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Who bears the burden of bribery? Evidence from Public Service Delivery in Kenya

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Abstract

This paper empirically examines how an individual's economic, social and political capital affects their propensity to make bribe payments in exchange for public services. Using an individual-level survey on bribes, the econometric results suggest that the burden of bribery is borne by the poor, but substantially decreases when institutions that constrain bureaucratic corruption are strong and effective. The results also show that bribery incidences decrease when social capital is high but increase when political networks are prevalent. These findings support the need to combine anti-corruption reforms with poverty reduction strategies and social policies in order to foster equity in public services provision in Kenya.

Keywords: accountability, bureaucratic behaviour, corruption, public service delivery

1. Introduction

The theoretical debate on who bears the cost of bribery in public service delivery has culminated with two contrasting hypotheses. One line of argument posits that the burden of bribery is borne by the rich and those who are politically connected, as they can afford to ‘grease the wheels’ and circumvent costly bureaucratic red tape. Bribery is perceived to be an outcome of a rational process that enhances efficiency, especially in countries with weak institutions and accountability mechanisms (Rose-Ackerman, 1978). A competing argument postulates that the burden of bribery is borne by the poor, who due to income constraints, significantly depend on public services and are thus prone to bureaucratic extortion (Hirschman, 1970). Bribes are therefore perceived to ‘sand the wheels’ and generate adverse welfare implications (Meon and Weill, 2010). Reconciling these conflicting arguments remains challenging, despite its importance in the design of sound anti-corruption reforms. At the theoretical level, most studies are grounded on a uni-dimensional approach in economics, sociology or political science while at the empirical level, micro-level data that matches the incidence of bribery with public service delivery is largely unavailable. This paper reconciles this debate by providing empirical evidence that takes into account these divergent dimensions.

The objective of this paper is twofold. First, using a recent micro level survey conducted in Kenya, it examines how economic, social and political factors affect an individuals’ likelihood to pay a bribe in exchange for public services such as health, education, water, security and permits. The main emphasis is placed on economic factors, which are captured by a multi-dimensional index of poverty and deprivation. Second, the paper investigates whether accountability mechanisms can deter bureaucratic corruption.

The paper focuses on Kenya for several reasons. First, Kenya is perceived as one of the most corrupt countries, ranking 145 out of 175 in the global transparency international index (TI, 2015). Second, similar studies examining bribery in public service provision have adopted a cross-country approach (Justesen and Bjornskov, 2014; Hunt and Laszlo, 2012), making interpretation difficult due to differences in the definition of corruption across countries and cultural settings (Sequeira, 2012). In fact, while such pitfalls may be mitigated by employing a within-country analysis, such an approach is surprisingly lacking in the literature.

Third, related studies focusing on the link between bribery and public service provision have mainly been conducted at the firm level (Mendoza et al. 2015; Sequeira and Djankov, 2014; Ufere et al. 2012) and do not capture the relationship between bureaucrats and ordinary citizens. Fourth, by using an experience-based survey, it is possible to improve on perception-based studies, which are susceptible to perception and cognitive biases such as the bandwagon and halo effects (Sequeira, 2012; Treisman, 2007). Finally, unlike findings based on game experiments, the empirical strategy relies on a nationwide representative survey and thus this increases the generalizability of the findings.

The empirical results generate three main findings. First, the incidence of bribery increases with poverty levels and poor individuals are 6.9% more likely to pay a bribe in exchange for a public service. Second, the burden of bribery systematically varies with the type of public service, and the poor are more likely to pay bribes in exchange for health and education - services that the rich can exit from and seek alternative (private) suppliers. Third, countervailing accountability mechanisms such as civil society movements and an independent media are instrumental in reducing bureaucratic corruption. These findings are robust to changes in econometric technique and specifications as well as the inclusion of multiple control variables.

These findings add value to the literature on bureaucratic corruption and accountability in public service delivery in several dimensions. First, at the conceptual level, the study presents an analytical framework that combines the traditional economic approach to corruption (Rose–Ackerman, 1978) with a political economy model (Hirschman, 1970) and posits that the propensity to extract bribes not only depends on the social-economic and political status of individuals, but it is also contingent on the type of the public service being offered. This framework is found to be useful in reconciling a wide range of contradictory results on the micro-level determinants of bribe payments.

Second, it relates to the growing empirical literature that attempts to quantify the determinants of bribe payments in public service provision. For instance, Bertrand et al. (2007) examined corruption in the provision of driving licences in India and show that bribery incidences respond to individuals' willingness to pay. Using experimental evidence, they show that bureaucrats intentionally impose hurdles and individuals are more likely to pay bribes to circumvent the institutional process of obtaining permits. Justesen and

Bjornskov (2014) developed a theoretical model depicting the interaction between individuals and bureaucrats and show that bribery is a function of an individual's social economic status and those at the bottom of the income distribution are more likely to be exposed to bureaucratic corruption. They argue that rational bureaucrats do not extort the rich as they may opt out of public services or seek alternative options. On the contrary, Mocan (2008) finds that high-income individuals have higher exposure to being asked for a bribe by a government official as they frequently interact with public officials. Finally, Hunt and Laszlo (2005) found that both bribery incidence and value are increasing function of household's income and individuals who do not pay bribes do not receive the sought service.

Third, the study contributes to an emerging theoretical and empirical debate on the role of political and social capital in driving corruption in developing countries. The current literature is split on whether such networks provide perverse incentives for bribery through elite capture or lower the incidence of bribery by promoting trust and norms of civic cooperation that constrain bureaucrats' behaviour (Knack and Keefer, 1997). Consistent with Putnam (1993), the empirical results lend support to the hypothesis that social capital in the form of religious organizations is associated with a lower likelihood to bribe while political capital increases bribery as self-interest motives are associated with interest groups, a finding consistent with the theoretical proposition by Olson (1982).

Finally, the paper extends the literature on the design of anticorruption reforms in developing countries by supplementing the existing evidence obtained from field and artefactual experiments. For instance, Olken (2007) found that top-down monitoring through government audits significantly reduces corruption and the misallocation of project resources. In Liberia, Beekman et al. (2014) show that improving the quality of bureaucrats and public officials can lead to an increase in the provision of public goods. Relatedly, Falisse and Leszczyńska (2015) show that in Burundi, bureaucrats who are aware of professional integrity standards are more likely to provide public services in an equitable manner while Campos-Ortiz (2011) argues that personal attributes of bureaucrats affect the likelihood of engaging in bribery. This evidence is in line with Mpunga and Deininger (2005) and Peisakhin and Pinto (2010) who argue that knowledge on reporting corruption and information on government activities reduces bureaucratic corruption.

The rest of the paper proceeds as follows. Section 2 reviews the theoretical and empirical evidence on bribery in public service provision while section 3 presents the empirical strategy. Section 4 discusses the results while section 5 presents some robustness checks. Section 6 concludes with policy implications.

