.67)
Senegal	-0.020930	(1.19)	-0.064329	(3.14)	-0.017855	(1.63)
*Countries with a positive gender difference in bribery for basic human needs**						
Burkina Faso	0.002460	(0.21)	-0.017678	(1.09)	-0.039137	(2.82)
Liberia	0.021718	(1.59)	0.016288	(0.84)	-0.013154	(0.69)
Nigeria	0.008789	(0.72)	-0.033924	(2.10)	-0.053944	(2.47)
South Africa	0.002171	(0.37)	0.020404	(2.67)	0.003726	(0.47)
Zimbabwe	0.000257	(0.02)	-0.048093	(2.23)	-0.060443	(3.47)

*Marginal effects based on linear probability estimations.

Appendix

A1: Linear Probability Models without Controls for Exposure

	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)
Education	0.016***	0.006***	0.011***
	(0.002)	(0.001)	(0.001)
Female	-0.047***	-0.015***	-0.050***
	(0.006)	(0.002)	(0.007)
Age	-0.001***	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)
Religion			
Very important	-0.006	-0.003	-0.012*
	(0.008)	(0.006)	(0.007)
Rural	-0.037***	-0.034***	-0.046***
	(0.007)	(0.006)	(0.009)
Employed	0.019***	0.015***	0.024***
	(0.007)	(0.005)	(0.006)
Economic situation	0.001	0.003*	0.001
	(0.003)	(0.002)	(0.002)
Support for democracy	-0.013**	-0.020***	-0.010**
	(0.006)	(0.006)	(0.004)
Political Affiliation	0.020***	0.012**	0.007
	(0.005)	(0.005)	(0.005)
# Observation	24,477	24,477	24,477
Prob > F =	0.0000	0.0000	0.0002

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

A2: Linear Probability Models with Controls for Exposure

	Getting a Document or Permit (1)	Water & Sanitation (2)	Police (3)
Education	0.012***	0.002*	0.006
	(0.002)	(0.001)	(0.001)***
Female	-0.042***	-0.012***	-0.045
	(0.005)	(0.002)	(0.006)***
Age	-0.001***	-0.000**	-0.001
	(0.000)	(0.000)	(0.000)***
Religion			
Very important	-0.011	-0.007	-0.017
	(0.007)	(0.006)	(0.007)**
Rural	-0.018***	-0.016***	-0.025
	(0.005)	(0.005)	(0.006)***
Employed	0.007	0.005	0.011
	(0.006)	(0.005)	(0.005)**
Economic situation	-0.001	0.002	-0.002
	(0.003)	(0.002)	(0.002)
Support for democracy	-0.014**	-0.021***	-0.012
	(0.006)	(0.006)	(0.004)***
Political Affiliation	0.018***	0.012**	0.006
	(0.005)	(0.004)	(0.004)
Bribe exposure			
Payment of fees for	0.029***	0.017***	0.024
gov't services	(0.005)	(0.004)	(0.005)***
Payment of fees for	0.053***	0.030***	0.052
gov't License	(0.008)	(0.007)	(0.009)***
Payments of property	0.057***	0.034***	0.055
rates and taxes	(0.010)	(0.009)	(0.008)***
Payment of public	0.030***	0.045***	0.039
	(0.007)	(0.010)	(0.007)***
# Observation	24,277	24,277	24,277
Prob > F =	0.0000	0.0000	0.0002

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Figure 1: Mean of Bribery