Exploiting the Poor: Bureaucratic Corruption and Poverty in Africa

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Summary. — While extant research has focused on the causes and consequences of corruption at the macro-level, less effort has been devoted to understanding the micro-foundation of corruption. We argue that poor people are more likely to be victims of corrupt behavior by street-level bureaucrats as the poor often rely heavily on services provided by governments. We test this proposition using micro-level survey data from the *Afrobarometer*. Multilevel regressions across 18 countries show that poor people are much more prone to experience having to pay bribes to government officials.
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1. INTRODUCTION

Corruption constitutes a major problem in most of the developing world. It tends to hamper investment and economic growth (Sekkat & Méon, 2005; Shleifer & Vishny, 1993), aggravates problems of underground economies (Bjørnskov, 2011; Dreher, Kotsogianni, & McCorriston, 2009; Friedman, Johnson, Kaufmann, & Zoido-Lobaton, 2000), exacerbates the difference between rich and poor (Gupta, Davoodi, & Alonso-Terme, 2002; Uslaner, 2008), creates obstacles to economic and political reform (Hellman, Jones, & Kaufmann, 2003; Shleifer, 1997), and can in the long run cause considerable human welfare losses (Kaufmann, Kraay, & Mastruzzi, 2005). While popular debate often treats corruption as a problem created by greedy bureaucrats and politicians that mainly affects elites—those who presumably can afford to pay bribes—little is known about how corruption affects ordinary citizens and which groups are most likely to bear the social and economic costs of corruption.[1] Hunt (2007), one of the few papers to study this issue, finds that in Peru, victims of adverse events like crime and job losses are more likely to pay bribes than other people. Describing this phenomenon as "hitting people when they are down," she hints at a more general set of social problems related to street-level corruption that has received only little attention in the literature.

In this paper, we begin to open the black box of street-level bureaucratic corruption by asking who is actually most likely to pay bribes, and in particular how micro-level economic conditions and poverty affect people's exposure to corruption. In doing so, we make two contributions to the literature. First, we develop a simple theoretical framework showing that corrupt bureaucrats would ideally want to extract bribes from the rich, but may have incentives to mainly target the poor when asking for money in return for access to public services they control. In our model, the mechanism creating this perverse effect is the existence of costly exit options not available to the poor, a mechanism strengthened if households face credit constraints and coordinating bureaucracies. Second,

we test the theoretical implications using micro-level data from the third round of the *Afrobarometer*, which includes detailed survey information from individuals in 18 sub-Saharan African countries. We create an index capturing how often respondents have had to bribe bureaucrats controlling access to five different areas of public services. Estimates from fixed effects regressions provide robust evidence that poorer individuals more often have to bribe bureaucrats to obtain access to vital public services. In Africa, consequently, bureaucratic corruption is not only an elite problem, but also a problem that affects the poorest groups. This result sheds new light on the relationship between micro-level poverty and corruption in Africa.

The rest of the paper proceeds as follows. We first outline the theoretical considerations in Section 2. Section 3 describes the data and estimation strategy used in Section 4. Section 5 explores two possible complications while Section 6 concludes.

2. THEORETICAL CONSIDERATIONS

This section provides an informal outline of the key implications of the theoretical model linking poverty to corruption. We present the formal model in detail in the Appendix. The starting point of the model is that a key motivation for paying bribes is to get access to basic public services, such as education, water, permits and licenses, or legal enforcement of contracts. If, for example, a public water supply is not available, getting water may be difficult and highly costly. Most people—actual or potential clients of public services—therefore have incentives to protect themselves from such situations.

Street-level corruption therefore differs from standard settings of grand corruption where agents attempt to gain illegal access to special treatment (Banerjee, Hanna, & Mullainathan, 2012). Here, bribes associated with regular access to public services are functionally similar to insurance against adverse shocks to service access. In other words, the type of corruption potentially inherent in these situations is of an extortionary nature, and not collusive as is the case in, e.g., situations in which agents pay bribes in order to bypass tariffs and regulations or in other ways gain (Non-Governmental Organisations) access to illegal or extralegal treatment. It is also "corruption without theft," as defined by Shleifer and Vishny (1993), as bureaucrats demand bribes to allow access to public goods and services for which households have already paid through taxes and (legal) fees. Corrupt street-level acts are thus one-sided in the sense that they only confer benefits on the bureaucrat, compared to a situation without corruption.

As in any standard model of insurance, the willingness to pay—which in our setting is equivalent to a willingness to pay bribes—is increasing in risk and in income as long as individuals' utility functions are quasi-concave and well-behaved. Similarly, bureaucrats' willingness to accept bribes are increasing in bribe size and decreasing in the risk of being convicted of corruption. Without any further complications, wealthier individuals should therefore be more willing and able to pay bribes to get access to public services.

However, in our model, this scenario is changed by (the realistic) assumption that at least some clients can exit from corrupt public services. In particular, allowing for the existence of exit options—the possibility that clients can opt out of public services—reverses the implications. We think of such options as both alternatives within one's community and through relocating to another community: the possibility of using NGO (Non-Governmental Organization), community-based or private health facilities, moving to another neighborhood with better and/or certain public services—at the extreme a gated community—or in the case of education having the possibility of sending one's children to a private school or moving to another school district. Incorporating an exit option relaxes an important feature of the theoretical framework of Hunt and Laszlo (2012), who explicitly assume that government officials have a monopoly on service provision such that clients cannot opt out of public service provision.

If exit options are not free, i.e., when they come with some form of fixed cost, households with an expected bribe cost exceeding this cost rationally use the exit option. This has the theoretical implication that bribe propositions are more likely to be turned down by relatively well-off clients, in particular if bureaucrats realize that the attempt to extract bribes will cause clients to exit. This option generates a situation where relatively poorer households are more likely to depend on and use public services, which is the case in many developing countries (e.g., Asian Development Bank, 2013; Department for International Development, 2010; UNESCAP, 2007). This participation constraint—that households necessarily must access the public service, which allows bureaucrats to extract bribes—is less likely to hold for relatively richer households.