2. Theoretical proposition on the burden of bribery

2.1 Rich individuals: The economist argument

The mainstream approach dominating the literature is that the burden of bribery is borne by the rich in order to overcome bureaucratic rigidities and save time by avoiding cumbersome and inefficient regulations (Rose Ackerman, 1978). By offering speed money, they either access services they are not entitled to or provide ‘the much needed grease for the squeaking wheels of a rigid administration’ (Bardhan, 1997, p.1322) and thus reallocate their resources to high productive activities. At the empirical level, Hunt and Laszlo (2012) found that rich individuals are four times more likely to pay bribes in Peru while they are 1.2% points more likely to pay bribes to access health services in Uganda. Hunt and Laszlo (2012) found that rich individuals in Uganda incur the cost of bribery in order to avoid deliberate delays in processing documents while Meon and Weill (2010) found evidence in support of the ‘grease the wheels’ hypothesis in a cross country analysis of developing countries and that corruption is less detrimental to efficiency where institutions are ineffective. These studies argue that although offering bribes generates perverse incentives and perpetuates inefficiency in the delivery of public services, bribes normally reflect the opportunity cost of an individual, and engaging in corruption is an outcome of a cost-benefit analysis.

2.2 Poor individuals: The social inequality argument

A competing view argues that the burden of bribery is borne by the poor as they face income and credit constraints that inhibit them from accessing privately provided services. Due to the absence or costly nature of exit options, bureaucrats capitalize on their discretionary power to demand bribes from users of public services (Paul, 1992). In a panel of sub-Saharan African countries, Justesen and Bjornskov (2014) showed that the poor are 2.5 times more likely to pay bribes compared to the rich, while Kayaga and Franceys (2007) found that poor households in urban slums in Uganda are more likely to pay bribes to access water services. The empirical evidence of Kaufmann et al. (2008) shows that low income households in Peru pay a considerable share of their income as bribes to access public services up to the point of discouragement and ‘bribery appears to penalize twice poorer users, both acting as a regressive tax and as a discriminating mechanism for access to basic services’ (p.2). In India, Bertrand et al. (2007) showed that bureaucrats and agents engage in collusion to extort bribes in the provision of common public services such as driving permits while Peiffer and Rose (2014)

showed that in most African countries, poor individuals are more likely to face bureaucratic corruption and in comparison with the rich, the magnitude of the costs incurred by the bribes is higher. For instance, Mamdani and Bangser (2004) used a micro-level survey from rural Tanzania and show evidence of bribery in public health centres that are not even required to charge any official fees.

2.3 Individuals with social networks: The social organization argument

While the economist and the social inequality approaches emphasize individuals' monetary ability, the social organization argument postulates that the likelihood of paying bribes hinges on the depth of an individual's social capital and inclusion and social capital can account for differences in public service provision across regional governments (Arrow, 1972). Societies with high social capital, in terms of trust and norms of civic cooperation, experience equitable access to public services due to social and informal restrictions to bureaucratic opportunisms (Putnam, 1993). According to Olson (1982), social capital embedded in community participation and religious groups reduces the likelihood of corruption by solving the collective action problem and enhancing the information flow regarding bureaucratic procedures and official user prices for public services. As discussed by Knack and Keefer (1997, p.1254), 'cooperative norms act as constraints on narrow self-interest, leading individuals to contribute to the provision of public goods of various kinds, and internal and external sanctions (such as guilt and shame) associated with norms alter the costs and benefits of defecting' and engaging in bribery. Conversely, Portes (1998) argues that political networks are likely to be associated with corruption as opportunistic individuals can interact with politicians to influence bureaucratic decisions. Political networks are thus perceived as special interest groups whose preferences are misaligned with institutional and social norms (Kaufmann and Wei, 2000).

2.4 Individuals with low levels of trust: The behavioural argument

Unlike the preceding arguments, this school of thought views corruption through the lens of behavioural science, attributing it to cultural and psychological aspects driven by the self-fulfilment attitudes of individuals (Lambsdorff, 2012). Theoretical models and empirical evidence in behavioural science show that the prevalence of corruption depends on the aggregate level in the society as perceived by individuals. When the level of bribery is anticipated to be high, the probability of detection declines while that of encountering corrupt

individuals and bureaucrats increases and as a result, this generates a societal norm and culture of bribery (Bardhan, 2006) as the ‘short-term costs of being honest are comparatively very high’ (Persson et al, 2013, p.457). In societies where corruption is perceived to low, all agents internalize its costs and refrain from it. In a field experiment by Ryvkin and Serra (2012), the authors show that the incidence of bribery is low when bureaucrats and individuals are uncertain regarding each other’s level of corruption, and argue that anti-corruption reforms can be enhanced by lowering contact between bureaucrats and individuals through staff rotation and the competitive provision of public services.

3. Empirical Methodology

3.1 Data

The data is obtained from the 5th round of the *Afro-barometer* survey, a cross-sectional national representative individual-level survey on the quality of democracy and governance in Kenya. The data were collected in 44 local countries between November 2011 and November 2012 using a standard questionnaire translated into 7 local languages and the unit of observation and analysis is at the individual level. The sampling frame is based on the country’s census – thus being a nationally representative survey- and the data is weighted to take into account individual selection probabilities. The survey contains information on (1) individuals’ social-economic and political attributes, (2) individuals’ corruption perception (3) whether individuals paid any bribes to access public services such as permits (driving licence and identity cards), health, education, security or connection to utilities (water), (4) whether individuals sought public assistance to ease the process of accessing any public service, and (5) the affiliation of individuals to different social networks and groups.

3.2 Empirical Model

The baseline specification adopted to estimate the probability of paying a bribe conditional on the prevailing economic, social and political factors is denoted by

$$y_{ij} = \beta_0 + \beta_{1j}Z_{ij} + \beta_{2j}S_{ij} + \beta_{3j}P_{ij} + \beta_{4j}B_{ij} + \beta_{5j}X_{ij} + \varepsilon_{ij}$$

Equation (1)

where y_i is the bribe index, which equals 1 if an individual i paid a bribe to access a public service j and 0 otherwise, Z_i captures an individual's economic status (an index of poverty), S_i is social capital (a binary variable that indicates membership of a religious association), P_i is political capital (a binary variable that represents contact with a local councillor, political party, member of parliament or government agency), B_i captures cognitive effect (a binary variable that represents an individual's level of trust regarding the corruptive behaviour of others) and X_i is a vector of individual-level controls (age, education, gender, employment status and geographical location). To ease presentation, the control variables are suppressed in the tables.

