



UNITED NATIONS
UNIVERSITY

UNU-MERIT

Working Paper Series

#2019-042

Corruption and tax morale in Africa

Amadou Boly, Maty Konte and Abebe Shimeles

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)

email: info@merit.unu.edu | website: <http://www.merit.unu.edu>

Boschstraat 24, 6211 AX Maastricht, The Netherlands

Tel: (31) (43) 388 44 00

UNU-MERIT Working Papers

ISSN 1871-9872

Maastricht Economic and social Research Institute on Innovation and Technology

UNU-MERIT

UNU-MERIT Working Papers intend to disseminate preliminary results of research carried out at UNU-MERIT to stimulate discussion on the issues raised.

Corruption and Tax Morale in Africa

Amadou Boly*, Maty Konte† and Abebe Shimeles‡

Abstract

This paper analyses the effect of the quality of governance (proxied by perceived corruption) on attitude towards paying tax. Using the Afrobarometer surveys from 36 African countries over the period 2011–2015, we find that low perception of corruption of different levels of the Executive branch (President Office, Government Officials or Tax Authorities) has a significant and positive impact on tax morale. To account for possible reverse causality between a citizen's perception of governance quality and attitude towards tax payment, we also propose an IV approach, using the ethnicity of the country's leader as instrument for perceived level of corruption. The IV results confirm that an individual's positive perception of governance has a positive impact on its willingness to pay tax.

Key words: Corruption; Taxation; Governance; Africa

JEL Classification: D73; H71; O55

* African Development Bank, a.boly@afdb.org.

† United-Nations University (UNU-MERIT), konte@merit.unu.edu.

‡ African Development Bank, a.shimeles@afdb.org.

We thank participants in the AERC Biannual Research Workshop (December 2017) in Arusha (tanzania) for constructive comments. We would also like to thank Betty Y. Camara, Gideon Ndubuisi and Zackary Seogo for excellent research assistance.

1. Introduction

African countries have stepped up efforts to increase government revenues in recent years, particularly through taxation.¹ But there is a structural limit to these efforts due to the prevalence of “hard-to-tax” sectors (e.g. small/informal businesses or subsistence farmers) in many countries in Africa. This situation poses substantial enforcement problems and provides ample opportunities for non-compliance. In such a situation, understanding and promoting tax morale to enhance voluntary compliance, becomes very important.

The main objective of this paper is to study the relationship between governance and tax morale. The latter can be defined broadly as nonpecuniary factors (intrinsic motivation, guilt, shame or reciprocity) that encourage voluntary tax compliance (Luttmer and Singhal. 2014). Specifically, we investigate how the public’s perception of corruption at different level of the Executive branch of the government (President Office, Government Officials and Tax Authorities) may affect individual tax morale, using a large sample that combines Afrobarometer surveys collected in 36 African countries between 2011 and 2015.² We find that low level of perceived corruption at different levels of the Executive branch is significantly associated with high tax morale.

A potential problem in studying the effect of governance on tax morale relates to reverse causality. On the one hand, the psychological tax contract literature posits that tax compliance is influenced by government policy, tax authorities’ behaviour, and state institutions (Feld & Frey, 2007). On the other hand, the “revenue bargaining” theory argues that the taxpaying process can play a crucial role in the emergence of responsive and effective governments (see Moore 2008). Our paper attempts to address this possible endogeneity between individuals’ perception of corruption and their willingness to pay tax, using an IV approach.

We use the ethnicity of Presidents or Heads of Government of each country as instrument for perceived corruption. Our assumption is that individuals from the same ethnic group as the

¹ Domestic resource mobilisation (DRM) was also identified as the first of six “leading actions” in the Consensus declaration of the 2002 Monterrey Conference on Financing for Development (FFD). The 2015 Addis Ababa Action Agenda on FFD reaffirmed the urgent need to increase DRM to finance the Agenda 2063 and Sustainable Development Goals (SDGs) in the context of the Vision 2030.

² The executive branch carries out and enforces laws. In a presidential system, it typically includes the President, the Cabinet, executive departments, independent agencies, and other boards, commissions, and committees. In this paper, the President Office would constitute the higher level, while Government Officials (which include Tax Authorities) would constitute the lower level.

President or Head of Government tend to have favourable perception of the Executive's governance, as they may derive "psychic benefits" from seeing him/her in office (Chandra, 2004; Franck and Rainer, 2012 ; De Luca et al, 2018). In contrast, an individual would prefer to avoid paying their taxes (see e.g. Slemrod, 2007), whether or not the President or Head of Government is from the same ethnic group. The IV results confirm that an individual's positive perception of governance has a positive impact on its willingness to pay tax.

The rest of the paper is organised as follows. The next section presents a review of the literature on tax compliance, institutions and governance; and highlights the contributions of our paper relative to previous literature. Section 3 describes the data, while Section 4 discusses the empirical approach. We present the results in Section 5 and make concluding remarks in Section 6.

2. Literature Review

The deterrence approach to taxation suggests that tax compliance is negatively associated with the probability of detection and the severity of punishment, *à la* Allingham and Sandmo (for a review see Sandmo, 2005). In contrast, the psychological tax contract strand sees the act of tax paying as a quasi-voluntary one. It portrays the existence of the state as a contractual relationship between the elected and the electorate wherein the later becomes tax compliant as long as the political process is perceived to be fair, legitimate and public goods are provided. In this case, being tax compliant is influenced by government policy, tax authorities' behaviour, and state institutions (Feld & Frey, 2007).

The psychological tax contract argument has been corroborated at the individual level in a series of cross-country studies comprising both developing and developed countries (see e.g. Torgler, 2006; Frey & Torgler, 2007; Richardson, 2008; Anderson, 2017); or single country analyses (see e.g. Torgler & Schneider, 2005; Alm & Torgler, 2006; Timmons & Garfias, 2015). Most of these studies uses the World Value Surveys (WVSs) to measure tax morale and country-level measures of governance. In the present paper both tax morale and governance data were obtained at the individual level permeating greater heterogeneity and variations.

Kirchler et al. (2008) combined the deterrence and psychological tax contract models into the "slippery slope" framework arguing that trust in authorities increases voluntary compliance, whereas the power of tax authorities to enforce tax payments determines involuntary

compliance. The power of authorities refers to taxpayers' perception of tax officers' capacity to detect tax evasion, while trust in authorities stems from citizens' general belief that the tax authorities are benevolent and work beneficially for the public welfare. The power of the government and tax-payers' trust in government (or tax authorities) both independently and jointly determine tax compliance level.

The review of the theoretical literature above suggest that, while enforcement remains a key driver of compliance, tax morale can play a significant role in tax compliance decisions. A few studies provide empirical evidence on the importance of tax morale. For example, Kleven et al. (2011) distinguishes between third-party and self-reported income in a tax audit study in Denmark. They found that compliance rate for self-reported income was about 83% for total positive income, 95% for capital income, 86% for stock income, and 82% for self-employment income.

Dwenger et al. (2014) conducted a field experiment on local church tax payment in Germany. This tax (which can be combined with donation through overpayment) is legally binding but the church does not exercise its auditing right; giving rise to a zero deterrence situation. They found that 20% of individuals pay at least their true taxes owed in the zero deterrence baseline, suggesting substantial intrinsically motivated compliance is substantial; although a majority behave as rational, self-interested taxpayers. They also find evidence suggesting that deterrence has strong compliance effects on extrinsically motivated payers, but insignificant effects on the intrinsically motivated.