This situation is exacerbated if poorer households face credit constraints. If households have access to loans, fixed exit costs may be too low relative to the value of public services. In developing countries, credit constraints often bind if credit is rationed, access to financial services is limited, or standard household assets are either unacceptable as collateral or not marketable (De Soto, 2000), thus changing the role of the participation constraint.

The consequence of this more realistic scenario is that an exit option lowers bureaucrats' corrupt earnings. They face an adverse selection problem, as the most profitable clients are least likely to engage in any transactions while the least profitable clients are most likely to select into the services of the bureaucrat. The existence of an exit option therefore works as a constraint on corrupt bureaucratic behavior toward specific clients. This leads to our first directly testable hypothesis, which asserts an approximately monotonically decreasing relationship between household income and bribe payments:

H1. The risk of paying bribes to get access to public services controlled by street-level bureaucrats is decreasing in household income, given that clients have access to viable exit options.

The observable implication of Hypothesis 1 is that poor clients are more likely to pay bribes in return for public services than wealthier clients, provided that exit options are available. However, as we show in the Appendix, since very poor households are unwilling and perhaps unable to pay bribes of a size that outweigh the risks that bureaucrats face, they may be effectively excluded from access to public services if bureaucrats insist on bribes. This complication leads to the second testable hypothesis:

H2. The effect of household income on corruption risk is nonlinear.

In the model, this nonlinearity arises because corruption risk increases with income for the poorest groups due to an exclusion effect, but decreases with income above a certain threshold (as depicted in Figure A2 in the Appendix). This means that while corruption risk decreases with income, the absolutely poorest groups are less likely to pay bribes because of an inability or unwillingness to do so.

The realistic assumption of the existence of at least some exit options, either by changing the service provider or relocating to different areas, substantially changes which households are more likely to pay bribes. In the following, we test these two hypotheses on individual-level data from 18 African countries.

3. DATA AND METHODS

We test the hypotheses linking poverty to bribery using data from the third round of the *Afrobarometer* survey.[2] The survey contains individual-level data from 18 African countries. Following the wording of the *Afrobarometer* questionnaire, we use the term "government officials" to denote employees in the public sector in a broad sense, including administrative staff in government agencies and street-level bureaucrats such as teachers, medical personnel, and police officers. This ensures that we are only capturing one type of corruption (Knack, 2007).

The surveys were conducted in 2005 and 2006 using face-to-face interviews, and consist of individual-level responses to a set of standardized questions. The data were collected based on a stratified sampling procedure, producing a broadly representative sample of adult individuals in each country (Bratton, Mattes, & Gyimah-Boadi, 2004).[3] The sample size is 1,200 in most countries, but 2,400 in Nigeria, South Africa, and Uganda, which are highly fractionalized countries. Although the *Afrobarometer* countries do not differ significantly from the

sub-Saharan average on important socio-economic indicators (Justesen, 2011), the surveys are conducted only in countries that are minimally democratic and not part of armed conflicts (Bratton *et al.*, 2004). In these respects, the countries are not representative of sub-Saharan Africa and the results cannot necessarily be generalized to the region as a whole.

(a) *Estimation*

Given that we have micro-level data from 18 different countries, we use country fixed and region fixed effects models to estimate the relationship between poverty and corruption. The advantage of these models is that the fixed effects capture the impact of all factors that are common to individuals within countries/regions and which therefore vary only between countries or regions. This eliminates bias due to omitted variables at the country-level, and turns attention toward within-country variation. Moreover, in contrast to random effects models, which require that the random effects and the regressors are orthogonal, the fixed effects model allows for consistent estimation in the presence of any type of correlation between the fixed effects and the regressors (Wooldridge, 2002, p. 266). However, the results are entirely robust to using random effects models. [4]

(b) *Dependent variable*

Corruption is usually defined as the use of public power to obtain private pecuniary gains (Aidt, 2003; Kaufmann *et al.*, 2005; Rose-Ackerman, 2006; Svensson, 2005). To obtain a measure of bureaucratic corruption that is consistent with this definition, we use questions inquiring into peoples' experience with paying bribes to government officials in return for obtaining public services. The *Afrobarometer* contains five similarly phrased questions (Q57A-E), covering different areas of public services by asking the following: "*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 a child into school, (c) get a household service (like piped water, electricity, or phone), (d) get medicine or medical attention, (e) avoid a problem with the police (like passing a checkpoint or avoiding a fine or arrest)?*" The wording of this question is similar to questions in related surveys of corruption and bribery (Hunt, 2006, 2007; Knack, 2007; Mocan, 2008). These questions measure corruption in the relationship between ordinary citizens and government officials, and therefore deal with what Knack (2007, p. 256) calls "administrative corruption"—corresponding to what we label "bureaucratic corruption." Consequently, the questions do not capture all dimensions of corruption. For instance, bribes paid to local chiefs or representatives of private companies are not included. Similarly, the measure does not capture large-scale corruption in exchanges between large corporations, high-ranking government bureaucrats, and politicians. Another important caveat is that the data do not allow us to measure the distribution of the welfare costs of corruption. For instance, it is possible that poor people—due to liquidity constraints—pay smaller amounts in bribes more frequently, but at the same time pay a smaller proportion of their income relative to wealthier people. Therefore, it is important to stress that our measure does not capture how much money people pay in bribes or how large a share of their incomes this amounts to. Consequently, we can only measure how frequently people pay bribes to government bureaucrats in return for public services.

For each question, respondents can answer using the categories "Never," "No experience with this in the past year,"

"Once or twice," "A few times," or "Often." We combine the first two categories of each item and code them as 0, while the remaining categories are given the values 1, 2, and 3, respectively. On this background, we create two different dependent variables. First, we add the five items into one bribery index producing a 16-point scale ranging from 0 to 15. The pairwise correlations of the five corruption types (Table A1 in the Appendix) are all positive (between 0.32 and 0.45) and highly significant ($p < 0.001$). Moreover, results from principal component analysis confirm that the bribe variables load onto one common factor, with Cronbach's alpha equal to 0.76. [5] Low values on this index indicate no experience with paying bribes in the past year, and high values indicate that people have to pay bribes more frequently in a number of areas to obtain services from government officials.