The main coefficient of interest is denoted by β_1 and is expected to be positive, implying that poor individuals are more likely to face bureaucratic corruption in exchange for public services due to the costly exit option. The proxy for social capital – membership of a religious group - is expected to have a negative sign ($\beta_2 < 0$) as social networks deter bribe payments by solving collective action problems while the coefficient of political capital - contact with a public official or being a member of a voluntary association - is anticipated to portray a positive sign ($\beta_3 > 0$) as political networks are associated with special interest groups and elite capture. Finally, β_4 is expected to be negative as high levels of trust in a society decrease the likelihood of an individual engaging in corruption.

Given the binary nature of the dependent variable, Equation 1 is estimated using a binary logistic regression model in order to ensure that the predicted probabilities are not greater than 1 or less than zero. This transforms Equation 1 to

$$\log\left(\frac{\pi_i}{1-\pi_i}\right) = \alpha_0 + \alpha_{1j}Z_{ij} + \alpha_{2j}S_{ij} + \alpha_{3j}P_{ij} + \alpha_{4j}B_{ij} + \alpha_{5j}X_{ij} + \varepsilon_{ij}$$

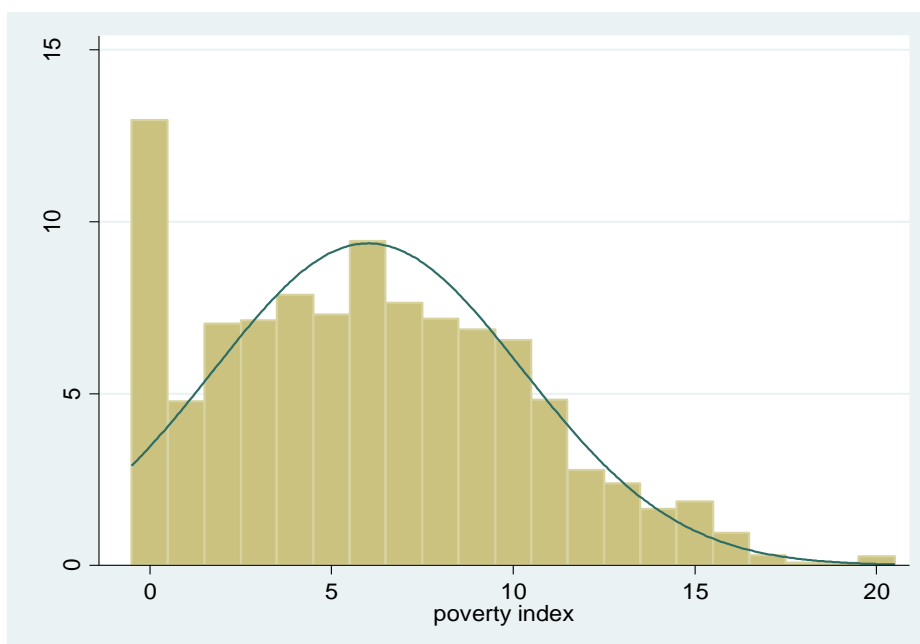
Equation (2)

where $\pi_i = P(Y_i = 1)$ and $1 - \pi_i = P(Y_i = 0)$ and the empirical estimates can be interpreted both as odds ratios or as probabilities.

3.3 Construction of the poverty index

Given that the dataset does not contain any direct measure of respondents' economic status, a poverty index is constructed by aggregating responses, using equal weights, from a series of questions regarding deprivation of basic household amenities. On a scale from zero to four, (0=Never, 1=Just once or twice, 2=Several times, 3=Many times, 4=Always) respondents were asked 'Over the past year, how often, if ever, have you or anyone in your family gone without: (1) enough food (2) enough clean water for home use (3) enough medical care (4) enough fuel to cook your food and (5) without a cash income' Carter (2012, p.10-11). Figure 1 displays the distribution of the index, where higher values are associated with increased poverty and a lack of household necessities.

Figure 1: Distribution of poverty index



Source: Afro-barometer survey (2011).

As illustrated by the pairwise correlation in Table A1, all five components of the index are positive and significantly correlated at the 5 percent level. The reliance on this index is similar to Justesen and Bjornskov (2014) and superior to conventional income measures as it encompasses a multi-dimensional assessment of poverty and deprivation (Sen, 1976). This approach departs from the consumption index used by Hunt and Laszlo (2012) in their study of Uganda and Peru, as consumption may proxy individuals' choices rather than their poverty

levels. It also improves on the income measures used by Hunt (2007) as respondents are more likely to underestimate income in survey data.

4. Results

4.1 Descriptive Statistics

Descriptive statistics on the perception of bribery in the country's main institutions are depicted in Table 1 and reveal that bribery is perceived to be high especially at the county level. At least 90% of the respondents perceive local government councillors, bureaucrats, members of parliament and the police as corrupt. Among these, 31% claim that the entire police force is corrupt, while this magnitude is 15.6% for councillors and 13% for members of parliament. This may reflect the degree of discretionary power exercised by such officials or be due to prior experience. Less than 10% of the respondents perceive corruption to be non-existent, a finding consistent with TI (2015).

Table 1: Distribution of the number of individuals (in %) who perceive different institutions as corrupt

	all of them	most of them	some of them	none of them	don't know
Members of parliament	13.1	36.8	41.0	2.3	6.8
Government officials	12.4	40.1	39.4	1.6	6.4
Local government councillors	15.6	34.7	41.0	2.9	5.9
Police	31.0	39.3	23.0	2.4	4.9

Source: Afro-barometer survey (2011).

Table 2 presents the distribution of bribe payments, disaggregated by poverty quintile, where the 1st quintile represents the poorest individuals while the 5th quintile represents the richest. The results show that while the burden of bribery is distributed across all groups, a substantial number of individuals who paid bribes fall in the middle of the distribution. Thus, bribery seems to be a major problem affecting both rich and poor individuals.

Table 2: Distribution of the number of individuals (in %) who paid a bribe, disaggregated by quintiles of the poverty index

	1 st	2 nd	3 rd	4 th	5 th	Number of people who			number of respondents
						paid bribes	did not pay bribes		
Permits	11.7	11.76	10.2	13.15	9.5	1296	1009		2305
Water or sanitation services	8.5	8.8	6.3	10.02	7.2	940	1365		2305
Treatment at local health clinic	7.3	7.6	6.2	10.4	7.8	905	1400		2305
Police	12.1	12.1	8.2	12.2	9.5	1247	1058		2305
Placement in primary school	8.7	8.2	5.6	8.9	6.7	876	1429		2305

Source: Afro-barometer survey (2011).

Table 3 reports the frequency of bribe payments across all of the public services. The results show that the frequency of bribery is high for police and permits, services that are only provided by bureaucrats. This finding is in line with Bratton (2012), who used data for 20 African countries and found that almost one in five Africans have engaged in bribery in order to access a permit. Finally, the pairwise correlation matrix in Table A2 shows that paying bribes is positively and significantly correlated with an individual's poverty level as well as social and political capital.