Kogler et al. (2013) provide also empirical support for the "slippery slope" framework in four European countries, by presenting participants with different scenarios of trust and power. Likewise, Kastlunger et al. (2013) surveyed 389 self-employed Italian taxpayers and entrepreneurs and found that trust is positively related to voluntary tax compliance and that coercive power and legitimate power are correlated with enforced compliance; with the latter leading to increased evasion. A laboratory experiment and an online experiment also show that trust and power, modelled by describing fictive situations, positively influence tax payments (Wahl, Kastlunger and Kirchler, 2010). Again these studies point to the importance of tax morale (here trust) in compliance decisions.

In an African context, using a field experiment approach, Abebe et al. (2018) find that appealing to the tax morale promotes compliance but slightly less than the threat of audit. Ali et al. (2014) find that tax compliance attitude is positively correlated with the provision of public services (a proxy for good governance) in Kenya, Tanzania, Uganda and South Africa, using the 2011–12 Afrobarometer survey data. Likewise, using the Afrobarometer surveys (2011/2013), Jahnke (2017) finds that bribe payment is negatively correlated to tax morale. The previous two studies focus on correlation and do not attempt to address the reverse causality bias, between an individual's perception of governance quality and his/her attitude towards tax payment. In contrast, our paper attempts to address the causality issue explicitly (see details in the Result section).

3. Data

This section presents the data used to quantify attitude towards tax payment and perception of governance quality, including the control variables that are included in our regressions.

a. Attitude towards tax payment

We use data from Afrobarometer surveys, which is a collection of nationally representative surveys that provide a series of information on African citizens' opinions on economic, social and political aspects in 36 African countries. To measure attitudes towards taxation, we rely on two questions related to people's attitudes towards tax payment in round 5 (collected between 2011 and 2013) and round 6 (collected between 2014 and 2015) of the surveys.

The literature has proposed different measures of tax compliance ranging from measures that captures the actual action of paying taxes to measures that capture individuals' attitudes towards taxation - the so-called tax morale - which relates to voluntary tax compliance, an aspect deterrence models have typically pushed to the residual (see Feld & Frey, 2007). In this paper, we focus on tax morale, as questions on actual tax payment behaviour may be biased if people are not willing to share such information. It is worth mentioning that an implicit assumption in studies like ours is that self-reported attitudes toward taxation would translate into actual compliance behaviour. Such an assumption is however difficult to verify, given the difficulty of linking survey questions with actual behaviour. Nevertheless, some existing studies report a strong negative correlation between the level of tax morale and the extent of tax non-compliance (Williams & Martinez, 2014).

To measure tax morale, we use the question of the surveys that asks citizens whether they agree or disagree that the tax authorities always have the right to make people pay taxes. We create a variable “Right to make people pay taxes”, which takes value 1 for respondents who agree with the statement, and 0 otherwise. For discussion purposes only, we will refer to cases where “Right to make people pay taxes” is 1 as high tax morale; and cases where “Right to make people pay taxes” is 0 as low tax morale.

To measure people behaviour towards tax payment, we use the question that asks interviewees whether they have refused to pay taxes or fee to government in the last year. The possible responses are “yes”, “no, would never do this” and “no, but would do if had the chance”.³ It is worth noting that it may be hard to rely on the information that comes from this question, especially for respondents who claim that they have never refused to pay taxes. We define “Never refused to pay taxes” as a dummy variable that takes the value 1 if the respondent never refused to pay taxes or fee to government; and 0 otherwise.⁴

Table 1 below provides some summary statistics. The first column named “Disagree that citizens must pay taxes” contains the percentage of people who disagree that the tax authorities have the right to make people pay taxes.

[Table 1 about here]

Table 1 shows that on average around 26% of citizens disagree that tax authorities have the right to make people pay taxes. The minimum value reported is 12.4% for Sierra Leone, while Togo has the highest percentage, at 46%. Notably, there are significant differences across countries and we can observe a high standard error of around 8.2%. This indicates that the determinants of tax compliance may extend beyond individual socio-economic characteristics. As a result, this analysis also includes country-level variables such as quality of governance, and some indicators of development to test how contextual variables can affect tax morale.

The second column “Has or would refused to pay taxes” shows, for each country, the percentage of citizens who have refused to pay taxes in the last twelve months or would do so if they had the opportunity. The overall average is 27% of the respondents. Mauritius records the

³ Although people can state the number of times that they have refused to pay taxes, we group all “yes” responses together.

⁴ When the respondents do not answer the question, refuse to answer or answer “I don’t know” to the question, we code it as missing values.

lowest value at 8.7%, while Sao Tome and Principe has the highest value at 44.3%, followed by Togo which was 42%.

b. Measuring perception of corruption

To assess the effect of perceived governance quality on tax compliance, we consider three questions from the Afrobarometer surveys on citizens' perception of corruption in the country's Executive. The first question asks about the level of corruption in the President/Prime Minister and Officials in his Office: *"How many of the following people do you think are involved in corruption, or haven't you heard enough about them to say: The president and the officials in his office?"* The second one asks a similar question about Government Officials, and the third one asks specifically about Tax Officials (e.g. Ministry of Finance officials or Local Government tax collectors). The possible answers for each of these questions are 'none of them', 'some of them', 'most of them', and 'all of them'.

Table 2 below presents summary statistics. The numbers indicate a high level of perceived corruption. For instance, only 18 percent of the people interviewed think that none of the officials in the President's Office are corrupt. However, 49 percent responded that at least some of them are corrupt, and roughly 32 percent responded that most or all of them are corrupt. The perceived level of corruption is even higher for government officials and tax officials; only 9 percent of the respondents attested that none of the government officials are corrupt, and just 11 percent said the same about tax officials.

For the empirical analysis, we create three dummy variables: 'Perceived corruption of President's Office', 'Perceived corruption of government officials', and 'Perceived corruption of tax officials'. Each of them equals 1 if a respondent's answer is 'none' and 0 otherwise. Those who refused to respond or answered 'I don't know' are coded as missing. Because of high correlation between these measures of perception of corruption, we entered them separately in the estimations.

[Table 2 about here]

c. Individual and country level control variables

In addition to the measures of perceived corruption, we include a series of individual socioeconomic characteristics that may affect people's willingness to pay taxes. Table 3 shows

the list of individual variables with summary statistics. Among them, bribe payments made to officials measure people's experience of corruption. We use two questions from the surveys. One asks whether, over the last 12 months, the respondent paid a bribe to government officials to get an official document or permit. The second question asks whether the respondent paid a bribe to avoid a problem with the police. There is a high incidence of bribe payments in our sample. At least 87 percent of the people reported paying a bribe for a document or permit, and roughly 90 percent paid a bribe to the police to avoid problems. This high incidence of "actual" bribery is in line with the high level of perceived corruption among public officials, as shown in Table 2.

We also take into account the gender, education, age, geographical location, and employment status of the respondents. To measure access to information, we refer to the survey questions that ask interviewees how often they get news from sources such as the radio, TV, newspapers, and the internet. Access to information make it more likely to citizens will be informed about abuses of power and other illegal activities, so that governments can be held accountable and possibly changed through voting.

