How does Petty Corruption affect Tax Morale in Sub-Saharan Africa?
An empirical analysis.

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Abstract

Sub-Saharan Africa economies introduced extensive reforms of their tax systems in the last two decades. In most of these countries taxes are now remitted through the self-assessment system that relies on quasi voluntary compliance and audit selection by risk. However, the revenues from direct taxes remained fairly stable and tax/GDP ratios lack behind the industrialized world. Several scholars argue that corruption is one of the major obstacles to increase tax revenues but focus on perceived corruption and remain on the macro-level. This study uses mirco-level data from the Afrobarometer survey wave 5 and thus relates personal corruption experiences to tax morale. The nationally representative survey includes information about corruption experiences in everyday situations when people need to get access to public goods in 31 sub-Saharan African countries. The paper finds that these petty corruption experiences significantly reduce the peoples willingness to pay taxes and hence contribute to the state community. The survey also provides information about trust in tax department in general as well as the perceived number of corrupt tax officials. A mediation analysis estimates that petty corruption experiences not only cause a directly negative effect on tax morale but also have indirectly affect on tax morale via reduced trust in the tax department.

JEL-Codes: D73, H26, K42, F63

Keywords: corruption, tax morale, institutional and governance quality, economic development

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1   Introduction

Recent literature identified corruption as a major obstacle to economic development. Tanzi and Davoodi (2000) demonstrated that corruption negatively affects public revenues levels. Bird and Martinez-Vasquez (2008) identified that corruption has strong impacts on the tax to GDP levels of developing and transition countries. In the same vein, Besley and Persson (2014) argued that corruption is key to understand the gap in tax to GDP capacities between high- and low income countries. Attila (2008) and Tanzi and Davoodi (2000) argued that lower taxation levels result from inefficient tax systems due to corruption. Moreover, higher levels of perceived corruption are related to lower GDP growth and human development (Dreher and Herzfeld, 2005). Though these studies provide robust results about the macro-economic impact of corruption it is still puzzling how corruption affects individuals' decisions to pay taxes. In fact, the Transparency International Corruption Perception Index (CPI), that is used in most studies, is based on "the views of analysts, businesspeople and experts in countries around the world" but gives no information about the "individual frustration of this reality" (Transparency International, 2015).

Hence, the question arises how corruption does affect the individuals' decision to contribute to the public budget. This issue is of particular interest for developing and emerging economies which introduced reforms of their tax systems and increasingly rely on the compliance of their citizens (Fossat and Bua, 2013; Drummond et al., 2012). We argue that people struggle with paying taxes because they become extorted by corrupt public servants. The theoretical background for this relationship is provided in the fiscal exchange theory by Buchanan (1976) and Torgler (2003). According to its predictions, people are more tax-compliant if they feel treated fairly by the government. On the other hand, they refuse cooperative behavior if they feel extorted. The condition of paying bribes in order to get access to public services applies to the micro-oriented concept of *petty corruption* and may have different effects than the more macro-oriented *grand* or *systemic corruption* (Barr and Serra, 2009). Petty corruption may diminish the peoples willingness to contribute to the state community for at least two reasons. First, paying money for bribes reduces their individual budgets and hence they lack of resources to contribute to the public budget. Second, they may perceive paying extra money to corrupt officials as double-taxation and hence public services as overpriced. Finally, petty corruption might erode trust in public institutions and hence in the taxation administration even though they do not extort bribes.

To shed light on the impact of corruption on peoples' behavior some scholars started research at the individual level. Alm et al. (2014) focused on the impact of corruption on tax compliance at the firm level. They employed the World Enterprise Survey and the Business Environment and Enterprise Performance Survey to show that corruption payments - either voluntary offered to or extorted by corrupt officials - significantly reduces reported sales and hence tax compliance of firms. A valuable source to explore the relationship between corruption and tax morale at the individual level is provided by the Afrobarometer. This survey, inter alia, provides information about personal experiences with paying bribes to corrupt public officials, the perception of government policies to fight corruption and asks for tax morale. Based on these data, Ali et al. (2014) found some negative effects for corruption on tax morale in South Africa and Uganda. However, they only explore the impact of the perceived number of tax officials involved in corruption activities.

This paper intends to present a more detailed analysis of how corruption affects tax morale. It employs personal corruption experiences related to the access to public goods as well as perceived corruption in tax authorities based on data from the Afrobarometer 5. We show that experienced petty corruption significantly reduces tax morale but that these effects vary among different types of petty corruption and the measure of tax morale employed. We also find that trust in the tax department and the perceived number of corrupt tax officials are significantly correlated with tax morale. We further consider personal bribe experiences as exogenous event and confidence in the tax department as channel how petty corruption might indirectly affect tax morale. We employ a mediation analysis and find that the total effect of petty corruption on tax morale substantially depends on the indirect effect.

The remainder of this article is organized as follows: Section 2 provides an overview about the data and gives descriptive statistics. Section 3 analyzes the relationship between petty corruption and tax morale. Section 4 explores how confidence in the tax department influences tax morale. Section 5 discusses the problem of reverse causation and introduces the mediation analysis as approach to estimate the total effect of petty corruption on the tax morale. Section 6 employs self-reported tax compliance as an alternative proxy for tax morale and hence checks for robustness of the results. Section 7 concludes.