Table 3: Distribution of the number of individuals (in %) who paid a bribe, disaggregated by frequency of payments

	Often	a few times	once or twice	no experience within last year
Permits	6.8	11.8	20.3	18
Water or sanitation services	2.6	7.4	7.6	23.3
Treatment at local health clinic	4.2	11	12.8	11.8
Police	8.2	10.8	12.7	22.6
Placement in primary school	2.4	5.6	9.1	21

Source: Afro-barometer survey (2011).

4.2 Estimating the determinants of paying bribes

Tables 4-5 report the determinants of bribe payments in exchange for public services across the different local counties. As a starting point, Table 4 presents the estimates from a linear probability model where in column (1), the dependent variable equals 1 if an individual paid a bribe to access at least one type of public service and zero otherwise, while in columns (2) through (6), it is disaggregated in order to examine whether the determinants of bribery vary across the different types of public services. In all of the columns, the coefficient of poverty is positive and statistically significant at the conventional levels, indicating that poor individuals are more likely to pay bribes to bureaucrats to access basic public services. The disaggregated results show that the largest effect is for health services and permits.

Table 4: Linear Probability Model

Dependent variable: Bribe paid	(1) Bribe index	(2) Permits	(3) Water	(4) Health	(5) Police	(6) Education
Poverty	0.012 ^{***} (3.71)	0.013 ^{**} (3.59) *	0.010 ^{**} (2.63)	0.019 ^{**} (5.29) *	0.011 ^{***} (2.83)	0.008 [*] (1.93)
Religious group member	-0.024 ^{***} (-2.65)	-0.008 (-0.68)	-0.013 (-1.25)	0.001 (0.11)	-0.035 ^{***} (-4.41)	-0.026 ^{***} (-2.91)
Voluntary group member	0.019 [*] (1.69)	0.015 (1.34)	0.038 ^{**} (3.50) *	0.022 ^{**} (2.02)	0.038 ^{***} (2.98)	0.022 [*] (1.90)
Contact with local councilor	0.036 ^{**} (2.06)	0.061 ^{**} (3.45) *	0.029 (1.61)	0.032 [*] (1.72)	0.034 ^{**} (2.33)	0.011 (0.62)
Contact with MP	0.007 (0.46)	0.012 (0.76)	0.034 [*] (1.72)	0.050 ^{**} (2.45)	0.016 (0.90)	0.041 ^{**} (2.23)
Contact with gov. agency	0.006 (0.43)	-0.002 (-0.13)	-0.003 (-0.16)	- (-2.09) 0.033 ^{**}	-0.014 (-1.01)	-0.038 ^{***} (-2.66)
Contact with political party	-0.005 (-0.38)	0.001 (0.05)	-0.017 (-0.95)	-0.017 (-0.93)	0.034 ^{**} (2.45)	0.0003 (0.02)
Cognitive effect (trust)	-0.008	-0.006	-0.0002	-0.009	-0.005	-0.005

	(-1.13)	(-1.01)	(-0.03)	(-1.49)	(-0.54)	(-0.80)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2305	2305	2305	2305	2305	2305
R ²	0.039	0.039	0.030	0.046	0.040	0.028
F statistic	11.15	5.43	4.52	4.43	9.93	6.67

t statistic in parentheses. Robust standard errors used. Significance at * 10%; ** 5%; *** 1%.

Control variables as defined in the baseline model.

Table 5 reports the main findings, which are based on the binary logistic regression. The estimates, which are significant at the 5 percent level even after controlling for individual-level characteristics, underscore poverty as an important determinant of paying bribes in exchange for public services. In column (1), the coefficient of poverty implies that a 1 unit increase in poverty multiplies the odds of paying a bribe by a factor of $\exp(0.067) = 1.069$. In other words, holding the other factors constant, the probability of a poor individual paying a bribe increases by 6.9%. Consistent with the LPM results, the likelihood of paying a bribe also depends on the type of public service. Poor individuals in pursuit of health services are more likely to face bureaucratic corruption (with a probability of 8.5%) while the probability of those seeking public education increases by 3.6%.

Table 5: Binary Logistic Model

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Bribe paid	Bribe index	Permits	Water	Health	Police	Educatio n
Poverty	0.067 ^{***} (3.58)	0.054 ^{***} (3.54)	0.044 ^{***} (2.63)	0.082 ^{***} (5.33)	0.044 ^{***} (2.80)	0.035 ^{**} (2.03)
Religious group member	-0.126 ^{***} (-2.67)	-0.033 (-0.72)	-0.054 (-1.24)	0.004 (0.09)	-0.151 ^{***} (-4.33)	-0.115 ^{***} (-2.85)
Voluntary group member	0.100 (1.60)	0.063 (1.31)	0.159 ^{***} (3.47)	0.098 ^{**} (2.04)	0.158 ^{***} (2.87)	0.096 [*] (1.95)
Contact with local councilor	0.212 [*] (1.95)	0.268 ^{***} (3.33)	0.124 (1.62)	0.141 [*] (1.77)	0.149 ^{**} (2.28)	0.052 (0.68)
Contact with MP	0.066 (0.62)	0.073 (0.92)	0.146 [*] (1.72)	0.224 ^{**} (2.49)	0.081 (1.00)	0.182 ^{**} (2.26)

Contact with gov. agency	0.036 (0.44)	-0.008 (-0.13)	-0.012 (-0.19)	-0.155** (-1.99)	-0.061 (-1.01)	-0.181** (-2.50)
Contact with political party	-0.027 (-0.32)	0.005 (0.07)	-0.071 (-0.95)	-0.075 (-0.91)	0.170** (2.29)	0.010 (0.12)
Cognitive effect(trust)	-0.039 (-1.09)	-0.024 (-0.96)	-0.001 (-0.04)	-0.040 (-1.48)	-0.018 (-0.51)	-0.020 (-0.75)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2305	2305	2305	2305	2305	2305
Pseudo R ²	0.035	0.030	0.023	0.035	0.030	0.022

z statistic in parentheses. Robust standard errors used. Significant at * 10%; ** 5%; *** 1%

This finding is consistent with several studies that find evidence of bribery in health institutions in Kenya and document its disproportional effect on the poor. According to the 2015 Kenya National Ethics and Corruption Survey, 20.7 per cent of those who get sick and attend public health institutions are required to pay a bribe in order to be attended to. The majority of these individuals are the poor and according to a household health survey by CBS (2002), around 64 percent of users of public health care belong to the bottom wealth quintile. In a study on health services in public and private institutions, Luoma et al. (2010) found that in comparison to the rich, the poor are an easy target for bribery extortions by health-care providers due to their inability to afford private alternatives and while the rich may incur a higher cost in the private institutions, this is offset by health insurance, which is limited to individuals working in the formal sector. According to a micro-level study by Xu et al. (2006), the authors found that less than 5 percent of Kenyans in the four lowest income quintiles have private health care, an aspect that reinforces their dependency on public health and exposes them to bureaucratic corruption.