As a starting point, we use this index as the dependent variable in OLS (Ordinary Least Squares) regressions with country fixed effects. However, as shown in Figure 1a, the bribe index is not normally distributed but strongly skewed with a large number of zeros, reflecting that a surprisingly large proportion of Africans—more than 70%—report that they have no experience with paying bribes to government officials. This corresponds to the results reported by Bratton *et al.* (2004), and indicates that people's experience with paying bribes is, in fact, relatively modest. However, the level of corruption varies a lot across countries. The least corrupt countries are
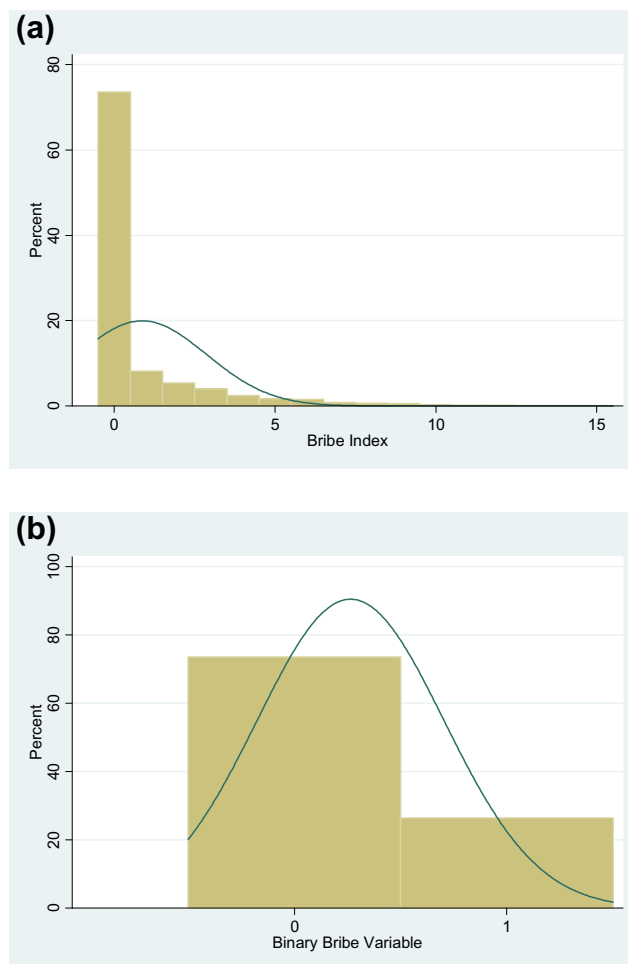

Figure 1. *(a) Distribution of bribe index. (b) Distribution of binary bribe variable.*

Botswana and Cap Verde, where only around 5% of the population has experience with paying bribes. In comparison, bureaucratic corruption is widespread in countries like Nigeria, Uganda, and Kenya, where nearly 50% of the population have had to pay bribes to government officials in return for public services.

We try to address the skewness of the bribery index in two ways. First, we treat the bribe index as a count variable in negative binomial regressions, which—unlike the OLS model—can better accommodate the observed pattern in the data, and which—unlike the Poisson model—allow for overdispersion in the data (Cameron & Trivedi, 2005, pp. 674–675). Second, we create a binary dependent variable, shown in Figure 1b, and use it in binary logistic regression models. The binary dependent variable is coded as zero (0) if respondents have no experience with paying bribes, and one (1) if respondents report having experience with paying bribes to government officials. Table A2 in the Appendix shows summary statistics for the corruption measures for the entire sample and by country.

Although the dependent variable is based on experienced rather than perceived corruption, we do not want to be too sanguine about the corruption measure. [6] Indeed, a worry may be that the corruption measures are biased by social desirability effects, which occur when respondents' answers to survey questions reflect their beliefs about what is socially desirable rather than their true attitudes or experiences. For instance, studies of voter participation have shown that highly educated people are more likely to overreport their voting behavior (Karp & Brockington 2005), and Olken (2009, pp. 958–59) finds that corruption perceptions are increasing with education. A potential worry is that the corruption measures may also suffer from social desirability bias related to respondents' education. For instance, more educated people may be more aware of attempts by bureaucrats to extract bribes, and may also be more likely to perceive the actions of bureaucrats as corrupt, even when—in fact—they are not. This would result in an upward bias in reported levels of corruption. However, if prevailing norms identify corruption as socially unacceptable, more educated people—attempting to conform to those norms—may also underreport their own payments of bribes. To address this issue, we have tested the sensitivity of our results to excluding respondents with the highest levels of education—secondary and/or tertiary—from the regressions. Doing so does not change the results. Details are available in Tables A4–A5 in the Appendix.

A related type of reporting bias—particularly relevant in weakly institutionalized democracies—is due to people's beliefs about who are conducting and sponsoring the survey. If people believe that the survey is administered on behalf of the government, they may underreport involvement in corrupt exchanges due to fear of punishment. Fortunately, toward the end of the interview, respondents are asked (Q100): "*Who do you think send us to do this interview*?" A relatively large proportion of respondents answer "the government." We have therefore replicated the results excluding all respondents who believe the government (national, regional or local) is the source of the survey. This has no effect on the results. Details are available in Table A6 in the Appendix.