Access to basic social services and infrastructure also could influence citizen's perception of tax compliance. To capture this, we created a community infrastructure variable to measure the quality of infrastructure in the primary sampling unit where people live. In the surveys, the interviewers reported whether the following items are present in Primary Sampling Unit (PSU) where the interviews take place: an electricity grid, piped water, sewage systems, paved roads, and cell phone services. They also indicated if there is a post office, school, police station, health clinic, and market in the PSU or within walking distance. Using all these pieces of information and factor analysis method, we construct the variable 'Availability of infrastructure in PSU' to control for infrastructure provision in the place of residence.

Furthermore, we control for a number of country-level variables from different sources to account for country differences. "Control of Corruption" from the Worldwide Governance Indicators (WGI) captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption; as well as "capture" of the state by elites and private interests. "Democracy" from the Polity IV project is included to measure "institutionalised democracy". It ranges from 0 to 10, with a higher value indicating greater democracy. Additional measures from the World Development Indicators (WDI) are include

gross domestic product (GDP) per capita to control for differences in development among countries, urbanisation rate, and trade openness (defined as the sum of exports and imports relative to the GDP).

[Table 3 about here]

4. Empirical Approach

To assess the effect of perceived corruption on tax morale, we use a Probit model to estimate the probability that an individual i living in a country c has a positive attitude towards tax payment. The equation of estimation takes the following form:

$$Probability(y_{ic}) = \beta_0 + \beta_1 corruption_{ic} + \beta_2 X_{ic} + \beta_3 W_c + time + \mu_c + \varepsilon_{irc} \quad (1)$$

Where y_{ic} represents the dummy variable “Right to make people pay taxes”, which takes value 1 for respondents who agree with the statement that the tax authorities always have the right to make people pay taxes, and 0 otherwise. For robustness check, we will run our estimations using the dummy “Never refused to pay taxes” that takes the value 1 if the respondent has or would never refused to pay tax, and 0 otherwise.

The variable $Corruption_{ic}$ measures perceived level of corruption of the President’s Office, Government Officials or Tax Officials, depending on the specification. The corruption variable equals 1 if the respondent thinks that none of the President/Prime Minister, Government Officials, or Tax Officials are involved in corruption; 0 otherwise. The vector X denotes a set of respondent’s individual socio-economic characteristics which are gender, education, age bracket, employment status, geographical location (rural or urban), and access to information. Because the quality of public service may affect willingness to pay taxes, we control for infrastructure provision in the localities where the respondents live. In the vector W , we have a number of country level variables to control for country differences. The variable $Time$ controls for time fixed-effect, while is $\varepsilon_{irc} \sim N(0,1)$ is the error term.

Because of possible reverse causality between attitude towards tax payment and perception of corruption, we propose an instrumental variable approach with perception of corruption treated as endogenous.⁵ We use as instrument a dummy “Same ethnic group as President” that indicates

⁵ The IV approach is implemented using the *BIPROBIT* command in Stata 15.

if the respondent is from the same ethnic group as the President or Head of Government. The equations of estimation take the following form:

$$Prob(y_{ic}) = \beta_0 + \beta_1 Corruption_{ic} + \beta_2 X_{ic} + \beta_3 W_c + time + \mu_c + \varepsilon_{irc} \quad (2)$$

$$Prob(Corruption_{ic})$$

$$= \alpha_0 + \alpha_1 Ethnic_pres_{ic} + \beta_2 X_{ic} + \beta_3 W_c + time + \mu_c + e_{irc} \quad (3)$$

We use the ethnic group of the President or Head of Government of each country as instrument.⁶ Our assumption is that individuals from the same ethnic group as the President or Head of Government would tend to have favourable perception of the Executive's governance, as they may derive "psychic benefits" from having a co-ethnic leader in office (Chandra, 2004; Franck and Rainer, 2012 ; De Luca et al, 2018). These "psychic benefits" imply that members of the leader's ethnic groups will tend to support him/her unconditionally (Franck and Rainer, 2012), including through positive appreciation of governance quality. In contrast, being from the same ethnic group as the President or Head of Government should not affect an individual's tax morale because the individual would bear the full financial burden of tax payment, without being able to exclude free-riders from benefiting from public goods funded by his/her taxes. As a result, individuals would prefer to avoid paying their taxes (Slemrod, 2007), whether or not the President or Head of Government is from the same ethnic group.

5. Empirical Results

In this section, we start by providing the results from the simple Probit regression, before turning to the IV approach.

5.1. Simple Probit

We start our empirical analysis by investigating the effects of the different measures of perceived corruption on the probability that a citizen would agree that the tax authorities always have the right to make people pay taxes, using a simple Probit regression. To keep as many observations as possible in columns (1) to (3) of Table 4, we only control for the perceived corruption variables and exclude individual and country-level variables. In columns (4) to (6), we add a series of individual-level variables discussed in Section 3.C. Finally, in columns (7) to (9), we control for

⁶ We collected information on the ethnic group of Presidents or Heads of Government of each country and matched it with the ethnic group of the respondent. It is worth noting that, for some countries, the Afrobarometer surveys do not provide information about the respondents' ethnic groups.

country-level variables, namely control of corruption, democracy, GDP per capita, urbanisation rate, and trade openness.

[Table 4 about here]

The estimated coefficients on the perceived level of corruption of the President's Office, Government Officials or Tax Officials, are all positive and statistically significant at the 1 percent significance level; suggesting a positive relationship between corruption perception and tax morale. In other words, an individual who thinks that none of the officials in the President's Office are involved in corruption has a higher probability to accept that tax authorities always have the right to make people pay taxes, than an individual who perceives that some, most, or all the officials in the President's Office are corrupt. These results extend to perception of corruption among Government Officials or Tax Officials. These findings are not also affected by the inclusion of individual characteristics (columns 4 to 6) or country-level variables (columns 7 to 9).

Turning to the remaining variables included in the estimations, individuals' experience of bribe payment in exchange for official documents or for avoiding problems with the police is significant and negatively associated tax morale. We find a positive and significant relationship between high tax morale and the following variable: being a woman, having completed secondary education or higher level of education, being employed and being able to access information. Older respondents have a higher tax morale than people younger than 25 years. As expected, the presence of necessary infrastructures in the primary sample unit where the individuals are located positively affects their tax morale.

For country-level variables, we find that higher control of corruption leads to a higher likelihood of having high tax morale, in line with the individual corruption perception results. Likewise, Frey and Torgler (2007) show that better quality of institutions such as high level of control of corruption is positively associated with tax morale in Central and Eastern Europe. Both urbanisation rate and trade openness also significantly increase the likelihood of high tax morale. However, we did not find evidence that citizens in more democratic countries have a higher tax morale.

5.2. IV Approach and Robust Check

As noted earlier, there can be reverse causality between attitude toward tax payment and perception of corruption. In order to address this potential reverse causality bias, we propose an instrumental variable approach using the ethnicity of the President or Head of Government as an instrument for perception of corruption (see section 4 for details).