The empirical results in Tables 4-5 also show that informal networks constitute a key determinant of bribe payment and that its effect systematically differs between social and political networks. Individuals who are affiliated to a religious group are less likely to pay bribes and according to column (1) of Table 5, holding other factors constant, being a member of a religious group is associated with an 11.8% decrease in the probability of paying a bribe. This finding might be reflective of the importance of local religious organizations in

creating an environment for fighting institutional vices such as corruption through the sharing of information and knowledge between citizens (Kilonzo, 2009). Religious groups in Kenya (both Christian and Muslims) have historically been proactive in fostering efficient governance by speaking against corruption, conducting outreach programmes that create awareness of anticorruption measures, invoking religious social teachings to combat the culture of bribery, and establishing local religious chapters that act as watchdogs. For instance, the National Council of Churches of Kenya (NCCCK) capitalizes on its wide membership in churches, universities and community organizations to educate households on their civic rights and uses religious sermons to instil professional integrity amongst leaders and community members (NCCCK, 2015).

By contrast, membership of a voluntary organization such as a business group increases the chances of paying a bribe. In columns (3) through to (6) of Table 5, the results show that, consistent with the logic of Olson (1982), the probability of individuals affiliated to business groups paying a bribe are high: 17.23% for water and 17.12% for police. This may potentially arise when business groups engage in collusion with bureaucrats to lower operational costs by receiving preferential treatment in the provision of services or when bureaucrats extort businesses that significantly depend on public services in order to function effectively. In fact, according to the World Bank, evidence from the 2013 Kenya Enterprise Survey shows that 21 percent of firms identified corruption as a major constraint while 30.9 percent of business entities expected to make unofficial payments to public officials in order to receive a water connection. This evidence of bribery in the business sector was also found by Iarossi (2009), who shows that business groups operating in the transport sectors are more likely to pay bribes to the police in road blocks and weigh bridges while Kaniki and Gwatzido (2012) used firm level data and show that bribes in the water sector are high as on average Kenyan businesses face water shortages for about 4 days in a month.

As for the effect of political contact on the likelihood of bribe payment, the results in Table 4-5 suggest a positive and statistically significant effect, especially for individuals who contact a member of parliament or a local councillor. This is in line with the work of Rugene (2009), who shows evidence of bribe extortion by members of parliament in Kenya. In column (1) of Table 5, the results show that contacting a local councillor in order to access a public service increases the probability of paying a bribe by $\exp(0.212) = 23.6\%$. This magnitude turns out to be the highest for those seeking permits (30.7%) and police services (16.1%).

Although it is difficult to determine whether bribes are extorted or offered as speed money, these services constitute those over which the government possesses discretionary powers and it might thus have perverse incentives to demand bribes. In the context of Kenya, local councillors play a monopolistic role in the provision of permits such as driving licences and the issuance of identity cards. Micro-level evidence by Hope (2014) shows that most bribes are extorted in order to complete the transactions and failure to comply leads to denial of the public service. In fact, according to the 2015 Kenya National Ethics and Corruption Survey on corruption, 16.3 percent of applicants paid a bribe to secure a title deed, 10.3 percent paid a bribe to get identity card replacement services, 18.4 percent of new identity card applicants were asked to pay bribes of around KSH 700, while 8 percent of those who went to the police to report a crime had to pay an average of KSH 4,430. The report also reveals that the services that are most sought after by individuals, especially those residing in rural counties, are associated with the highest incidence of bribery. While both rich and poor individuals depend on the government for most of these services, the bribe amount constitutes a large portion of the poor's income.

Finally, the results do not provide evidence that cognitive factors influence the probability of bribe payment. In Tables 4-5, the proxy for cognitive bias is not significant at any conventional level, although it consistently retains a negative sign. This finding complements recent studies by Campbell and Goritz (2013), who argue that social norms and ideologies are endogenous and constantly change over time. This could partly explain the low explanatory power of cognitive factors as determinants of bribery across the different public services.

4.3 Estimating the determinants of the frequency of bribe payments

To examine the systematic nature of corruption rather than a one-off incidence, Table 6 presents the determinants of the frequency of bribe payments in exchange for public services. Given that the dependent variable has a natural ordering (0=Never, 1=Once or twice, 2=A few times, 3=Often), the baseline specification is estimated using an ordinal logistic regression.

Table 6: Ordinal Logistic Regression

	(1)	(2)	(3)	(4)	(5)
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Dependent variable: Bribe paid	Permits	Water	Health	Police	Education
Poverty	0.105 ^{***} (5.99)	0.141 ^{**} (7.12)	0.147 ^{***} (10.83)	0.059 ^{***} (4.05)	0.115 ^{***} (7.12)
Religious group member	-0.007 (-0.15)	-0.103 [*] (-1.82)	-0.018 (-0.33)	-0.114 ^{***} (-2.65)	0.001 (0.02)
Voluntary group member	0.024 (0.52)	0.188 ^{**} (4.52)	0.096 ^{**} (2.17)	0.154 ^{***} (2.95)	0.118 ^{**} (2.45)
Contact with local councilor	0.199 ^{***} (3.09)	0.060 (0.70)	0.125 (1.63)	0.056 (0.87)	0.125 (1.35)
Contact with MP	0.021 (0.28)	0.121 (1.43)	0.197 ^{**} (2.28)	-0.050 (-0.59)	0.128 (1.45)
Contact with gov. agency	-0.047 (-0.74)	-0.172 [*] (-1.75)	-0.123 (-1.46)	0.010 (0.22)	-0.180 [*] (-1.88)
Contact with political party	0.035 (0.46)	0.130 (1.25)	-0.078 (-0.90)	0.240 ^{**} (2.52)	0.016 (0.18)
Control variables	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2305	2305	2305	2305	2305
Pseudo R ²	0.041	0.055	0.052	0.042	0.038

z statistic in parentheses. Robust standard errors used. Significant at * 10%; ** 5%; *** 1%.

Consistent with the previous findings, not only are the poor more likely to pay bribes, but they also make such payments more frequently than the rich and well-off. Across the different public services, the coefficient of poverty turns out to be positive and statistically significant at the 1% level, even after the inclusion of several control variables. In column (1) of Table 6, the odds of paying bribes for poor individuals in exchange for permits is multiplied by a factor of $\exp(0.105) = 1.1107$. This is equivalent to stating that, controlling for the other explanatory variables, a 1 unit increase in the poverty index is associated with an 11.07% increase in the odds of giving a response that indicates a higher frequency in paying bribes in exchange for permits. The empirical results further show that despite an even distribution of the frequency of bribe payments across the different public services, the magnitude is stronger for health services (15.8%), water (15.1%) and education (12.2%). These results are consistent with the descriptive statistics in Table 2 and correspond to Hunt's

(2007) assertion that ‘corruption hits people when they are down’. In sum, the findings lend support to the hypothesis that not only does the burden of bribery disproportionately fall on the poor, but it affects public services such as health, which the poor need to access more often than the rich as they are more likely to fall sick.