(c) Poverty: A survey-based measure

To measure individual-level poverty, we follow the standard established by the work of Mattes, Bratton, and Davids (2003), Bratton et al. (2004), and Bratton (2008), who have developed the so-called *Index of Lived Poverty* based on the *Afrobarometer*. This index assesses poverty by asking respondents how frequently they lack access to basic household necessities. Specifically, respondents are asked how often during the past year, they or anyone in their family have gone without: (a) enough food to eat, (b) enough clean water for home use, (c) medicines or medical treatment, (d) enough fuel to cook food, and (e) a cash income. [7] Respondents' answers are coded on a five-point scale from "never" to "always." In accordance with the literature (Bratton, 2008; Bratton et al., 2004; Justesen, 2011; Mattes et al., 2003) we create a combined poverty index based on these five items, where high values reflect that people live in poverty and deprivation, while low values indicate that people are well-off and live in materially good conditions, in the sense that they do not lack basic necessities on a regular basis. A principal component analysis shows that the five items load onto a single dimension, with Cronbach's alpha equaling 0.78. [8] This corroborates that the index works as a good measure of poverty, understood as people's experience with being deprived of basic household necessities.

(d) Control variables

To guard against spurious correlations, we include a number of individual-level control variables that may affect both experience with corruption and selection into poverty. To ensure that we do not capture the effect of simply using public services, it is important to distinguish people who have used public services from people who have not (Hunt 2007). We cannot, of course, rule out the possibility of endogeneity in the relationship between public sector use and bribery, in the sense that people who expect to pay bribes select out of the public sector. Nevertheless, to ensure that poverty does not work as a proxy for people's propensity to use public services, we evaluate the impact of poverty on bribe paying conditional on using public services. To this end, we create an index based on five questions (Q71A–A71E) that enable us to distinguish respondents who find it difficult or easy to obtain government services from those who report they "never try" to do so. For each of the five constituent variables, we categorize people who report that, in their experience, obtaining government services is either difficult or easy as public sector users (1). People who answer that they "never try" to obtain government services are classified as nonusers (0). The five dummy variables are then aggregated into an index ranging from 0 to 5, with high values indicating extensive experience with using government services.

To ensure that the poverty index does not capture general demands for government services, which may lead to increased use of corruption by government officials and staff, we include four variables (Q32A-Q32D) based on questions asking respondents how often during the past year they have contacted: (a) a local government councilor, (b) a member of parliament, (c) a government ministry official, or (d) a political party official, in order to solve a problem or to express personal views. Including all four variables seems relevant, since we are dealing with bribes paid to precisely people who are employed in and affiliated with the public sector. Moreover, the variables also capture the effect on bribery of simply establishing contact with people in specific job functions related to the government sector, e.g., a local government councilor. For each question, respondents can answer on a four-point scale from "never" to "always." However, since these questions were not asked in Zimbabwe, we run regressions that both include and exclude these four variables. Importantly, this also works as a test of the robustness of the results to excluding Zimbabwe—the least democratic country in the *Afrobarometer* sample—from the analyses.

We also control for respondents' membership of various civil organizations. Specifically, questions Q28A–Q28D ask people whether they are members (active, inactive or leaders) of (a) religious groups, (b) trade unions or farmers associations, (c) professional or business associations, or (d) community development organizations. Membership of such organizations may both increase the demand and supply of corruption. On the demand-side, organization members may both act as lobbyists and rent-seekers on behalf of their organization to obtain specific government services in return for payment of bribes. On the supply-side, government officials may target members of a specific organizations to obtain bribes. To allow for these possibilities, we include all four variables measuring organizational membership.

Finally, we include a series of socio-economic and demographic controls that may correlate with both poverty and corruption. We control for whether people live in urban (1) or rural (0) areas, which is important because poverty is particularly widespread in rural areas (Poku & Mdee, 2011, p. 54). Moreover, people living in rural areas may have little or no access to alternative service providers—i.e., few exit options. Since our theoretical argument requires that opting out of public services is feasible for at least some citizens, addressing urban–rural differences is particularly important. Below, we do so in two ways: We first control for urban–rural residence, and later we include an interaction term for poverty and urban–rural residence, thereby allowing the poverty effect to depend on the existence of viable exit options within one's community. To ensure that the impact of poverty is distinguished from the impact of employment, a dummy variable indicating whether respondents have a paid job (1) or not (0) is included. Similarly, we control for educational attainment using a 10-point scale ranging from a minimum value (0) reflecting no education to a maximum value (9) indicating a post-graduate degree. All regressions also include controls for gender (females = 1) and age (in years). Summary statistics are available in Table A3 in the Appendix.

4. RESULTS

We start by testing Hypothesis 1, concerning the simple relationship between poverty and bribery. Table 1 shows results from eight regressions with the bribe measure as the dependent variable and the poverty index as the key explanatory variable. All regressions include country fixed effects. Models 1–4 use OLS regressions; models 5–6 show results from negative binomial regressions; and models 7–8 use conditional (fixed effects) logistic regressions with the binary bribe measure as the dependent variable. The odd-numbered columns (1, 3, 5, 7, and 9) show results for all 18 countries, while the even-numbered columns (2, 4, 6, 8, and 10) add controls for respondents' contact with people working in jobs related to the government sector, e.g., local councilors or political party officials. These variables are not available for Zimbabwe, which is consequently dropped from the analyses. However, as is evident in the table, this has little effect on the results.

Models 1–2 show that poverty has a positive and highly significant effect on the frequency of paying bribes to government officials. Recall that high values on the poverty index indicate that people are poor and regularly suffer from shortages of basic household necessities. The positive sign therefore shows that people's experience with paying bribes to street-level bureaucrats increases with increasing levels of poverty. This is similar to saying that—compared to wealthier groups—poor people are more likely to pay bribes in return for obtaining

services from government officials. However, a worry might be that the poverty variable could serve as a proxy for regional variations in, e.g., institutional quality within countries, and therefore reflect that public officials in poor regions are more likely to demand bribes than public officials in wealthier regions. Fortunately, the *Afrobarometer* provides information on the political-geographical regions where respondents are interviewed. For instance, in Mali, the survey records which of the country's eight political-geographical regions respondents reside in. To account for regional variations, models 3–4 include a full set of region fixed effects for all countries. This nevertheless has very little effect on the estimates for poverty.