The IV estimation results are reported in Table 5. These include both the results for the first-stage corruption equation (see columns (1), (3), and (5)) and the second-stage tax compliance attitude equation (see columns (2), (4), and (6)). The results for the corruption equation show a positive and statistically significant coefficient on the dummy related to ethnic group of the president. This indicates that people with the same ethnic group as the country leader have a higher probability of indicating that the President's Office, Government Officials or Tax Officials are not corrupt; in line with "psychic benefits" hypothesis.

[Table 5 about here]

For individual-level control variables, paying a bribe decreases the probability of agreeing with the statement that the President's Office, Government Officials or Tax Officials are not corrupt. Education, living in an urban area, being employed, and having access to information also have negative effects on the probability of perceiving the President's Office, Government Officials or Tax Officials as incorrupt.

Columns (2), (4), and (6) of Table 5 show the second-stage estimation results for the tax morale equation. The estimated coefficients of the perceived level of corruption of the President's Office, Government Officials or Tax Officials, remain all positive and statistically significant at the 1 percent level; thereby suggesting that perceived incorruptness has a positive effect on the probability that a citizen would agree with the statement that tax authorities always have the right to make people pay taxes; in line with the findings of the simple Probit regression model.

Finally, for robustness check, we repeat our estimations in Tables 6 and 7, using the variable "Never refused to pay taxes" as the dependent variable. The results obtained are similar to the ones reported in Tables 4 and 5. Specifically for the IV estimations, having the same ethnicity as the President or Head of Government increases the probability of perceiving the President's Office, Government Officials or Tax Officials as incorrupt. In turn, perceiving the President's

Office, Government Officials or Tax Officials as incorrupt increases the probability that a citizen has or would never refuse to pay taxes.⁷

6. Conclusion

How to increase domestic resource mobilisation through taxation has been a key policy concern in African countries, given formidable development financing needs. However, according to the Afrobarometer surveys conducted over the period 2011–2015, on average, 27% of citizens in Africa have refused to pay taxes and around 26% of agree that the tax authorities do not have the right to make people to pay taxes. These figures vary significantly across countries and rise to 42% and 46%, respectively, in a country like Togo, for instance.

With the prevalence of “hard-to-tax” sectors, positive attitude towards taxation and voluntary compliance can be instrumental for increased revenue mobilisation in African countries. This paper provides evidence of a positive and significant relationship between perceived corruption of the President’s Office, Government Officials, or Tax Officials, and tax compliance attitude. Specifically, a citizen who thinks that none of the President’s Office, Government Officials or Tax Officials are involved in corruption has a significantly higher probability of having positive attitude towards paying taxes, than an individual who perceives that some, most, or all the officials in the President’s Office are corrupt.

In contrast to previous papers, we attempt to establish a causal relationship between perceived corruption and tax morale. This causal relationship is derived using an IV approach, where we use membership to President or Head of Government’s ethnic group as an instrument for perceived level of corruption. As hypothesised, we find that citizens belonging to the country leader’s ethnic group have a higher probability of indicating that the President’s Office, Government Officials or Tax Officials are incorrupt. The IV results also confirm a positive and significant relationship between perceived corruption and tax morale.

⁷ While there is a large literature on the dangers of weak instruments, there is still no available test for the cases where the dependent, endogenous explanatory and instrumental variables are binary. Nevertheless, we conducted Smith-Blundell test of exogeneity and find that the null hypothesis that the corruption variables are exogenous cannot be rejected in general. For the variable “Right to make people pay taxes”, the p-values are 0.137 for President’s Office; 0.051 for Government Officials; and 0.078 for Tax Officials. “Never refused to pay taxes”, the p-values are 0.301 for President’s Office; 0.327 for Government Officials; and 0.234 for Tax Officials. Note that the Smith-Blundell test normally considers a continuous endogenous variable that is estimated by OLS.

In summary, our result suggests that besides the enforcement power of tax authorities, other factors such as the quality of governance can influence tax morale. Better governance, by showing that the executive branch is acting beneficially to public welfare, can provide incentives for voluntary compliance and more positive attitude towards taxation; thereby resulting in higher tax revenues. This can be achieved by fighting corruption or promoting transparency and accountability mechanisms (including international initiatives such as the Extractive Industries Transparency Initiative) in government, as well as the provision of quality public goods and services.

Tables

All data come from the Afrobarometer surveys (round 5 and 6), unless otherwise specified.

Table 1: Citizens attitude towards tax payment in Africa

Country	“Disagree that citizens must pay taxes” (%)	“Has refused or would refuse to pay taxes” (%)
Algeria	34.63	20.41
Benin	40.27	36.51
Botswana	13.93	22.16
Burkina Faso	33.17	27.26
Burundi	32.15	21.53
Cameroon	26.09	24.34
Cape Verde	34.29	27.07
Côte d'Ivoire	29.90	26.88
Egypt	25.03	23.47
Gabon	22.35	31.99
Ghana	12.89	26.34
Guinea	37.16	31.12
Kenya	25.78	28.22
Lesotho	33.33	28.87
Liberia	16.73	27.59
Madagascar	30.91	32.94
Malawi	25.79	23.65
Mali	20.09	12.43
Mauritius	24.46	8.67
Morocco	29.07	24.36
Mozambique	28.53	34.63
Namibia	22.38	34.30
Niger	16.27	12.93
Nigeria	34.15	34.69
Senegal	22.69	25.12
Sierra Leone	12.39	24.52
South Africa	24.13	25.81
Sudan	37.12	37.31
Swaziland	14.44	22.30
Sao Tomé and Príncipe	21.20	44.31
Tanzania	26.30	38.45
Togo	45.98	41.99
Tunisia	15.96	10.66
Uganda	29.31	32.36
Zambia	22.36	22.66
Zimbabwe	20.66	21.66
Mean	26.16	26.93
Std. Dev.	8.16	8.22
Min	12.39	8.67
Max	45.98	44.31

Table 2: Perception of corruption of executive branch

	President's Office	Government officials	Tax officials
None	18.05	9.4	11.44
Some	49.01	48.69	46.45
Most	21.11	30.37	28.73
All	11.83	11.54	13.39
Total	100	100	100

Notes: Answers to the question 'How many of the following do you think are involved in corruption'.

Table 3: Description of individual control variables

Variable	Categories	Proportion (%)
Ever pay bribe for a document or permit?	Yes	87.2
	No	12.8
Ever pay bribe to the police?	Yes	89.5
	No	10.6
Gender	Female	50.03
	Male	49.97
Education	Primary completed	35.68
	Secondary	14.86
	Post-secondary	11.89
	Some primary or No Formal education	38.57
Age	<36	29.63
	>35	44.77
	<26	25.6
Location	Urban	38.45
	Rural	61.55
Employment status	Employed	36.2
	Unemployed	26
	Inactive	37.9
Access to information (radio, TV, newspapers)	Yes	89.8
	No	10.2