4.4 Estimating the role of accountability mechanisms

This section examines how countervailing accountability mechanisms can cushion the poor from bribery by altering bureaucrats’ opportunistic behaviour. Theoretical predictions argue that fostering downward accountability can ‘dramatically tighten the loop of accountability between those who produce public goods and services and those who consume them’ (Faguet, 2014, p.5) by increasing the probability of detection and sanction. Alam’s (1995) theory of countervailing actions links accountability to intermediary institutions and social organizations such as community groups and media outlets that solve collective action problems amongst the poor. Corresponding to Hirschman (1970), individuals can exit by seeking public services from non-corrupt officials or substitutes from alternative suppliers or by foregoing consumption of public services. This in turn can alter the structure of incentives faced by government bureaucrats and reduce corruption. Conversely, individuals can use their voice to confront corrupt officials, make official complaints, or engage in violence, threats and organized campaigns against corrupt officials.

To assess this link, Equation 3 introduces an interaction term between proxies for accountability (the strength of civil society movements and a free and independent media) and the poverty index.

$$\text{Log} \left(\frac{\pi_i}{1-\pi_i} \right) = \lambda_1 \text{Poverty}_i + \lambda_2 \text{Accountability} + \lambda_3 (\text{Poverty})(\text{Accountability}) + \lambda_4 A_i + \varepsilon_i$$

Equation (3)

where $\pi_i = P(Y_i = 1)$ and $1 - \pi_i = P(Y_i = 0)$ and accountability is a dummy variable representing

$$\text{civil society} = \begin{cases} 1, & \text{if its strong} \\ 0, & \text{otherwise} \end{cases}$$

and

$$\text{media} = \begin{cases} 1, & \text{if its strong} \\ 0, & \text{otherwise} \end{cases}$$

By taking derivatives, the effect of poverty on bribe payments is given by $\beta_1 + \beta_3(\text{Accountability})$, where it is conditional on the strength of the existing accountability mechanisms. Table 7 reports the results corresponding to civil society movements, and the interaction term is negative and statistically significant across most specifications. The empirical estimates in column (1) show that this effect is 0.104-0.015*(civil society). Intuitively, this implies that when the civil society is weak (civil society = 0), the odds of a poor individual paying a bribe in exchange for a public service is $\exp(0.104) = 1.1096$, that is, it increases by 10.96%. However, in counties with strong civil societies that hold local officials and bureaucrat accountable (civil society = 1), the likelihood of bribe payments declines significantly as the odds of a poor individual paying a bribe is $\exp(0.104-0.015) = \exp(0.089) = 1.093$. In other words, the probability is 9.3%, which is lower compared to weak civil societies.

Table 7: Binary Logit Regression: Role of Civil Society Movements

	(1)	(2)	(3)	(4)	(5)	(6)
	Bribe index	Permits	Water	Health	Police	Educatio n
Poverty	0.104 ^{***} (5.27)	0.092 ^{***} (5.21)	0.101 ^{***} (5.36)	0.103 ^{**} * (5.12)	0.082 ^{***} (4.55)	0.066 ^{**} (2.87)
Civil society	0.052 (1.27)	0.064 [*] (1.86)	0.087 ^{**} (2.62)	0.012 (0.34)	0.066 [*] (1.88)	0.045 (1.20)
Poverty * Civil society	-0.015 ^{***} (-2.68)	-0.012 ^{***} (-2.88)	-0.017 ^{***} (-4.16)	-0.007 (-1.41)	-0.013 ^{***} (-3.18)	-0.011 ^{**} (-2.11)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2300	2300	2300	2300	2300	2300
Pseudo R ²	0.016	0.013	0.015	0.024	0.010	0.010

z statistic in parentheses. Robust standard errors used. Significant at * 10%; ** 5%; *** 1%.

Table 8 further confirms the effectiveness of countervailing strategies when the media is taken as a proxy for accountability, an empirical result that is consistent with Kneller et al. (2007). In fact, according to the survey, 77 percent of the respondents had strong trust in the media. These findings support hypothesis 3, that accountability mechanisms based on third party enforcement can play a key role in mitigating bureaucratic corruption by reducing information asymmetry, solving collective action problems and holding local officials accountable.

Table 8: Logistic regression: Role of the Media

	(1) Bribe index	(2) Permits	(3) Water	(4) Health	(5) Police	(6) Education
Poverty	0.110*** (5.72)	0.144** * (5.97)	0.191** * (3.94)	0.174** * (7.42)	0.131*** (6.04)	0.196*** (6.63)
Media	0.115** (2.11)	0.037 (0.66)	0.052 (0.45)	0.032 (0.45)	0.119 (1.40)	0.079 (0.82)
Poverty * Media	-0.017** (-2.37)	- 0.017** (-2.09)	-0.023 (-1.42)	-0.009 (-0.95)	-0.029*** (-2.78)	-0.032*** (-2.82)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2300	2300	2300	2300	2300	2300
<i>Pseudo R</i> ²	0.037	0.064	0.078	0.079	0.069	0.034

z statistic in parentheses. Robust standard errors used. Significant at * 10%, ** 5%, *** 1%.

5. Robustness

To assess the reliability of the main findings, two potential concerns are addressed. The first one is the social desirability bias as respondents may misreport (underestimate or overestimate) the incidence of bribery due to the fear of social and legal litigations (Sequeira, 2012). To address this, the main results are replicated after excluding the respondents who thought that the survey was being conducted or financed by the central government. The

assumption is that such individuals are more likely to admit not engaging in bribery. Despite the reduction in the sample size of 48%, the results in Tables 9-10 reveal that the main findings related to the four hypotheses are robust.