2 Descriptive statistics of main variables

The data used in the empirical analysis are taken from round 5 of the Afrobarometer. The survey was carried out during the years 2011-2013 in 35 African countries, 31 from the sub-Saharan region. The survey consists on nationally representative samples, varying between either 1,200 or 2,400 respondents who are at least 18 years old. The baseline sample of the included sub-Saharan countries counts 45,599 persons but is smaller in most of the regressions because of missing data. The countries included in this paper are Benin, Botswana, Burkina Faso, Burundi, Cameroon, Côte d'Ivoire, Cape Verde, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. The data set provides demographic information about the employment status of the respondents, their education level, and whether they live in urban or rural areas. Since the survey does not provide information about the income of the respondents, a wealth indicator was constructed by employing principal component analysis. The indicator includes information whether the respondents possess a radio, television, motor vehicle or mobile phone as well as their access to water, toilet and the condition of the roofs on their home (see table A1 in the Appendix for descriptive statistics of all variables).

The questions regarding taxation, political attitudes and personal corruption experiences were asked in all countries listed above and hence it allows for comparison in the ensuing analysis. The main dependent variable is *tax morale*. The variable is derived from question 76 (Q76B):

> *I am now going to ask you about a range of different actions that some people take. For each of the following, please tell me whether you think the action is not wrong at all, wrong but understandable, or wrong and punishable: Not paying the taxes they owe on their income.*

As in other studies, a binary dependent variable is employed in most of the ensuing regressions. A value of 1 captures that the respondents consider not paying taxes as *wrong and punishable*, and 0 if they consider it as *wrong but understandable* or *not wrong at all*. As presented in Table A4 in the Appendix tax morale varies between the sub-Saharan countries. The respondents in Malawi and Uganda exhibit the highest tolerance for non-compliant tax payers while two-thirds of the respondents in Cameroon, Ghana, Liberia, and Burundi answered that cheating on taxes is wrong and should be punished. The technique of employing an indirect question to estimate the personal tax morale, has become standard in the literature (see Ali et al., 2014; Frey and Torgler, 2007; McGee, 2008). However, some scholars challenged the reliability of this proxy and argued that it might not reflect the actual behavior of the individuals (e.g. Elffers et al., 1987). Torgler et al. (2011) provided evidence for a robust correlation between the indirectly measured tax morale and the actual level of tax evasion. Halla (2010) provides first evidence for a causal link between tax morale and actual tax compliance behavior. Because the Afrobarometer 5 provides information about the self-reported tax compliance we decided to employ that variable as a robustness check below and compare its results with those from the indirect measure. The survey includes several questions about corruption. The main explanatory variable of interest captures the actual bribery experience of the respondents. Question 61 asks whether the respondents

> *had to pay a bribe, give a gift, or do a favor to government officials in order to get a document or a permit, water or sanitation services, treatment at a local health clinic or hospital, avoid problems with the police, place in primary school.*[1]

The survey offers 4 possible answers, ranging from *never, once or twice, a few times* to *often* and thus captures the frequencies of bribe experiences. As presented in table A5 in the Appendix, corruption experiences are quite prevalent in sub-Saharan Africa. In particular paying bribes or offering gifts is necessary in order to get documents, health service or to avoid problems with the police. Corruption in these categories is most prevalent in Kenya and Sierra Leone. On the other hand, people from Botswana and Namibia have very little experience with bribing.

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[1]The respondents were also asked whether they *received a bribe offer during the last election campaign*. That question is not included into the analysis because it rather applies to the concept of political corruption than to that of petty corruption.

3   Tax morale and corruption experiences

Table 1 presents the estimates of the impact of petty corruption experiences on tax morale. All regression models include country dummies and standard errors clustered at the country level. The first model employs a logit regression model with a binarily coded dependent variable taking the value of 1 if the respondents experienced corruption in at least one of the types of petty corruption during the last year. A value of 0 indicates that the respondent has no experience with corruption at all. The marginal effect indicates that corruption experiences have a significantly negative effect at the 1 percent level. Having made petty corruption experiences during the last year reduces the probability of exhibiting the highest level of tax morale by some 5 percent. The significantly negative effect persists if other estimation models are employed. Only if the full scale of tax morale is employed in the OLS model the magnitude of the estimations substantially deviates from the other results. In contrast to other studies (Ali et al. 2014; Frey and Torgler, 2007) females exhibit a lower tax morale than males. This might be due to the fact that females are more likely being extorted by a corrupt public official than males.[2] Moreover, wealthier people and those with high education attainments have a higher tax morale while those who are self-employed are significantly less likely of having the highest level of tax morale.