In the negative binomial (models 5–6) and conditional logistic (models 7–8) regressions, the results for the poverty variable also show a consistent pattern, which corroborates that poverty has a highly significant impact on people's experience with paying bribes to government officials. Regardless of the choice of dependent variable and estimation techniques, this result is highly robust and suggests that poverty is an important determinant of how frequently people are involved in corrupt transactions. Since the regressions include two levels of fixed effects, omitted country-level or region-level variables are not confounding the results.

The substantial effect of poverty on the frequency of being involved in corrupt transactions is also quite large. In the linear models, the magnitude of the coefficients for the poverty variable is between 0.95 (model 1) and 0.78 (models 3–4). Based on model 4, this means that increasing the poverty index from the lowest (0) to the highest (1) value—corresponding to a movement from being well-off to being very poor—leads to an increase of between 0.8 and 0.9 on the 16-point bribery index. In the negative binomial regressions and conditional logistic regressions, the coefficients of the poverty index are also large and even more significant than in the linear regressions. In the negative binomial regressions (model 5–6), the coefficients show that a change from being well-off to being very poor increases the estimated log of the count by around 0.94–0.98. Exponentiating the coefficient in model 6 ($e^{0.94} = 2.57$) gives the so-called incidence-rate ratio, which shows that a one-unit increase in the poverty variable increases bribery experiences by a factor of 2.5. That is, holding the other variables in the model constant, the expected number of corrupt transactions a poor person is involved in is around 2.5 times larger compared to a well-off person. Exponentiating the coefficients from the conditional logistic regressions (models 7–8) shows that the multiplicative effect on the odds ratio is around $e^{0.96} = 2.61$ (model 8), meaning that a change from the lowest to the highest value on the poverty index on average increases the odds of paying bribes by a factor of more than 2.5. Compared to a well-off person, a poor person is therefore more than 2.5 times as likely to pay bribes to government officials in return for obtaining public services, all else equal. These findings strongly corroborate Hypothesis 1 that micro-level poverty is significantly related to the frequency with which people are exposed to demands for bribes from street-level bureaucrats.

The results for the control variables in Table 1 show that the relationship between poverty and bribery applies when controlling for a number of potential confounders. Unsurprisingly, people who use public services are more likely to pay bribes to government officials. This also means that the effect of poverty does not arise simply because poor people are more likely to use public services. Membership of civil organizations does not have uniform effects on individuals' exposure to corrupt behavior by government officials, but rather depends on

Table 1. *Poverty and Bribery in Africa: Estimates from Fixed Effects Regressions*

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Method	OLS	OLS	OLS	OLS	NBREG	NBREG	LOGIT	LOGIT
Poverty	0.954***	0.902***	0.832***	0.782***	0.976***	0.944***	0.978***	0.963***
	(6.17)	(5.63)	(6.14)	(5.50)	(17.82)	(16.70)	(10.87)	(10.33)
Public sector user	0.193***	0.183***	0.181***	0.170***	0.183***	0.178***	0.244***	0.239***
	(5.63)	(5.37)	(5.32)	(4.88)	(14.76)	(14.12)	(10.77)	(11.11)
Religious assoc. member	−0.063	−0.081	−0.051	−0.063	0.054*	0.033	0.008	−0.017
	(1.43)	(1.66)	(1.23)	(1.31)	(1.70)	(1.02)	(0.16)	(0.34)
Union member	0.092*	0.043	0.095*	0.054	0.065*	0.022	0.073	0.020
	(1.80)	(0.84)	(2.06)	(1.18)	(1.96)	(0.64)	(1.13)	(0.29)
Business assoc. member	0.363***	0.309***	0.337***	0.286***	0.249***	0.202***	0.306***	0.250***
	(4.60)	(3.98)	(5.92)	(5.07)	(6.75)	(5.40)	(4.26)	(3.21)
Community assoc. member	0.177***	0.114**	0.205***	0.149***	0.231***	0.172***	0.216***	0.151***
	(3.77)	(2.91)	(3.69)	(3.20)	(7.60)	(5.52)	(4.49)	(3.41)
Local councilor contact		0.100***		0.090***		0.120***		0.099***
		(4.42)		(3.83)		(7.66)		(2.89)
MP contact		0.148***		0.133***		0.050**		0.037
		(3.24)		(3.09)		(2.19)		(0.85)
Bureaucracy contact		0.103**		0.093**		0.061***		0.082
		(2.39)		(2.44)		(2.82)		(1.49)
Political party contact		0.094**		0.083*		0.088***		0.176***
		(2.24)		(2.08)		(4.68)		(4.74)
Urban	0.241***	0.246***	0.230***	0.234***	0.190***	0.197***	0.231***	0.236***
	(3.75)	(3.84)	(3.36)	(3.47)	(6.80)	(6.83)	(3.22)	(3.48)
Employment	0.072*	0.051	0.041	0.019	0.186***	0.169***	0.169**	0.154**
	(1.88)	(1.27)	(0.92)	(0.41)	(6.86)	(6.06)	(2.24)	(1.96)
Education	0.051**	0.032	0.052**	0.034	0.051***	0.031***	0.061***	0.038
	(2.64)	(1.64)	(2.39)	(1.59)	(6.66)	(3.90)	(2.79)	(1.64)
Gender	−0.190***	−0.153***	−0.186***	−0.155***	−0.249***	−0.210***	−0.298***	−0.259***
	(4.74)	(4.03)	(5.00)	(4.49)	(9.43)	(7.64)	(6.27)	(5.10)
Age	−0.004*	−0.005**	−0.003	−0.004**	−0.011***	−0.013***	−0.011***	−0.013***
	(1.94)	(2.72)	(1.52)	(2.37)	(10.39)	(11.84)	(5.17)	(5.62)
Constant	−0.361	−0.278	−0.155	−0.024	−2.555***	−2.450***	–	–
	(1.35)	(1.02)	(0.56)	(0.09)	(32.08)	(30.07)		
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Region fixed effects	NO	NO	YES	YES	NO	NO	NO	NO
R^2	0.05	0.06	0.10	0.11				
Observations	21,901	20,872	21,901	20,872	21,901	20,872	21,901	20,872
Countries	18	17	18	17	18	17	18	17