Table 9: Robustness results: Logit Regressions – correction for social desirability bias

	(1) Bribe index	(2) Permits	(3) Water	(4) Health	(5) Police	(6) Education
Poverty	0.072 ^{***} (4.30)	0.043 ^{**} (2.99)	0.044 ^{**} (3.04)	0.062 ^{**} (4.21)	0.037 ^{**} (2.52)	0.048 ^{***} (3.29)
Religious group member	-0.144 ^{**} (-2.32)	-0.013 (-0.23)	-0.096 (-1.64)	-0.038 (-0.64)	-0.218 ^{***} (-3.77)	-0.114 ^{**} (-1.96)
Voluntary group member	0.085 (1.40)	0.032 (0.59)	0.120 ^{**} (2.16)	0.104 [*] (1.87)	0.118 ^{**} (2.13)	0.058 (1.04)
Contact with local councilor	0.234 ^{***} (2.70)	0.321 ^{**} (4.23)	0.126 [*] (1.70)	0.141 [*] (1.89)	0.100 (1.36)	0.006 (0.08)
Contact with MP	-0.010 (-0.08)	-0.040 (-0.39)	0.060 (0.60)	0.082 (0.81)	-0.042 (-0.42)	0.148 (1.47)
Contact with gov. agency	0.003 (0.03)	-0.033 (-0.47)	-0.064 (-0.89)	-0.093 (-1.26)	-0.035 (-0.50)	-0.038 (-0.52)
Contact with political party	-0.08 (-0.75)	-0.029 (-0.29)	-0.103 (-1.02)	-0.049 (-0.49)	0.183 [*] (1.74)	-0.060 (-0.60)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	1286	1286	1286	1286	1286	1286
<i>Pseudo R</i> ²	0.036	0.026	0.016	0.020	0.031	0.016

z statistic in parentheses. Robust standard errors used. Significant at ^{*} 10%; ^{**} 5%; ^{***} 1%

Table 10: Robustness results: Ordered regression - correction for social desirability bias

	(1)	(2)	(3)	(4)	(5)
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	Permits	Water	Health	Police	Education
Poverty	0.097 ^{***} (6.54)	0.153 ^{***} (7.66)	0.142 ^{***} (8.61)	0.071 ^{***} (4.59)	0.144 ^{***} (7.44)
Religious group member	0.035 (0.61)	-0.163 [*] (-1.94)	-0.033 (-0.49)	-0.178 ^{***} (-2.81)	-0.031 (-0.38)
Voluntary group member	0.033 (0.60)	0.190 ^{**} (2.54)	0.155 ^{**} (2.46)	0.164 ^{***} (2.80)	0.097 (1.30)
Contact with local councilor	0.304 ^{***} (4.23)	0.174 [*] (1.74)	0.174 ^{**} (2.10)	0.110 (1.43)	0.125 (1.27)
Contact with MP	-0.045 (-0.44)	0.059 (0.45)	0.157 (1.38)	-0.072 (-0.70)	0.155 (1.19)
Contact with gov. agency	-0.005 (-0.07)	-0.157 (-1.45)	-0.0615 (-0.74)	0.0315 (0.45)	-0.108 (-1.03)
Contact with political party	-0.0005 (-0.01)	0.040 (0.31)	-0.098 (-0.85)	0.163 [*] (1.74)	-0.096 (-0.72)
Control variables	Yes	Yes	Yes	Yes	Yes
<i>N</i>	1286	1286	1286	1286	1286
<i>Pseudo R</i> ²	0.046	0.072	0.055	0.058	0.051

z statistic in parentheses. Robust standard errors used. Significant at ^{*} 10%; ^{**} 5%; ^{***} 1%

The second concern relates to the choice of econometric technique. Amongst the respondents who did not pay a bribe, some of them may never have been asked to pay by bureaucrats. This implies that if the poor frequently pay bribes, the coefficient of poverty will be overestimated. To address this, a two-stage econometric model is estimated (hurdle model), which takes into account zero and positive counts and fits a model to the positive counts only. Given the over-dispersion in bribe payments (a large number of zeros in the dependent variable), as depicted in figure A1, the main results (Table 5) are replicated using a negative binominal model. The estimates are reported in Table 11. As anticipated, poverty – as well as the proxies for social and political capital - retain the expected signs and remain significant at the conventional levels.

Table 11: Robustness results: Hurdle model - Negative Binomial Regression

	(1) Bribe index	(2) Permits	(3) Water	(4) Health	(5) Police	(6) Educatio n
Poverty	0.016 ^{***} (3.81)	0.022 ^{***} (3.50)	0.025 ^{***} (2.69)	0.047 ^{***} (5.91)	0.019 ^{***} (2.97)	0.020 ^{**} (2.06)
Religious group member	-0.033 ^{**} (-2.61)	-0.012 (-0.63)	-0.029 (-1.18)	0.004 (0.17)	-0.066 ^{***} (-4.17)	-0.071 ^{***} (-2.92)
Voluntary group member	0.026 [*] (1.73)	0.027 (1.37)	0.090 ^{***} (3.81)	0.058 ^{**} (2.12)	0.070 ^{***} (3.17)	0.057 ^{**} (2.06)
Contact with local councilor	0.047 ^{**} (2.12)	0.099 ^{***} (3.59)	0.065 (1.62)	0.070 [*] (1.68)	0.060 ^{**} (2.40)	0.028 (0.64)
Contact with MP	0.008 (0.40)	0.012 (0.50)	0.065 [*] (1.66)	0.098 ^{**} (2.26)	0.024 (0.83)	0.098 ^{**} (2.31)
Contact with gov. agency	0.007 (0.45)	-0.002 (-0.11)	-0.006 (-0.18)	-0.085 [*] (-1.87)	-0.025 (-0.97)	-0.112 ^{**} (-2.56)
Contact with political party	-0.005 (-0.28)	0.002 (0.11)	-0.032 (-0.83)	-0.026 (-0.63)	0.053 ^{**} (2.62)	0.017 (0.36)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2305	2305	2305	2305	2305	2305

z statistic in parentheses. Robust standard errors used. Significant at ^{*} 10%; ^{**} 5%; ^{***} 1%

6. Conclusion and Policy Recommendations

Existing empirics in the corruption literature continue to advance contradictory propositions on how to design sound anti-corruption reforms aimed at addressing bureaucratic corruption. This paper argues that this arises due to the failure to identify the distributional impact of bribe payments and precisely who bears the burden of bribery. Using an individual-level and experience-based survey conducted across local counties in Kenya, several key findings emerge. First, the burden of bribery disproportionately falls on the poor, who face costly exit options with regard to finding alternative supplies. Second, the poor pay bribes more frequently than the rich and this differs across public services, with the effects being larger for health and education – public services that the poor significantly depend on. Third, while strong civil societies and the media tend to be effective instruments to deter bureaucratic corruption, membership of social organizations can similarly reduce the incidence of bribery.

These findings have important policy implications. First, they highlight the need to align anti-corruption reforms with poverty reduction strategies. Empowering the poor, in terms of boosting income opportunities, may increase opportunities to exit to alternative sources that provide better quality but expensive services. According to the survey, the respondents ranked ordinary citizens as the most effective non-governmental group with the greatest impact on the fight against corruption. Second, promoting open access order, especially membership of religious and community associations, should be encouraged as a channel for solving collective action problems that perpetuate corruption. In fact, 97 percent of the survey respondents claimed that they do not report corrupt cases using official means due to fear of reprisal. Third, strengthening local countervailing mechanisms such as civil society movements and a free media could alter the structure of incentives faced by bureaucrats and local politicians, and thus foster downward accountability and access to public services. This is consistent with the survey findings, which show that 73 percent of the respondents support the role of the media in investigating and reporting on government corruption.