Table 1: **Tax morale and corruption experiences**

Model	Logit	Orderd Logit	OLS(binary)	OLS(full scale)
Dependent variable:	Marginal	Marginal	Coefficient	Coefficient
Tax morale	Effects	Effects		
(1) Corruption Experience				
Bribe paid to government officials	−0.046***	−0.054***	−0.043***	−0.076***
	(-3.01)	(-4.01)	(-4.08)	(-5.52)
(2) Demographic factors				
Female	−0.024**	−0.021**	−0.026**	−0.034***
	(-2.38)	(-2.30)	(-4.55)	(-4.08)
Age	0.001**	0.001**	0.001**	0.001**
	(2.51)	(2.43)	(3.23)	(2.77)
High Education	0.047**	0.054***	0.031**	0.056***
	(2.51)	(3.10)	(2.37)	(3.50)
Self-employed	−0.048***	−0.043***	−0.035***	−0.043**
	(-2.88)	(-2.76)	(-2.48)	(-2.19)
Urban	0.009	0.008	0.016	0.028*
	(0.65)	(0.52)	(1.42)	(1.79)
Wealth	0.021***	0.023***	0.014***	0.024***
	(4.00)	(4.75)	(3.55)	(4.99)
(3) Country dummies included	Yes	Yes	Yes	Yes
N	38,469	38,469	37,043	37,043
Pseudo R^2	0.040	0.040		
R^2			0.054	0.069

Notes: (I.) Dependent Variable: Attitudes towards the legitimacy of not paying taxes. If the variable is binarily coded 1 gives: wrong, and punishable and 0 all else. (II.) Z-values and t-values are reported in brackets. (III.) Standard errors are clustered at country level. (IV.) The reference group is given by males with post-secondary qualifications or lower who do live in rural areas and are not self-employed and made no experiences with corruption during the last year. (V.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

To estimate whether the corruption frequency influences tax morale a set of dummy variables was created. The variables consists on the sum of corruption experiences per individual in the sample. A value of 0 indicates that the respondent has no experience with corruption. A value of 1 indicates that the respondent experienced corruption once or twice in one or two of the listed

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[2]As presented in Table A1, the sample consists on equal shares of females and males. However, 20 percent more females than males are affected by petty corruption.

types of corruption or a few times in one type. A value of 2 indicates that the respondents often made bribe experiences in one of the groups or once or a few times in at least two groups. A value of 3 indicates more corruption experiences. Table 2 indicates that tax morale negatively depends on the bribe frequency. All three frequency dummies included in the regression are of statistical significance. Even though the marginal effects increase with the higher frequencies the differences are of no statistical significance. This was checked by the Wald test post estimation methodology (p-values of 0.1275 between bribe frequency measures 2 and 1 and 0.3605 between frequency measures 3 and 2).

Table 2: **Tax morale and bribe frequency**

Logit Estimation	Model (1)	
Tax morale	Coefficients	Marginal Effects
Bribe experience (1)		
One or two times	−0.109**	-0.027
	(-2.06)	
Bribe experience (2)		
Often in one group or once or	−0.216***	-0.054
a few times in two groups	(-3.12)	
Bribe experience (3)		
More experiences	−0.291***	-0.073
	(-3.56)	
(4) Demographic factors		
Female	−0.110***	-0.028
	(-4.70)	
Age	0.004***	0.001
	(3.24)	
High Education	0.130**	0.033
	(2.35)	
Self-employed	−0.148**	-0.037
	(-2.50)	
Urban	0.068	0.017
	(1.43)	
Wealth	0.059***	0.015
	(3.60)	
(5) Country dummies included	Yes	
N	37,043	
Pseudo R^2	0.040	

Notes: (I.) Dependent Variable: Attitudes towards the legitimacy of not paying taxes. The variable is binarily coded. 1 gives: wrong, and punishable. 0 all else.(II.) Z-values are reported in brackets. (III.) Standard errors are clustered at country level. (IV.) The reference group is given by males with post-secondary qualifications or lower who do live in rural areas, are not self-employed and paid no bribe during the last year. (IV.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

Table 3 presents the individual types of bribe experiences. Models 1-5 analyze each type of corruption in single regressions. All types of petty corruption have statistically significant effects on tax morale. Bribes paid to circumvent problems with the police reduces the probability of reporting the highest level of tax morale by 5.4 percent. Bribes paid to get access to the water or sewage system reduce tax morale by 6.8 percent and hence has the largest effect. The difference between the sizes of the marginal effects between water or sanitation access and bribes paid to police officers is of statistical significance as a p-value of 0.0256 indicates when employing the Wald test to compare the individual regressions. No significant difference was found when comparing bribes paid to police officers and bribes paid to get documents that shows the smallest marginal effect.

Table 3: **Tax morale and specific corruption experiences**

Logit Estimation	(1)	(2)	(3)	(4)	(5)
Tax morale	Marginal Effects	Marginal Effects	Marginal Effects	Marginal Effects	Marginal Effects
(1) Bureaucratic corruption					
Bribe paid to get documents	−0.033** (-2.44)				
Bribe paid to police offer		−0.054*** (-3.72)			
(2) Service corruption					
Bribe paid to get water or sanitation			−0.068*** (-3.47)		
Bribe paid to get health treatment				−0.047*** (-3.03)	
Bribe paid for place in prim. school					−0.055*** (-2.91)
(3) Socio-demographic variables included	Yes	Yes	Yes	Yes	Yes
(4) Country dummies included	Yes	Yes	Yes	Yes	Yes
N	36,907	36,831	36,831	36,872	36,902
Pseudo R^2	0.040	0.039	0.040	0.040	0.040