**Table 4: Authorities always have the right to make people pay taxes
(Marginal Effects, Probit: 1 if agreed)**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Perceived corruption in President's Office (1 if none)	0.032*** (0.004)			0.038*** (0.004)			0.036*** (0.004)		
Perceived corruption of government officials (1 if none)		0.021*** (0.005)			0.025*** (0.005)			0.022*** (0.006)	
Perceived corruption of tax officials (1 if none)			0.056*** (0.005)			0.061*** (0.005)			0.061*** (0.005)
Has paid bribe to obtain documents (1 if yes)				-0.036*** (0.005)	-0.035*** (0.005)	-0.031*** (0.005)	-0.041*** (0.005)	-0.039*** (0.005)	-0.036*** (0.005)
Has paid bribe to police (1 if yes)				-0.053*** (0.005)	-0.056*** (0.005)	-0.056*** (0.005)	-0.055*** (0.005)	-0.056*** (0.005)	-0.056*** (0.005)
Gender (1 if female)				-0.011*** (0.003)	-0.011*** (0.003)	-0.010*** (0.003)	-0.011*** (0.003)	-0.011*** (0.003)	-0.010*** (0.003)
Primary education completed (1 if yes)				0.022*** (0.004)	0.023*** (0.004)	0.021*** (0.004)	0.025*** (0.004)	0.025*** (0.004)	0.024*** (0.004)
Secondary education completed (1 if yes)				0.040*** (0.005)	0.040*** (0.005)	0.040*** (0.005)	0.043*** (0.005)	0.043*** (0.005)	0.043*** (0.005)
Post-secondary education completed (1 if yes)				0.048*** (0.005)	0.045*** (0.005)	0.046*** (0.005)	0.054*** (0.006)	0.050*** (0.005)	0.052*** (0.006)
Age 26-35 (1 if between 26 and 35)				-0.005 (0.004)	-0.004 (0.004)	-0.003 (0.004)	-0.005 (0.004)	-0.004 (0.004)	-0.003 (0.004)
Age 35+ (1 if above 35)				0.008** (0.004)	0.012*** (0.004)	0.013*** (0.004)	0.008* (0.004)	0.012*** (0.004)	0.013*** (0.004)
Urban area (1 if urban)				0.016*** (0.004)	0.012*** (0.004)	0.012*** (0.004)	0.014*** (0.004)	0.010*** (0.004)	0.010*** (0.004)
Employed (1 if employed)				0.015*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.016*** (0.004)	0.015*** (0.003)	0.016*** (0.003)
Access to information (1 if access to radio, TV or Internet)				0.017*** (0.005)	0.017*** (0.005)	0.017*** (0.005)	0.017*** (0.006)	0.018*** (0.005)	0.018*** (0.006)
Availability of infrastructure in PSU (Index)				0.010*** (0.002)	0.010*** (0.002)	0.012*** (0.002)	0.009*** (0.002)	0.010*** (0.002)	0.011*** (0.002)
Control of corruption (country level; WGI)							0.040 (0.030)	0.022 (0.028)	0.018 (0.029)
Democracy (country level; Polity IV)							0.018*** (0.004)	0.020*** (0.004)	0.022*** (0.004)
GDP per capita (country level; WDI)							-0.120*** (0.046)	-0.120*** (0.044)	-0.083* (0.044)
Urbanisation rate (country level, Log; WDI)							0.246 (0.174)	0.490*** (0.168)	0.364** (0.172)
Trade Openness (country level, Log; WDI)							0.127*** (0.024)	0.128*** (0.024)	0.133*** (0.024)
Observations	86,119	91,384	88,236	80,326	85,282	82,444	74,200	78,921	76,086
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

**Table 5: Authorities always have the right to make people pay taxes
(Marginal Effects, IV Probit: 1 if agreed)**

VARIABLES	(1) First stage 'Corruption in President's office'	(2) Second stage "Right to make people pay taxes"	(3) First stage 'Corruption of government officials'	(4) Second stage "Right to make people pay taxes"	(5) First stage 'Corruption of tax officials'	(6) Second stage "Right to make people pay taxes"
Instruments						
Same ethnic group as President (1 if yes)	0.047*** (0.004)		0.019*** (0.003)		0.014*** (0.003)	
Endogenous variables						
Perceived corruption in President's Office (1 if none)		0.198*** (0.043)				
Perceived corruption of government officials (1 if none)				0.165*** (0.049)		
Perceived corruption of tax officials (1 if none)						0.296*** (0.040)
Control variables						
Has paid bribe to obtain documents (1 if yes)	-0.042*** (0.005)	-0.030*** (0.006)	-0.023*** (0.004)	-0.034*** (0.005)	-0.030*** (0.004)	-0.027*** (0.005)
Has paid bribe to police (1 if yes)	-0.040*** (0.005)	-0.047*** (0.006)	-0.029*** (0.004)	-0.052*** (0.006)	-0.025*** (0.005)	-0.050*** (0.006)
Gender (1 if female)	-0.000 (0.003)	-0.011*** (0.003)	-0.001 (0.002)	-0.012*** (0.003)	-0.008*** (0.002)	-0.008** (0.003)
Primary education completed (1 if yes)	-0.029*** (0.003)	0.035*** (0.004)	-0.025*** (0.003)	0.035*** (0.004)	-0.024*** (0.003)	0.036*** (0.004)
Secondary education completed (1 if yes)	-0.044*** (0.005)	0.056*** (0.006)	-0.038*** (0.004)	0.055*** (0.006)	-0.037*** (0.004)	0.058*** (0.006)
Post-secondary education completed (1 if yes)	-0.064*** (0.005)	0.073*** (0.006)	-0.055*** (0.004)	0.067*** (0.006)	-0.052*** (0.004)	0.073*** (0.006)
Age 26-35 (1 if between 26 and 35)	-0.002 (0.004)	-0.005 (0.004)	-0.006** (0.003)	-0.006 (0.004)	-0.009*** (0.003)	-0.002 (0.004)
Age 35+ (1 if above 35)	0.014*** (0.004)	0.004 (0.004)	0.002 (0.003)	0.008* (0.004)	0.003 (0.003)	0.009** (0.004)
Urban area (1 if urban)	-0.032*** (0.004)	0.022*** (0.004)	-0.021*** (0.003)	0.017*** (0.004)	-0.022*** (0.003)	0.021*** (0.004)
Employed (1 if employed)	-0.015*** (0.003)	0.019*** (0.004)	-0.009*** (0.002)	0.018*** (0.004)	-0.014*** (0.003)	0.020*** (0.004)
Access to information (1 if access to radio, TV or Internet)	-0.024*** (0.005)	0.021*** (0.006)	-0.017*** (0.003)	0.022*** (0.006)	-0.022*** (0.004)	0.024*** (0.006)
Availability of infrastructure in PSU (Index)	0.003 (0.002)	0.007*** (0.003)	-0.001 (0.002)	0.009*** (0.002)	-0.004** (0.002)	0.011*** (0.003)
Control of corruption (country level; WGI)	0.094*** (0.029)	-0.065* (0.036)	-0.014 (0.021)	-0.039 (0.034)	-0.125*** (0.024)	-0.004 (0.035)
Democracy (country level; Polity IV)	-0.021*** (0.003)	0.023*** (0.004)	0.002 (0.002)	0.018*** (0.004)	-0.008*** (0.002)	0.021*** (0.004)
GDP per capita (country level; WDI)	0.322*** (0.036)	-0.240*** (0.050)	0.012 (0.026)	-0.182*** (0.045)	-0.059* (0.030)	-0.130*** (0.046)
Urbanisation rate (country level, Log; WDI)	1.597*** (0.150)	0.075 (0.192)	0.092 (0.123)	0.339* (0.175)	0.412*** (0.135)	0.114 (0.179)
Trade Openness (country level, Log; WDI)	-0.301*** (0.024)	0.177*** (0.028)	-0.109*** (0.018)	0.126*** (0.025)	-0.126*** (0.021)	0.140*** (0.025)
Observations	69,133	69,133	71,607	71,607	69,066	69,066
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Never refused to pay taxes or fee (Marginal Effects, Probit: 1 if never refused)