Dependent variables are respondents experience with paying bribes to government officials to obtain services (permits and documents, school placement, household service, medical services, and avoid problems with police). In models 1–6, the dependent variable is the bribe index (Figure 1a); in models 7–8 the dependent variable is the binary bribe variable (Figure 1b). Models 1–4 show estimates from OLS regressions; models 5–6 show estimates from negative binomial regression (NBREG); models 7–8 show estimates from conditional (fixed effects) logit regressions (LOGIT). All regressions include country fixed effects. Cell entries are regression coefficients for each variable (OLS: unstandardized regression coefficients; NBREG: log(count); LOGIT: log(odds)). Standard errors are robust and clustered by country. Absolute values of z-statistics are shown in parentheses.

*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

the type of organization. Membership of religious organizations and unions—what Knack and Keefer (1997) denote "Putnam groups"—is largely unrelated to bribery, while people who are members of business or community organizations ("Olson groups" more clearly identifiable as special interests) are significantly more likely to pay bribes. Similarly, contacting people in job functions related to the government sector in order to solve a problem also increases the likelihood of paying bribes. Particularly people who seek help from local government councilors and political party officials are more exposed to paying bribes. This finding probably reflects that people employed in such positions are often relatively influential, and may use this influence to actually help people—but at a cost. There are some indications that contacting government bureaucrats and members of parliament has similar effects, but this result is less robust and disappears in model 8.

Finally, the results for the socio-economic controls reveal some systematic patterns. People living in urban areas are significantly more likely to pay bribes to government officials than people who live in rural area, arguably because cities and urban areas have a higher concentration of public sector activity. Employment is relatively weakly related to corruption—at least in models 1–4—while education seems to raise the likelihood that people pay bribes, although the effect is significant only in around half the models. Moreover, since access to education—including for poor people—has increased substantially in African countries in recent decades (Stasavage, 2005), it is unlikely that the education variable serves a strong proxy for poverty.[9] Finally, exposure to bribery appears to be systematically biased by gender and age, with males and younger people being significantly more likely to pay bribes than women and older people.

(a) Decomposing corruption

While the results in Table 1 show that poverty is related to the aggregate measure of bribery, it is plausible that poverty affects bribes for different types of public services in different ways. On the one hand, it may be easier for wealthier people to exit from public services like health and education, but more difficult to avoid problems with the police. On the other hand, if the exit option is interpreted broadly and includes the possibility that wealthier people can exit by relocating to different geographical areas, it is plausible that the poor experience frequent encounters with corrupt street-level bureaucrats more generally across different areas of public services.

In Table 2, we therefore decompose the corruption index and test whether poverty affects how frequently people have had to pay bribes to get access to each of the five types of public services included in the bribe index: Documents and permits, school placement (education), household services, medicine or medical services (health), or avoiding a problem with the police.

Table 2 shows summary results of these tests. All regressions include the full set of controls and country fixed effects, but to economize on space, we only show results for the poverty variable. The columns in Table 2 show the relationship between poverty and bribes for each of the five types of public services. As in Table 1, we have estimated the relationship using OLS, negative binomial regression, and conditional logistic regression. Overall, the results show that poverty does, in fact, have a positive and significant effect on the frequency of paying bribes across all types of public services. However, in the negative binomial and logistic regressions, the coefficients of poverty are largest in the areas of education and health, suggesting that the effects of poverty may be most substantial for these types of public services that previously often used to be monopolized by the public sector. Nevertheless, the general pattern suggests that—in this sample of African countries—poor people are likely to experience more frequent demands for bribes in encounters with street-level bureaucrats across the different areas of public services. [10]

(b) Testing conditional and nonmonotonic effects

The results in Tables 1 and 2 provide robust evidence that poor people pay bribes more frequently than wealthier people. However, the theoretical model suggests that this relationship may be more complex. First, Hypothesis 1 states that the

relationship between poverty and corruption applies only conditional on exit options being *de facto* available to citizens. In Table 1 we addressed this issue by controlling for urban–rural residence. However, if exit options are more frequently available to people living in towns and cities, a more appropriate way of testing this hypothesis is to include a multiplicative interaction term between poverty and urban–rural residence, which allows the effect of poverty on bribery to differ between rural and urban dwellers. Second, as stated in Hypothesis 2 (and illustrated in Figure A2 in the Appendix), corruption risk may increase with income for the poorest groups until a certain threshold, after which the relationship reverses.

In Table 3 we test these hypotheses. The regressions in Table 3 include the full set of micro-level controls and country fixed effects, but to save space we only report results for the key variables. In the OLS (models 1 and 4) and negative binomial (models 2 and 5) regressions, the dependent variable is the bribe index (Figure 1a), while the conditional logistic regressions (models 3 and 6) use the binary bribe variable (Figure 1b).

Models 1–3 include a multiplicative interaction of poverty and urban–rural residence. Doing so implies that the effect of poverty is conditional on people's residential location (cf. Brambor, Clark, & Golder, 2006). Specifically, if exit options are more frequently available in urban areas, we would expect the marginal effect of poverty to increase for people living in urban areas. Similarly, if people have little or no access to alternative service providers—which is often the case in rural areas—citizen threats of opting out of corrupt public services are less credible, meaning that corrupt bureaucrats have better opportunities for extracting bribes from wealthier people too. This should weaken (but not necessarily eliminate) the relationship between poverty and corruption in rural areas.