Notes: (I.)Dependent Variable: Attitudes towards the legitimacy of not paying taxes. The variable is binarily coded. 1 gives: wrong, and punishable. 0 all else.(II.) Z-values are reported in brackets. (III.)Standard errors are clustered at country level. (IV.) The reference group is given by males with post-secondary qualifications or lower who do live in rural areas and are not self-employed. (V.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

4 Tax morale and trust in the tax department

This section intends to take a closer look on the influence of the perception of the tax department on tax morale. The survey gives no information about the actual bribe experiences of the individuals with tax officials. However, the survey asks questions on trust in several governmental institutions. Among them, the survey asks how much the respondents *trust in the tax department* (Q59D). They could choose between trusting them *not at all, just a little, somewhat* or *a lot.* To allow for more intuitively interpretation of the regression results the scale was recoded meaning that no trust in the tax department receives the highest value of 4. Additionally, the survey asks the respondents on *what they think how many tax officials are involved in corruption* (Q60F) and provides the answers: *none, some of them, most of them, all of them.* We employ these questions as proxies to estimate the effect of corruption by the tax authorities on tax morale. This information is not included in the questions regarding the actual bribe experiences.

Table 4 indicates that the two proxies for the impact of the performance of the tax authority are of highest statistical significance. A decrease of trust in the tax department by one unit reduces the probability of having the highest level of tax morale by 3.7 percent. On the other hand, a one unit increase in the perception of how many tax officials are involved in corruption decreases the probability of having the highest tax morale by 3.4 percent. However, the two variables do not give information about the actual experience with the tax administration and hence about the mechanism of how the tax administration might affect tax morale.

Table 4: **Tax morale and trust in tax department**

Logit Estimation	(1)	(2)
Tax morale	Marginal Effects	Marginal Effects
(1) Trust in institutions		
Tax department	−0.037***	
	(-7.20)	
(2) Perceived corruption involvement		
Tax officials		−0.034***
		(-5.17)
(3) Demographic factors		
Female	−0.024***	−0.024***
	(-4.21)	(-4.21)
Age	0.001***	0.001***
	(3.01)	(3.32)
High Education	0.038***	0.034**
	(3.09)	(2.50)
Self-employed	−0.036**	−0.040***
	(-2.49)	(-2.73)
Urban	0.018	0.020
	(1.44)	(1.63)
Wealth	0.010***	0.010***
	(3.22)	(3.23)
Country dummies included	Yes	Yes
N	33,767	32,529
Pseudo R^2	0.042	0.040

Notes: (I.)Dependent Variable: Attitudes towards the legitimacy of not paying taxes. The variable is binarily coded. 1 gives: wrong, and punishable. 0 all else.(II.) Z-values are reported in brackets. (III.) Standard errors are clustered at country level. (IV.) The reference group is given by males with post-secondary qualifications or lower who do live in rural areas and are not self-employed. (V.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

5 Channels of causality

The regression results presented so far indicate that the petty corruption experiences as well as the perceived corruption and trust in the tax department do cause significantly negative effects on the tax morale. However, it needs to be discussed in which order these observations influence tax morale and how prone corruption experiences are to reverse causation. Lavallée et al. (2008) and Cho and Kirwin (2007) employ instrumental variables provide robustness for their finding that experienced corruption significantly reduces trust in political institutions. However, people might already anticipate that they are expected to pay a bribe and hence the event of paying bribes might not be completely exogenous. Moreover, their instruments seem to be of limited validity with regard to the exclusion restriction. Additionally, Clausen et al. (2011) argue that public officials need to know the level of trust in public institutions of each individual to extract a bribe. That seems to be unlikely. They further demonstrate that reverse causation needs to be very substantial to outreach the effect of petty corruption experience on confidence in public institutions.

Due to this information we decided to consider petty corruption as an exogenous experience. We further argue that petty corruption may directly affect tax morale but also deteriorate trust in the tax department. Hence there seems to be an indirect effect by experienced corruption on the tax morale that is mediated through the tax administration. These considerations are shown in figure 1 below. To analyze the direct and indirect channels of how petty corruption might affect tax morale we employ the mediation analysis. Due to the categorical scale of the variables used in the mediation analysis we decided to use the approach by Buis (2010). This approach allows to estimate whether the direct and the indirect effect significantly affect tax morale and the share of the indirect effect at the total effect of petty corruption on tax morale. Buis (2010) further uses bootstrap to estimate standard errors. Because the estimations in this approach give no information about the significances of the individual direct effects presented in figure 1, we first estimate the coefficients of the following General Structural Estimation Model that can be written as:

$$Y = i_1 + cX + e_1 \tag{1}$$

$$Y = i_2 + c'X + b_1M_1 + b_2M_2 + e_2 \tag{2}$$

$$M_1 = i_3 + a_1X + e_3 \tag{3}$$

$$M_2 = i_4 + a_2X + e_4 \tag{4}$$

As presented in Table 5, all three channels significantly effect the tax morale. Having paid a bribe during the last 12 months increases the perceived number of corrupt tax officials as well as deteriorates overall trust in the tax department. A higher level of trust in the tax department increases the tax morale while an increase in the perceived number of corrupt tax officials as well as the experience of petty corruption significantly decreases tax morale. As discussed above, the questions of interest are whether and to what extent the effect from experienced corruption on tax morale is mediated through the perception of the tax department. The coefficients in Table 6 are estimated as odd ratios. In fact, the total effect shows that the odds of having a high tax morale for people with a bribe experience is 17 times lower as the odds for those without a corruption experience. The indirect effect shows that respondents without a corruption experience have a 5 times lower odds of having a high tax morale if they have the same level of trust in the tax administration as those who have corruption experiences. The direct effect indicates that people with corruption experiences have 12 times lower odds of having a high tax morale than those without such experience when they have the same level of trust in the tax department as those who have corruption experiences. The share of the indirect effect on the total effect is 30 percent and is statistically significant at the 1 percent level.[3] In the second method the trust in the tax department is kept at the level of those who have no experience with petty corruption. The results do not differ what is in line with predictions of Buis (2010).

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[3]The estimation of 30 percent for the share of the indirect effect is confirmed when using the seemingly unrelated regression method with multiple mediators as indicated by Preacher and Hayes (2008). However, this methodology only is applicable in case of a continuous dependent variable. We employed it as a robustness check because of the similarity of the logit and binary OLS model estimations in Table 1.

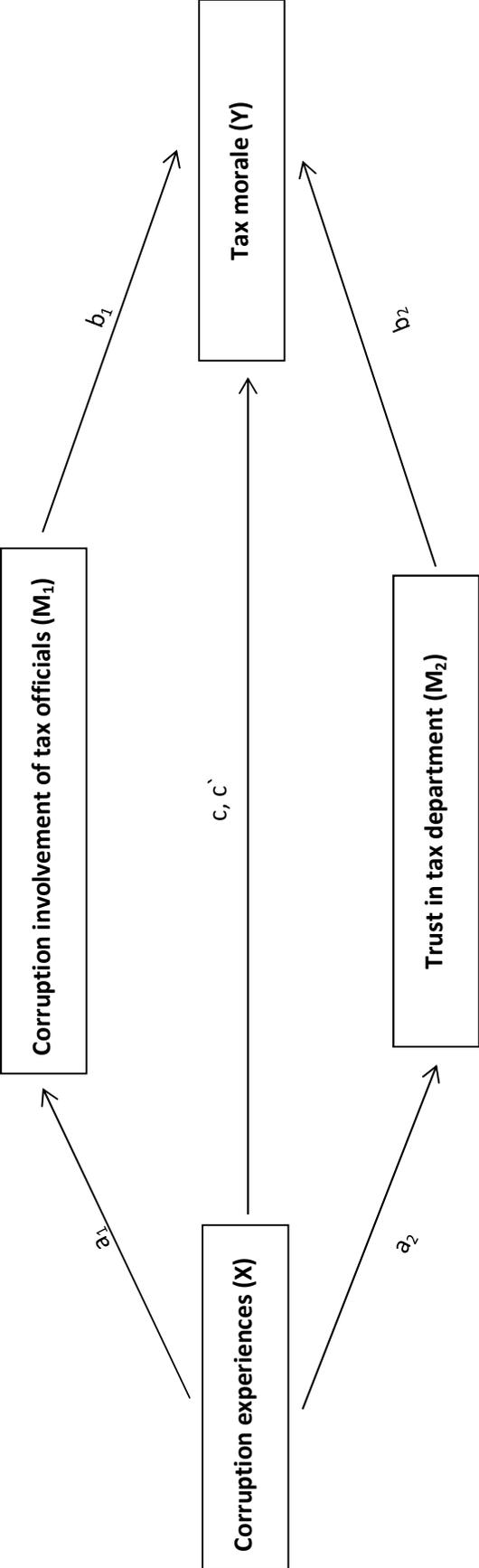**Figure 1: Structure of the mediation analysis:**

Table 5: **Mediation analysis I**

Generalized structural estimation model	Coefficient	Z-value
(1) Corrupt tax officials		
Bribe payment experience	0.668***	(32.82)
(2) Trust in tax department		
Bribe payment experience	−0.475***	(-24.56)
(3) Tax morale		
Trust in tax department	0.115***	(10.58)
Corrupt tax officials	−0.076***	(-5.64)
Bribe payment experience	−0.121***	(-5.24)
constant	0.005	(0.24)
(4) Corrupt tax officials		
/cut1	−1.853***	(-110.05)
/cut2	0.546***	(43.35)
/cut3	2.181***	(124.60)
(5) Trust in tax department		
/cut1	−1.440***	(-103.59)
/cut2	−0.122***	(-10.48)
/cut3	1.136***	(86.12)
N	42,467	

Notes: (I.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

Table 6: **Mediation analysis II**

Idecomp	Coefficient	Z-value
(1) Effect estimations		
Total effect	−0.173***	(-6.60)
Indirect effect 1	−0.053***	(-10.68)
Direct effect 1	−0.120***	(-4.42)
Indirect effect 2	−0.053***	(-10.68)
Direct effect 2	−0.120***	(-4.42)
(2) Share of indirect effects		
Method 1	0.306***	(5.16)
Method 2	0.306***	(5.16)
Average	0.306***	(5.16)
N	35,173	

Notes: (I.) Standard errors are estimated with bootstrap of 50 repetitions.(II.) Socio-demographic are variables included in the analysis.(III.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

6   Robustness checks

This section presents robustness checks. The self-reported tax compliance is employed as an alternative dependent variables.