Several caveats however remain due to data limitations. First, the paper is silent on the magnitude of bribes. While the poor might be more likely to pay bribes, the amounts may be lower compared to those paid by the rich. However, substantiating this claim is not possible due to a lack of information on the actual amount of bribes paid. Second, it is not possible to identify whether individuals drive bribery or react to demands from bureaucrats. Third, self-reported data on bribery might be prone to social desirability bias, which cannot be fully mitigated. The final caveat relates to the problem of reverse causality. While the poor are prone to pay bribes, individuals who pay bribes might be poorer to begin with and thus perpetuate bribery in exchange for public services. However, in the absence of a valid instrument for poverty, the analysis abstains from interpreting the empirical estimates in a causal manner. While these concerns are fully acknowledged, the empirical findings offer vital insights on the micro-level dynamics of bribery in public service delivery.

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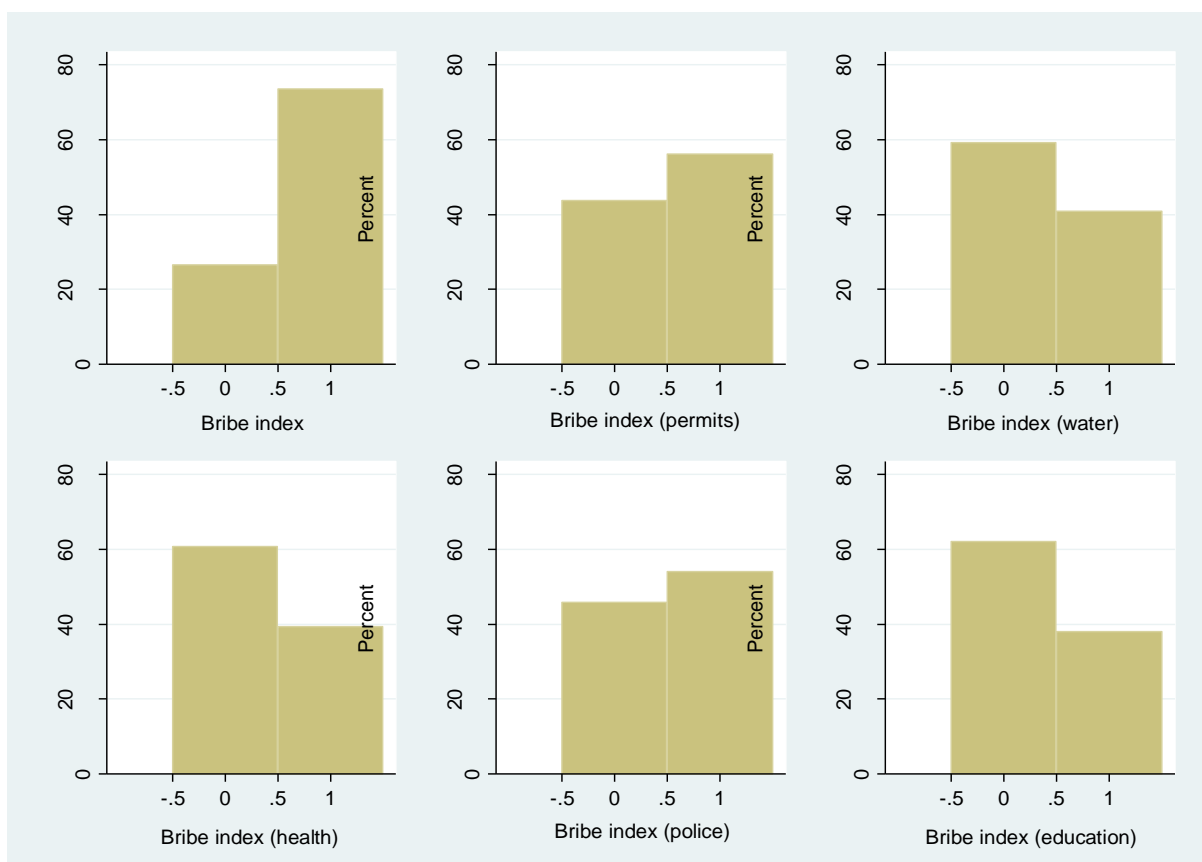
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Appendix

Appendix

Appendix

Figure A1: Distribution of the response variable (disaggregated by each public service)



Source: Afro-barometer survey (2011).

Table A1: Pairwise Correlation (components of the poverty index)

	Fuel	Water	Medical care	Cooking fuel	Cash income
Fuel	1				
Water	0.461**	1			
Medical care	0.474**	0.485**	1		
Cooking fuel	0.409**	0.428**	0.431**	1	
Cash income	0.408**	0.305**	0.414**	0.323**	1

** Significance at 5%.

Source: Afro-barometer survey (2011).

Table A2: Correlation Matrix

	Bribe index	Poverty	Religious group member	Voluntary group member	Contact with local council or	Contact with MP	Contact with gov. agency	Contact with political party	Employment	Education	Age Trust Urban Gender
Bribe index	1										
Poverty	0.10***	1									
Religious group member	-0.03	0.08** *	1								
Voluntary group member	0.06***	0.10** *	0.31***	1							
Contact with local council or	0.10***	0.08** *	0.09***	0.19***	1						
Contact with MP	0.07***	0.04**	0.06***	0.11***	0.50***	1					
Contact with gov. agency	0.06***	0.03	0.06***	0.17***	0.38***	0.36***	1				
Contact with political party	0.04**	0.04*	0.08**	0.10***	0.38***	0.46***	0.38** *	1			
Employment	0.05**	- 0.16** *	-0.01	0.06**	0.04	0.05**	0.04**	0.06***	1		
Education	0.03	- 0.06** *	-0.03	0.002	0.07***	0.14***	0.08** *	0.11***	0.10***	1	
Gender	-	-0.02	0.04*	-0.01	-0.15***	-0.07***	-	-	-	-0.07***	1

	0.07 ^{***}						0.13 ^{**} *	0.12 ^{***}	0.11 ^{***}					
Age	-0.05 ^{**}	0.08 ^{**} *	0.02	-0.01	0.08 ^{**}	0.08 ^{***}		0.08 ^{***}	-0.03	0.22 ^{***}	0.001	1		
Trust	-0.04	0.08 ^{**} *	-0.02	0.02	-0.03	-0.04 [*]	-0.02	0.001	-0.06 ^{***}	-0.09 ^{***}	0.11 ^{***}	-0.02	1	
Urban	-0.003	0.11 ^{**} *	0.08 ^{***}	0.01	0.10 ^{***}	0.08 ^{***}	0.04 ^{**}	0.04 ^{**}	-0.14 ^{***}	-0.07 ^{***}	-0.02	0.04 [*] *	0.03	1

Significance is denoted by *** for p<0.01, ** for p<0.05 and * for p<0.1