VARIABLES	(1)	(2)	(3)
Perceived corruption in President's Office (1 if none)	0.039*** (0.005)		
Perceived corruption of government officials (1 if none)		0.016*** (0.006)	
Perceived corruption of tax officials (1 if none)			0.024*** (0.005)
Has paid bribe to obtain documents (1 if yes)	-0.061*** (0.005)	-0.058*** (0.005)	-0.057*** (0.005)
Has paid bribe to police (1 if yes)	-0.079*** (0.006)	-0.078*** (0.005)	-0.078*** (0.005)
Gender (1 if female)	0.007** (0.003)	0.009*** (0.003)	0.008** (0.003)
Primary education completed (1 if yes)	0.002 (0.004)	-0.003 (0.004)	-0.001 (0.004)
Secondary education completed (1 if yes)	0.013** (0.005)	0.009* (0.005)	0.014*** (0.005)
Post-secondary education completed (1 if yes)	0.035*** (0.006)	0.026*** (0.006)	0.032*** (0.006)
Age 26-35 (1 if between 26 and 35)	0.006 (0.004)	0.008* (0.004)	0.010** (0.004)
Age 35+ (1 if above 35)	0.026*** (0.004)	0.029*** (0.004)	0.031*** (0.004)
Urban area (1 if urban)	-0.005 (0.004)	-0.003 (0.004)	-0.002 (0.004)
Employed (1 if employed)	0.010*** (0.004)	0.011*** (0.003)	0.011*** (0.004)
Access to information (1 if access to radio, TV or Internet)	0.023*** (0.006)	0.019*** (0.006)	0.023*** (0.006)
Availability of infrastructure in PSU (Index)	0.008*** (0.002)	0.007*** (0.002)	0.007*** (0.002)
Control of corruption (country level; WGI)	0.360*** (0.031)	0.299*** (0.030)	0.291*** (0.030)
Democracy (country level; Polity IV)	-0.002 (0.004)	-0.003 (0.004)	-0.004 (0.004)
GDP per capita (country level; WDI)	-0.066 (0.046)	0.057 (0.044)	0.081* (0.045)
Urbanisation rate (country level, Log; WDI)	1.525*** (0.182)	1.798*** (0.174)	1.700*** (0.179)
Trade Openness (country level, Log; WDI)	0.145*** (0.025)	0.102*** (0.024)	0.104*** (0.024)
Observations	74,209	79,070	75,950
Country FE	YES	YES	YES
Year FE	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Never refused to pay taxes or fee (Marginal Effects, IV Probit: 1 if never refused)

VARIABLES	(1) First stage 'Corruption in President's office'	(2) Second stage "Never refused to pay taxes"	(3) First stage 'Corruption of government officials'	(4) Second stage "Never refused to pay taxes"	(5) First stage 'Corruption of tax officials'	(6) Second stage "Never refused to pay taxes"
Instruments						
Same ethnic group as President (1 if yes)	0.046*** (0.004)		0.019*** (0.003)		0.014*** (0.003)	
Endogenous variables						
Perceived corruption in President's Office (1 if none)		0.169*** (0.036)				
Perceived corruption of government officials (1 if none)				0.107** (0.044)		
Perceived corruption of tax officials (1 if none)						0.158*** (0.050)
Control variables						
Has paid bribe to obtain documents (1 if yes)	-0.043*** (0.005)	-0.054*** (0.006)	-0.023*** (0.004)	-0.057*** (0.005)	-0.029*** (0.004)	-0.054*** (0.006)
Has paid bribe to police (1 if yes)	-0.040*** (0.005)	-0.075*** (0.006)	-0.030*** (0.004)	-0.080*** (0.006)	-0.025*** (0.005)	-0.079*** (0.006)
Gender (1 if female)	-0.001 (0.003)	0.005 (0.003)	-0.002 (0.002)	0.005 (0.003)	-0.008*** (0.002)	0.006* (0.003)
Primary education completed (1 if yes)	-0.029*** (0.004)	0.008* (0.005)	-0.025*** (0.003)	0.003 (0.005)	-0.024*** (0.003)	0.005 (0.005)
Secondary education completed (1 if yes)	-0.044*** (0.005)	0.022*** (0.006)	-0.038*** (0.004)	0.016*** (0.006)	-0.038*** (0.004)	0.022*** (0.006)
Post-secondary education completed (1 if yes)	-0.065*** (0.005)	0.050*** (0.006)	-0.054*** (0.004)	0.042*** (0.006)	-0.053*** (0.004)	0.050*** (0.007)
Age 26-35 (1 if between 26 and 35)	-0.003 (0.004)	0.006 (0.005)	-0.007** (0.003)	0.006 (0.004)	-0.010*** (0.003)	0.010** (0.005)
Age 35+ (1 if above 35)	0.013*** (0.004)	0.024*** (0.004)	0.001 (0.003)	0.026*** (0.004)	0.003 (0.003)	0.028*** (0.004)
Urban area (1 if urban)	-0.032*** (0.004)	-0.000 (0.004)	-0.021*** (0.003)	-0.004 (0.004)	-0.023*** (0.003)	-0.001 (0.004)
Employed (1 if employed)	-0.014*** (0.003)	0.012*** (0.004)	-0.009*** (0.002)	0.011*** (0.004)	-0.014*** (0.003)	0.012*** (0.004)
Access to information (1 if access to radio, TV or Internet)	-0.023*** (0.005)	0.023*** (0.006)	-0.017*** (0.003)	0.019*** (0.006)	-0.020*** (0.004)	0.024*** (0.006)
Availability of infrastructure in PSU (Index)	0.002 (0.002)	0.008*** (0.003)	-0.001 (0.002)	0.009*** (0.003)	-0.004** (0.002)	0.009*** (0.003)
Control of corruption (country level; WGI)	0.097*** (0.029)	0.447*** (0.038)	-0.009 (0.021)	0.497*** (0.036)	-0.124*** (0.025)	0.508*** (0.036)
Democracy (country level; Polity IV)	-0.020*** (0.003)	-0.002 (0.004)	0.001 (0.002)	-0.010** (0.004)	-0.008*** (0.003)	-0.011*** (0.004)
GDP per capita (country level; WDI)	0.310*** (0.036)	-0.146*** (0.049)	0.010 (0.026)	-0.025 (0.046)	-0.070** (0.031)	-0.003 (0.047)
Urbanisation rate (country level, Log; WDI)	1.493*** (0.151)	1.673*** (0.197)	0.067 (0.123)	1.949*** (0.184)	0.367*** (0.137)	1.791*** (0.190)
Trade Openness (country level, Log; WDI)	-0.308*** (0.024)	0.229*** (0.028)	-0.118*** (0.018)	0.166*** (0.025)	-0.132*** (0.021)	0.175*** (0.026)
Observations	69,096	69,096	71,640	71,640	68,832	68,832
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendices

**Table A.1: Authorities always have the right to make people pay taxes
(Probit: 1 if agreed)**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Perceived corruption in President's Office (1 if none)	0.141*** (0.013)			0.132*** (0.013)			0.121*** (0.014)		
Perceived corruption of government officials (1 if none)		0.058*** (0.016)			0.056*** (0.017)			0.050*** (0.018)	
Perceived corruption of tax officials (1 if none)			0.074*** (0.015)			0.067*** (0.016)			0.076*** (0.016)
Has paid bribe to obtain documents (1 if yes)				-0.191*** (0.015)	-0.180*** (0.015)	-0.180*** (0.015)	-0.192*** (0.016)	-0.182*** (0.016)	-0.179*** (0.016)
Has paid bribe to police (1 if yes)				-0.243*** (0.017)	-0.242*** (0.016)	-0.238*** (0.016)	-0.248*** (0.017)	-0.246*** (0.017)	-0.243*** (0.017)
Gender (1 if female)				0.021** (0.010)	0.028*** (0.010)	0.026*** (0.010)	0.020** (0.010)	0.027*** (0.010)	0.025** (0.010)
Primary education completed (1 if yes)				0.008 (0.013)	-0.005 (0.012)	-0.002 (0.013)	0.005 (0.013)	-0.008 (0.013)	-0.004 (0.013)
Secondary education completed (1 if yes)				0.043*** (0.017)	0.028* (0.016)	0.044*** (0.016)	0.041** (0.017)	0.027* (0.017)	0.044*** (0.017)
Post-secondary education completed (1 if yes)				0.094*** (0.017)	0.067*** (0.017)	0.083*** (0.017)	0.110*** (0.018)	0.081*** (0.017)	0.100*** (0.018)
Age 26-35 (1 if between 26 and 35)				0.023* (0.013)	0.027** (0.013)	0.034*** (0.013)	0.018 (0.014)	0.024* (0.013)	0.031** (0.014)
Age 35+ (1 if above 35)				0.080*** (0.013)	0.090*** (0.012)	0.095*** (0.012)	0.080*** (0.013)	0.090*** (0.013)	0.096*** (0.013)
Urban area (1 if urban)				-0.023* (0.012)	-0.016 (0.012)	-0.012 (0.012)	-0.014 (0.013)	-0.009 (0.012)	-0.006 (0.012)
Employed (1 if employed)				0.027** (0.011)	0.029*** (0.011)	0.026** (0.011)	0.032*** (0.011)	0.035*** (0.011)	0.034*** (0.011)
Access to information (1 if access to radio, TV or Internet)				0.062*** (0.017)	0.050*** (0.017)	0.063*** (0.017)	0.072*** (0.018)	0.060*** (0.018)	0.073*** (0.018)
Availability of infrastructure in PSU (Index)				0.032*** (0.007)	0.027*** (0.007)	0.025*** (0.007)	0.025*** (0.008)	0.022*** (0.008)	0.021*** (0.008)
Control of corruption (country level; WGI)							1.124*** (0.099)	0.939*** (0.093)	0.908*** (0.094)
Democracy (country level; Polity IV)							-0.007 (0.012)	-0.009 (0.012)	-0.014 (0.012)
GDP per capita (country level; WDI)							-0.206 (0.145)	0.180 (0.139)	0.252* (0.141)
Urbanisation rate (country level, Log; WDI)							4.765*** (0.568)	5.652*** (0.548)	5.305*** (0.560)
Trade Openness (country level, Log; WDI)							0.453*** (0.078)	0.319*** (0.076)	0.325*** (0.076)
Constant	0.966*** (0.042)	0.986*** (0.040)	0.968*** (0.041)	0.855*** (0.048)	0.890*** (0.046)	0.857*** (0.047)	-18.504*** (2.696)	-25.419*** (2.588)	-24.711*** (2.635)
Observations	86,047	91,464	88,013	80,278	85,364	82,243	74,209	79,070	75,950
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

**Table A.2: Authorities always have the right to make people pay taxes
(IV Probit: 1 if agreed)**

VARIABLES	(1) First stage 'Corruption in President's office'	(2) Second stage "Right to make people pay taxes"	(3) First stage 'Corruption of government officials'	(4) Second stage "Right to make people pay taxes"	(5) First stage 'Corruption of tax officials'	(6) Second stage "Right to make people pay taxes"
Instruments						
Same ethnic group as President (1 if yes)	0.207*** (0.017)		0.131*** (0.020)		0.079*** (0.018)	
Endogenous variables						
Perceived corruption in President's Office (1 if none)		0.643*** (0.140)				
Perceived corruption of government officials (1 if none)				0.534*** (0.157)		
Perceived corruption of tax officials (1 if none)						0.954*** (0.127)
Control variables						
Has paid bribe to obtain documents (1 if yes)	-0.187*** (0.022)	-0.099*** (0.019)	-0.156*** (0.027)	-0.110*** (0.017)	-0.170*** (0.025)	-0.086*** (0.018)
Has paid bribe to police (1 if yes)	-0.177*** (0.024)	-0.153*** (0.020)	-0.200*** (0.030)	-0.168*** (0.019)	-0.142*** (0.028)	-0.161*** (0.019)
Gender (1 if female)	-0.002 (0.012)	-0.036*** (0.011)	-0.008 (0.014)	-0.038*** (0.011)	-0.043*** (0.013)	-0.025** (0.011)
Primary education completed (1 if yes)	-0.127*** (0.015)	0.112*** (0.014)	-0.174*** (0.018)	0.112*** (0.014)	-0.135*** (0.017)	0.116*** (0.014)
Secondary education completed (1 if yes)	-0.192*** (0.021)	0.183*** (0.019)	-0.264*** (0.026)	0.179*** (0.019)	-0.210*** (0.023)	0.187*** (0.018)
Post-secondary education completed (1 if yes)	-0.284*** (0.023)	0.235*** (0.021)	-0.375*** (0.028)	0.217*** (0.020)	-0.298*** (0.025)	0.237*** (0.020)
Age 26-35 (1 if between 26 and 35)	-0.010 (0.017)	-0.018 (0.014)	-0.043** (0.020)	-0.018 (0.014)	-0.052*** (0.019)	-0.007 (0.014)
Age 35+ (1 if above 35)	0.061*** (0.016)	0.013 (0.014)	0.015 (0.019)	0.027* (0.014)	0.017 (0.017)	0.028** (0.014)
Urban area (1 if urban)	-0.140*** (0.016)	0.070*** (0.014)	-0.142*** (0.019)	0.056*** (0.014)	-0.128*** (0.017)	0.066*** (0.014)
Employed (1 if employed)	-0.067*** (0.014)	0.061*** (0.012)	-0.063*** (0.016)	0.057*** (0.012)	-0.080*** (0.015)	0.064*** (0.012)
Access to information (1 if access to radio, TV or Internet)	-0.108*** (0.020)	0.068*** (0.019)	-0.117*** (0.022)	0.070*** (0.019)	-0.124*** (0.022)	0.079*** (0.019)
Availability of infrastructure in PSU (Index)	0.011 (0.010)	0.023*** (0.008)	-0.005 (0.011)	0.029*** (0.008)	-0.024** (0.010)	0.034*** (0.008)
Control of corruption (country level; WGI)	0.413*** (0.127)	-0.209* (0.117)	-0.094 (0.143)	-0.128 (0.111)	-0.713*** (0.138)	-0.012 (0.114)
Democracy (country level; Polity IV)	-0.091*** (0.013)	0.074*** (0.012)	0.013 (0.014)	0.057*** (0.012)	-0.047*** (0.014)	0.069*** (0.012)
GDP per capita (country level; WDI)	1.419*** (0.159)	-0.779*** (0.160)	0.082 (0.180)	-0.590*** (0.146)	-0.334* (0.174)	-0.418*** (0.148)
Urbanisation rate (country level, Log; WDI)	7.044*** (0.664)	0.242 (0.623)	0.632 (0.843)	1.098* (0.568)	2.350*** (0.770)	0.368 (0.578)
Trade Openness (country level, Log; WDI)	-1.330*** (0.106)	0.574*** (0.091)	-0.746*** (0.125)	0.408*** (0.080)	-0.721*** (0.119)	0.451*** (0.081)
Constant	-37.598*** (3.116)	3.292 (3.076)	-1.059 (3.841)	-1.250 (2.738)	-4.842 (3.496)	-0.021 (2.761)
Observations	69,133	69,133	71,607	71,607	69,066	69,066
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.3: Never refused to pay taxes or fee (Probit: 1 if never refused)