6.1   Self-reported tax compliance

As dicussed above the Afrobarometer 5 provides information about the self-reported tax compliance. We decided to present its results and compare them with those from the indirect question. In fact, question 26 (Q26C) asks:

Please tell me whether you, personally, have done any of these things during the past year: Refused to pay a tax or fee to government.

The respondents could chose between *Yes, often; Yes, several times; Yes, once or twice; No, would if had the chance; No, would never do this.* Descriptive statistic about this question is presented in Table A3. The results indicate that about 73 percent of the respondents state that they would never evade their payment obligations. This result is quite in contrast to the estimated 50 percent of the respondents who consider evading of public contributions as wrong and punishable and hence exhibit the highest level of tax morale (see in Table A4). Hence, our observation is line with the argumentation by Ali et al. (2014) that people report a higher compliance behavior when they get asked for their own tax compliance and thus supports our approach to employ the direct measure only to check for robustness.
Table 7 presents the estimations on the self-reported tax compliance. A one unit increase in experienced corruption increases the probability of having refused to pay taxes by 3.6 percent. Moreover, being required to pay bribes to public servants in order to get access to public services reduces the probability of never refusing taxes or fees by 10 percent. Table 8 employs the different types of petty corruption. The dependent variable now is the probability of refusing to pay taxes or fees. All types of corruption experiences remain statistically significant. The magnitudes of the marginal effects are more sizable then with the indirect measure. Bribes paid to get access to the water or sewage system still has the largest effect. A one unit increase in this type of bribe experience increases the probability of refusing to pay taxes and fees by 15 percent. Additionally, the impact of the performance of public servants is remarkable. A one unit increase in the bribe experience with police officers increases the probability of refusing to contribute to the public budget by 11 percent. As discussed above, the results by the self-reported tax compliance might be treated with caution however they confirm that petty corruption has significant effects on tax morale and that political legitimacy can play an important role to explain tax evasion.

6.2   Mediation analysis

As before the mediation analysis is employed in order to analyze whether the corruption experiences have a direct and a mediated effect on the self-reported tax compliance. As presented in Table 9, the structural equation model confirms the earlier findings that higher trust in the tax department has a positive effect on the tax morale while the perceived number of corrupt tax officials as well as bribe experiences significantly deteriorate the tax morale. Table 10 shows that in both models the direct and the indirect effects have significantly negative effects on the tax morale. However, the share of the indirect, institutional effect on the total effects in this scenario only amounts to 7 percent and hence the corruption experiences explain almost the entire total effect.

Table 7: **Self-reported tax compliance and general bribe experience**

Self-reported tax compliance	No, would never refuse to pay taxes or fees	No, but would refuse to pay taxes or fees	Did refuse to pay taxes or fees
Ordered Logit Estimations	Marginal Effects	Marginal Effects	Marginal Effects
(1) Corruption experience			
Bribe paid to government officials	−0.101***	0.066***	0.036***
	(−10.10)	(9.32)	(8.03)
(2) Socio-demographic variables			
Females	0.011*	−0.007*	−0.004*
	(1.74)	(−1.74)	(−1.71)
Age	0.001***	−0.001***	−0.0004***
	(4.44)	(−4.42)	(−4.13)
Education high	0.014	−0.009	−0.005
	(1.24)	(−1.26)	(−1.21)
Self-employed	−0.015	0.010	0.005
	(−1.10)	(1.09)	(1.10)
Urban	−0.004	0.002	0.001
	(−0.36)	(0.36)	(0.37)
Wealth	0.001	−0.001	−0.0003
	(0.28)	(−0.28)	(−0.27)
(3) Country dummies included	Yes	Yes	Yes
N	37,538		
Pseudo R^2	0.037		

Notes: (I.) Dependent Variable: Self-reported tax compliance during the last year. Ordinal scale. 1 gives: No, would never refuse. 2 gives: No, but would refuse to pay taxes if having the chance. 3 gives: Yes, refused at least once. (II.) Z-values are reported in brackets. (III.) Standard errors are clustered at the country level. (IV.) The reference group is given by males with post-secondary qualifications or lower who do live in rural areas and are not self-employed. (V.) Significantly different from zero at 90% (*),95% (**) and 99% (***) confidence.