The results in models 1–3 correspond to this expectation. Interaction terms are complicated to interpret in nonlinear probability models (models 2 and 3), and therefore the easiest way of interpreting the interaction effect is to look at the linear regression in model 1. Since urban–rural residence is a dummy variable coded as 0 for respondents in rural areas and 1 for respondents in urban areas, the coefficient of poverty shows the effect of poverty on bribery for rural residents. Interestingly, poverty continues to be positively and significantly related to bribery even in rural areas. However, the coefficient of the interaction term is positive and highly significant. [11] This means that the marginal effect of poverty on bureaucratic corruption increases significantly for people living in urban

Table 2. *Corruption Decomposed: The Impact of Poverty on Corruption for Five Types of Public Services*

	Documents and permits	School placement	Household service	Medicine/medical service	Police
OLS	0.203[***]	0.157[***]	0.120[***]	0.255[***]	0.18[***]
	(5.70)	(4.58)	(3.21)	(5.70)	(4.37)
NBREG	0.927[***]	1.230[***]	0.755[***]	1.125[***]	0.839[***]
	(11.42)	(11.87)	(7.26)	(14.24)	(9.72)
LOGIT	0.960[***]	1.265[***]	0.733[***]	1.170[***]	0.834[***]
	(11.91)	(9.90)	(3.66)	(8.14)	(9.30)
Obs.	21,068	21,086	21,028	21,099	21,063
Countries	17	17	17	17	17

Note: The first row denotes corruption type (the type of service for which bribes are paid). Three regression models are estimated for each corruption type. The first column denotes the estimation technique used: OLS regression, negative binomial regression (NBREG), and conditional logistic regression (LOGIT). In the OLS and negative binomial regressions, the dependent variables have four categories. In the logistic regressions, the dependent variable is binary, and distinguishes people who have paid bribes (1) from people who have not (0). The full set of controls is included in all regressions (corresponding to model 2 in Table 1). All regressions include country fixed effects. Cell entries are regression coefficients for the poverty variable (OLS: unstandardized regression coefficients; NBREG: log(count); LOGIT: log(odds)). Absolute values of z-statistics are shown in parentheses.
[***] $p < 0.01$.

Table 3. *Poverty and Bribery in Africa: Testing Conditional and Nonmonotonic Relationships*

Model	1	2	3	4	5	6
Method	OLS	NBREG	LOGIT	OLS	NBREG	LOGIT
Poverty	0.686***	0.838***	0.810***	1.269***	2.161***	2.365***
	(3.68)	(11.45)	(6.10)	(3.39)	(12.33)	(7.39)
Urban	0.076	0.112	0.112	–	–	–
	(0.85)	(2.41)**	(1.01)			
Poverty × urban	0.600***	0.252**	0.402*	–	–	–
	(4.05)	(2.31)	(1.97)			
Poverty squared	–	–	–	−0.484	−1.52***	−1.794***
				(0.94)	(7.28)	(4.52)
Log (pseudo) likelihood	–	−22,044.8	−10,500.1	–	−22,019.5	−10,481.8
R^2 (within)	0.06	–	–	0.06	–	–
Observations	20,872	20,872	20,872	20,872	20,872	20,872
Countries	17	17	17	17	17	17

Note: Dependent variable is bribe index(Figure 1a) in OLS and negative binomial (NBREG) regressions. In logit regressions the dependent variable is the binary bribe variable (Figure 1b). Full set of controls included in all regressions (corresponding to model 2 in Table 1). All regressions include country fixed effects. Poverty × urban is a multiplicative interaction between the poverty and urban variables. Absolute values of z-statistics are shown in parentheses.
For other details, see note to Table 1.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

areas, which is precisely what we would expect provided that exit options are more widely available in urban areas. Overall, this result corroborates the expectation that the effect of poverty on the frequency of paying bribes to bureaucrats is strongest in urban areas where people can credible threaten to opt out of public service provision.

In models 4–6 we test Hypothesis 2 by including a squared term of the poverty variable to test for nonmonotonicity in the relationship between poverty and bribery. These results are generally consistent with Hypothesis 2. Since high values on the poverty index imply that people are very poor, the negative coefficient of the squared term suggests that the likelihood of paying bribes increases as the poorest groups obtain access to more basic material goods. While this provides evidence of a nonmonotonic effect of poverty on bribery, the optimum on the bribery index in the linear regression (model 4) is located at extreme levels of poverty, falling outside the scale we actually observe. [12] Within the observed scale of the poverty index, the effect of poverty is always positive—consistent with the results in Table 1. This suggests that the major differences in encountering administrative corruption is between people who are well-off and people who are not and lack basic necessities on a regular basis.

5. DISCUSSION

The most important finding of this paper is that poverty strongly increases the frequency with which individuals face demands for bribes in return for obtaining services from government officials—particularly in urban areas.

To the best of our knowledge, this is a novel finding that has not previously been demonstrated in an African context. Nevertheless, our results stand in contrast to the findings reported by Mocan (2008), who finds that wealthier people are more likely to pay bribes. However, of the 49 countries included in Mocan's analysis, only four are from sub-Saharan Africa, and two of these—Botswana and South Africa—are the wealthiest in the region and have below-average levels of bureaucratic corruption (Mocan, 2008, pp. 497–498; see also Table A2 in the Appendix). Conversely, our results provide

much more comprehensive evidence from a larger sample of countries in sub-Saharan Africa. Although we cannot extrapolate beyond the countries in the sample, the findings in this paper show that poverty significantly increases the probability of paying bribes in the countries covered by the *Afrobarometer*. The results in our paper are partially consistent with the work of Hunt and Laszlo (2012) who examine the relationship between income and corruption in Peru and Uganda. On the one hand their results suggest that rich people are more likely to bribe and, on average, pay larger bribes. On the other hand, the bribes paid by the poor constitute a larger share of their income, which suggests that the burden of corruption may be relatively more severe for poor groups. This finding is in line with the evidence presented by Kaufmann, Montoriol-Garriga, and Recanatini (2008), who also use Peruvian data and find corruption disproportionately affects the poor. Finally, our results are related to the work of Hunt (2006, 2007) and Olken (2006). Using household data from Peru, Hunt (2007) shows that victims of misfortune, such as crime and job loss, are more likely to pay bribes to government officials compared to people who are not subject to such events. In a related study, Olken (2006) finds that corruption impairs the welfare effects of redistributive programs targeted at the poor. Specifically, the findings from Olken's (2006) study of an Indonesian anti-poverty program allocating subsidized rice to the poor show that corruption significantly reduces the amount of rice that actually reaches the poor. Our results are consistent with this work in the sense that, in Africa too, adverse conditions like poverty increase the likelihood that people experience encounters with corrupt government officials.