Table 8: **Self-reported tax compliance and specific corruption experiences**

Logit Estimation	(1)	(2)	(3)	(4)	(5)
Self-reported tax compliance	Marginal Effects	Marginal Effects	Marginal Effects	Marginal Effects	Marginal Effects
(1) Bureaucratic corruption					
Bribe paid to get documents	−0.094**				
	(−7.70)				
Bribe paid to police offer		−0.111***			
		(−8.67)			
(2) Service corruption					
Bribe paid to get water or sanitation			−0.151***		
			(−13.25)		
Bribe paid to get health treatment				−0.099***	
				(−7.03)	
Bribe paid for place in prim. school					−0.108***
					(−8.76)
(3) Socio-demographic variables included	Yes	Yes	Yes	Yes	Yes
(4) Country dummies included	Yes	Yes	Yes	Yes	Yes
N	37,384	37,398	37,313	37,412	37,386
Pseudo R^2	0.044	0.045	0.047	0.044	0.044

Notes: (I.) Dependent Variable: Self-reported tax compliance during the last year. Ordinal scale. 1 gives: No, would never refuse. 2 gives: No, but would refuse to pay taxes if having the chance. 3 gives: Yes, refused at least once. (II.) Z-values are reported in brackets. (III.) Standard errors are clustered at the country level. (IV.) The reference group is given by males with post-secondary qualifications or lower who do live in rural areas and are not self-employed. (V.) Significantly different from zero at 90% (*),95% (**) and 99% (***) confidence.

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Table 9: **Mediation analysis I**

Generalized structural estimation model	Coefficient	Z-value
(1) Corrupt tax officials		
Bribe payment experience	0.668***	(32.82)
(2) Trust in tax department		
Corrupt tax officials	−0.475***	(-24.56)
(3) Tax compliance		
Trust in tax department	0.063***	(-5.21)
Corrupt tax officials	−0.074***	(-4.96)
Bribe payment experience	−0.537***	(-21.46)
constant	1.182***	(33.76)
(4) Corrupt tax officials		
/cut1	−1.853***	(-110.05)
/cut2	0.546***	(43.35)
/cut3	2.181***	(124.60)
(5) Trust in tax department		
/cut1	−1.440***	(-103.59)
/cut2	−0.122***	(-10.48)
/cut3	1.136***	(86.12)
N	42,467	

Notes: (I.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

Table 10: **Mediation analysis II**

Idecomp	Coefficient	Z-value
(1) Effect estimations		
Total effect	−0.575***	(-22.31)
Indirect effect 1	−0.039***	(-7.75)
Direct effect 1	−0.536***	(-21.41)
Indirect effect 2	−0.039***	(-7.75)
Direct effect 2	−0.536***	(-21.41)
(2) Share of indirect effects		
Method 1	0.068***	(7.85)
Method 2	0.068***	(7.85)
Average	0.068***	(7.85)
N	35,173	

Notes: (I.) Standard errors are estimated with bootstrap of 50 repetitions.
(II.) Significantly different from zero at 90% (*), 95% (**) and 99% (***) confidence.

7   Conclusion

This paper analyzes how petty corruption influences tax morale. It's focus is on the micro-economic level. The results show that personal corruption experiences have a significantly negative impact on tax morale in sub-Saharan African countries. In particular, bribing police officers and payments to get access to water or sanitation negatively affect tax morale. The strong negative effects of the number of corrupt tax officials as well as the significant effects of trust in tax departments imply that the performance of the tax authorities plays a key role for the acceptance of paying taxes and hence the improvement of the tax revenues. The mediation analysis has shown that petty corruption also has an indirect effect on tax morale that is mediated via confidence in the tax administration. We also employed an indirect measure for the personal tax compliance as our main variable and carefully interpreted the results of the direct measure which showed more sizable effects. Whatever measure is employed, petty corruption appears to have a significant impact on tax morale and thus may affect tax compliance. Some 20 percent of the respondents stated that they would evade taxes if they had the chance. Hence, petty corruption appears to be a serious obstacle to attempts of increasing the tax bases that has so far been largely ignored by the literature. Moreover, the survey only asks about five types of public goods. Descriptive statistics from the fourth wave, where 3 types of public goods are included, shows that the amount of respondents increases the more public goods are included in the analysis and hence the effect of petty corruption on tax morale might be more severe.

The sample focuses 31 countries from sub-Saharan Africa. We refrain from generalization of our results because not all countries from that region are included. However, we believe that our results give an indication that petty corruption is an important problem for economic development in that region. Future survey would also profit from giving information about the amount of the bribes paid to corrupt public servants. Finally, there are only very limited information about the taxes and fees paid by the individuals. This information would also be of importance to get more distinguished results.

All in all, our paper provides significant results to fill the gap regarding the impact of individual corruption experiences on tax morale and hence the willingness to make contributions to the public budget. We complement earlier research on taxation in sub-Saharan Africa by Ali et al. (2014) who considered corruption as part of political legitimacy that is one of the major theories to explain tax compliance. We would conclude that the tax reforms in Sub-Saharan Africa should be complemented by activities to reduce corruption at the smaller scale level because the phenomenon of petty corruption prevents people from paying their dues.

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Appendix

Table A1: **Descriptive statistics**

Variable	Mean	Min	Max	Observations
(1) Socio-economic characteristics				
Female	0.50	0	1	45,599
Age	37.09	18	105	45,184
Education High	0.11	0	1	45,599
Education Medium	0.50	0	1	45,599
Education Low	0.38	0	1	45,599
Self-employed	0.49	0	1	43,560
Urban	0.37	0	1	44,904
Wealth	3.65	0	7	41,592
(2) Corruption experiences				
Bribe experiences	1.33	0	18	45,599
(3) Trust in institutions				
Tax department	2.49	1	4	40,376
(4) Perceived corruption involvement				
Tax officials	2.43	1	4	38,365

Table A2: **Variables included in wealth index**

Variable	Code	Code
Personally owns a radio	1 = Yes	0 = No
Personally owns a TV	1 = Yes	0 = No
Personally owns a motor vehicle, car or motorcycle	1 = Yes	0 = No
Personally owns a mobile phone	1 = Yes	0 = No
Source of water	1 = Inside the house or the compound	0 = Outside the compound
Toilet or latrine	1 = Inside the house or the compound	0 = Outside the compound or not available
Roof material	1 = Metal, tin or zinc, tiles, shingles	0 = Tatch or grass, plastic sheets, asbestos, multiple materials

Table A3: **Self-reported tax compliance**

Refused to pay tax or fee to the government during the past year	N	Percent
No, would never do this	32,218	73.41
No, but would do	8,151	18.57
Yes, once or twice	1,375	3.13
Yes, several times	1,139	2.60
Yes, often	1,007	2,29
Total	43,890	100

Table A4: **Attitudes towards other peoples decision not to pay their taxes (in percentage of total)**

Country	Wrong and punishable	Wrong but understandable	Not wrong at all	Observations
Benin	51.47	43.73	4.79	1189
Botswana	59.67	33.64	6.69	1091
Burkina Faso	43.07	46.63	10.30	1126
Burundi	63.12	19.92	16.96	1185
Cameroon	66.17	30.22	3.61	1135
Côte d'Ivoire	56.11	38.27	5.62	1121
Cape Verde	38.11	40.65	21.23	1121
Ghana	64.24	29.63	6.12	2352
Guinea	54.28	29.23	16.49	1146
Kenya	53.98	34.84	11.18	2262
Lesotho	43.45	22.42	34.13	1008
Liberia	64.09	26.31	9.61	1072
Madagascar	42.34	37.60	20.06	1032
Malawi	27.99	43.12	28.89	2347
Mali	65.63	30.09	4.27	1193
Mauritius	73.13	24.23	2.64	1176
Mozambique	39.86	40.86	19.27	1899
Namibia	51.10	39.79	10.11	1137
Niger	63.68	25.04	11.28	1126
Nigeria	41.25	48.34	10.41	2344
Senegal	56.32	39.49	4.19	1170
Sierra Leone	55.46	38.13	6.41	1154
South Africa	57.31	37.27	5.42	2270
Swaziland	59.36	36.94	3.69	1164
Tanzania	46.53	32.85	20.62	2347
Togo	43.58	48.01	8.41	1129
Uganda	32.38	47.94	19.68	2307
Zambia	44.16	47.78	8.05	1105
Zimbabwe	38.45	51.01	10.54	2286
All countries	50.08	37.61	12.31	42,975

Table A5: Bribe experiences (in percentage of total)

Country	Get a document	Get water or sanitation	Get a health treatment	Solve problem with police	Get a place in primary school	Observations
Benin	13.17	6.25	7.17	7.42	7.00	1200
Botswana	1.75	0.50	0.50	3.00	0.58	1200
Burkina Faso	12.50	2.75	6.75	10.25	9.42	1200
Burundi	14.83	4.75	7.33	14.08	7.67	1200
Cameroon	25.25	13.92	24.75	25.17	16.42	1200
Côte d'Ivoire	20.25	7.92	16.75	17.17	14.17	1200
Cape Verde	3.39	1.90	2.81	1.41	0.99	1208
Ghana	10.79	7.58	8.13	11.33	6.04	2400
Guinea	19.33	16.58	41.48	20.50	28.92	1200
Kenya	38.77	17.38	27.55	31.85	17.05	2399
Lesotho	15.54	3.09	2.76	5.43	1.34	1197
Liberia	23.10	15.51	32.53	27.02	26.19	1199
Madagascar	14.42	3.33	14.50	6.17	8.50	1200
Malawi	4.11	3.37	3.49	5.94	3.07	2407
Mali	8.25	2.75	5.92	7.42	4.33	1200
Mauritius	1.83	0.50	0.33	2.50	0.42	1200
Mozambique	21.29	13.88	21.88	14.92	18.79	2400
Namibia	2.58	1.00	1.83	2.58	2.08	1200
Niger	9.58	3.50	18.83	13.58	4.33	1200
Nigeria	17.92	10.21	14.83	19.58	9.29	2400
Senegal	19.08	6.17	8.83	4.08	4.42	1200
Sierra Leone	34.62	25.38	40.25	36.47	32.44	1190
South Africa	5.42	5.79	7.29	6.34	5.50	2399
Swaziland	12.50	2.17	2.58	8.42	3.50	1200
Tanzania	15.88	9.83	24.33	13.17	8.71	2400
Togo	19.42	4.92	12.92	13.67	10.75	1200
Uganda	20.21	16.92	29.96	20.83	17.46	2400
Zambia	10.08	4.00	6.50	8.00	7.83	1200
Zimbabwe	21.25	7.92	11.00	23.00	8.58	2400
All countries	15.59	8.22	14.53	13.89	10.00	45,599