Our confidence in this result is strengthened by the fact that it is extremely robust. Even when we account for a rich set of micro-level control variables and country and regional fixed effects, the relationship between poverty and bribery remains strong and significant in both statistical and substantial terms. At the micro-level, our estimates suggest that poor people are, on average, almost three times more likely to pay bribes to government bureaucrats compared to wealthier people. However, the adverse effect of poverty seems to be stronger in urban areas where viable exit options are more widely available. Consequently, micro-level poverty is not only one of the variables

that is most significantly related to the frequency of experiencing bribery; it also has substantially large effects on the likelihood that people will have to engage in exchanges involving bribes in order to obtain services from the public sector.

However, it is important to emphasize that these results are subject to the caveat that the data do not allow us to say anything about the distribution of the welfare costs of corruption. Thus, although the poor may experience encounters with corrupt street-level bureaucrats more frequently than wealthier people, our data do not allow us to say how much money people pay in bribes, how large a proportion of their income people pay in bribes, or whether the economic costs of corruption are distributed disproportionately on the poor. It seems perfectly reasonable to assume that the absolute value of bribes is increasing with income (Hunt & Laszlo, 2012). However, this does not rule out that poor groups pay bribes more frequently under a regime of bureaucratic corruption. And if they pay bribes, the implication is at minimum that corruption not only affects rich elites, but also affects the livelihoods of poor people.

6. CONCLUSIONS

The literature on corruption has documented a number of severe, negative economic consequences of corruption. Nevertheless, only few studies have examined how micro-level poverty affects whether people experience exchanges with corrupt street-level bureaucrats. In this paper, we attempt to address this question. We do so by testing the implications of a simple agent-client model in which bribes serve an insurance purpose, using micro-level survey data from a sample of countries in sub-Saharan Africa.

At its simplest, the theoretical framework shows that corrupt bureaucrats prefer to demand bribes from richer clients, who are generally more willing to pay for access to public services.

However, given that we relax the assumption that bureaucrats operate as monopolists, and allow clients to use costly exit mechanisms to opt out of public service provision—e.g., by moving to different neighborhoods or using private and potentially informal health and school facilities—implies that corruption drives the relatively rich away from public services. This creates an adverse selection problem, where rich clients can credibly opt for the costly exit option, while poor groups continue to rely on the services of corrupt bureaucrats, because they cannot afford to opt out of public services.

Using data from the *Afrobarometer* survey for 18 sub-Saharan African countries, the results clearly corroborate that poor people pay bribes more frequently than wealthier people. While this result does not say anything about the distribution of the welfare costs of corruption, it does suggest that at the micro-level, corruption not only affects wealthier people, but also the poor.

Ultimately, these findings point to a genuine dilemma for agencies and policy-makers engaged in anti-corruption campaigns and public sector reform in developing countries. On the one hand, breaking down public monopolies and introducing exit mechanisms for clients of public services weaken the power of government bureaucrats and work as a constraint on corrupt behavior. This may serve to modify the overall burden of corruption in society. On the other hand, the introduction of exit mechanisms may also distribute the costs of corruption disproportionately on the poor, precisely because these groups have few alternatives but to rely on the services of corrupt bureaucrats. In so far as costly exit mechanisms constitute a remedy for fighting corruption, their effects may therefore materialize only conditionally on people becoming richer. In this sense, the combination of poverty reduction and anti-corruption reform in the public sector are important steps in the fight against corruption.

NOTES

1. For general surveys of the corruption literature, see Aidt (2003) and Treisman (2007). For evidence on the costs of corruption for firms and private entrepreneurs, see Svensson (2003), Svensson (2005).

2. We use the third rather than the fourth round of the *Afrobarometer* because the third round contains five questions concerning payment of bribes whereas round four contains only three questions.

3. Further details on the methodology behind the surveys are available in Bratton *et al.* (2004) and on the *Afrobarometer* website http://Afrobarometer.org/. Mattes (2007) discusses issues related to survey research in developing countries.

4. Results are available upon request.

5. Results are available upon request.

6. Corruption perceptions may differ dramatically from corruption experience (Bratton *et al.*, 2004, p. 234; Olken, 2009, 234; Treisman, 2007, pp. 217–220, 217-220).

7. We do not include question Q8F on school expenses for children, because a large number of respondents report having no children. However, the results (available upon request) are robust to including this variable in the index.

8. Results are available upon request.

9. We do not want to emphasize the impact of education too much. On one hand, several studies have questioned the economic importance of education in relatively poor countries (e.g., Pritchett, 2001). On the other hand, the private returns to education appear to be rather high in Sub-Saharan Africa (Montenegro & Patrinos, 2012). It is therefore possible that the effects of education are only strongly visible when households have "graduated" from a certain poverty level.

10. One would in principle expect to observe different impacts across different services, given the availability and cost of exit options. In practice, two types of exit nevertheless exist: choosing alternative service providers and physically moving the household to another location. The impact across different services therefore depends on the *mix* of these two types of exit across services. The small differences across services therefore merely reflect that they are determined by details pertaining to the exit options for which we have no information.

11. A plot of the marginal effect is available in Figure A3 in the Appendix.

12. The optimum on the bribery index in model 4 is given by $-\beta_1/2\beta_2$, where β_1 and β_2 are the coefficients of poverty and its squared term, respectively. The optimum level of bribery is located at a value of poverty equal to 1.31.

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APPENDIX A. SUPPLEMENTARY DATA

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.worlddev.2014.01.002.