VARIABLES	(1)	(2)	(3)
Perceived corruption in President's Office (1 if none)	0.121*** (0.014)		
Perceived corruption of government officials (1 if none)		0.050*** (0.018)	
Perceived corruption of tax officials (1 if none)			0.076*** (0.016)
Has paid bribe to obtain documents (1 if yes)	-0.192*** (0.016)	-0.182*** (0.016)	-0.179*** (0.016)
Has paid bribe to police (1 if yes)	-0.248*** (0.017)	-0.246*** (0.017)	-0.243*** (0.017)
Gender (1 if female)	0.020** (0.010)	0.027*** (0.010)	0.025** (0.010)
Primary education completed (1 if yes)	0.005 (0.013)	-0.008 (0.013)	-0.004 (0.013)
Secondary education completed (1 if yes)	0.041** (0.017)	0.027* (0.017)	0.044*** (0.017)
Post-secondary education completed (1 if yes)	0.110*** (0.018)	0.081*** (0.017)	0.100*** (0.018)
Age 26-35 (1 if between 26 and 35)	0.018 (0.014)	0.024* (0.013)	0.031** (0.014)
Age 35+ (1 if above 35)	0.080*** (0.013)	0.090*** (0.013)	0.096*** (0.013)
Urban area (1 if urban)	-0.014 (0.013)	-0.009 (0.012)	-0.006 (0.012)
Employed (1 if employed)	0.032*** (0.011)	0.035*** (0.011)	0.034*** (0.011)
Access to information (1 if access to radio, TV or Internet)	0.072*** (0.018)	0.060*** (0.018)	0.073*** (0.018)
Availability of infrastructure in PSU (Index)	0.025*** (0.008)	0.022*** (0.008)	0.021*** (0.008)
Control of corruption (country level; WGI)	1.124*** (0.099)	0.939*** (0.093)	0.908*** (0.094)
Democracy (country level; Polity IV)	-0.007 (0.012)	-0.009 (0.012)	-0.014 (0.012)
GDP per capita (country level; WDI)	-0.206 (0.145)	0.180 (0.139)	0.252* (0.141)
Urbanisation rate (country level, Log; WDI)	4.765*** (0.568)	5.652*** (0.548)	5.305*** (0.560)
Trade Openness (country level, Log; WDI)	0.453*** (0.078)	0.319*** (0.076)	0.325*** (0.076)
Constant	-18.504*** (2.696)	-25.419*** (2.588)	-24.711*** (2.635)
Observations	74,209	79,070	75,950
Country FE	YES	YES	YES
Year FE	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.4: Never refused to pay taxes or fee (IV Probit: 1 if never refused)

	(1) First stage	(2) Second stage	(3) First stage	(4) Second stage	(5) First stage	(6) Second stage
VARIABLES	'Corruption in President's office'	"Never refused to pay taxes"	'Corruption of government officials'	"Never refused to pay taxes"	'Corruption of tax officials'	"Never refused to pay taxes"
Instrument						
Same ethnic group as President (1 if yes)	0.201***		0.130***		0.080***	
Endogenous variables						
Perceived corruption in President's Office (1 if none)		0.525*** (0.111)				
Perceived corruption of government officials (1 if none)				0.332** (0.136)		
Perceived corruption of tax officials (1 if none)						0.490*** (0.153)
Control variables						
Has paid bribe to obtain documents (1 if yes)	-0.189*** (0.022)	-0.167*** (0.018)	-0.157*** (0.027)	-0.178*** (0.017)	-0.165*** (0.025)	-0.169*** (0.017)
Has paid bribe to police (1 if yes)	-0.177*** (0.024)	-0.233*** (0.019)	-0.207*** (0.031)	-0.248*** (0.018)	-0.145*** (0.028)	-0.243*** (0.018)
Gender (1 if female)	-0.004 (0.012)	0.016 (0.011)	-0.011 (0.014)	0.016 (0.010)	-0.044*** (0.014)	0.018* (0.011)
Primary education completed (1 if yes)	-0.126*** (0.015)	0.025* (0.014)	-0.169*** (0.018)	0.009 (0.014)	-0.135*** (0.017)	0.016 (0.015)
Secondary education completed (1 if yes)	-0.193*** (0.021)	0.069*** (0.018)	-0.259*** (0.025)	0.050*** (0.018)	-0.215*** (0.023)	0.069*** (0.019)
Post-secondary education completed (1 if yes)	-0.286*** (0.023)	0.156*** (0.020)	-0.369*** (0.028)	0.130*** (0.020)	-0.300*** (0.025)	0.154*** (0.020)
Age 26-35 (1 if between 26 and 35)	-0.012 (0.017)	0.018 (0.014)	-0.049** (0.020)	0.020 (0.014)	-0.055*** (0.019)	0.030** (0.014)
Age 35+ (1 if above 35)	0.058*** (0.016)	0.074*** (0.014)	0.005 (0.018)	0.082*** (0.013)	0.015 (0.017)	0.085*** (0.014)
Urban area (1 if urban)	-0.141*** (0.016)	-0.001 (0.014)	-0.145*** (0.019)	-0.012 (0.013)	-0.131*** (0.017)	-0.002 (0.014)
Employed (1 if employed)	-0.063*** (0.014)	0.036*** (0.012)	-0.060*** (0.016)	0.035*** (0.012)	-0.078*** (0.015)	0.038*** (0.012)
Access to information (1 if access to radio, TV or Internet)	-0.099*** (0.020)	0.071*** (0.019)	-0.113*** (0.022)	0.058*** (0.018)	-0.112*** (0.022)	0.074*** (0.019)
Availability of infrastructure in PSU (Index)	0.011 (0.010)	0.026*** (0.008)	-0.006 (0.011)	0.029*** (0.008)	-0.025** (0.010)	0.028*** (0.008)
Control of corruption (country level; WGI)	0.424*** (0.128)	1.388*** (0.119)	-0.062 (0.143)	1.546*** (0.112)	-0.702*** (0.139)	1.573*** (0.113)
Democracy (country level; Polity IV)	-0.090*** (0.013)	-0.006 (0.012)	0.008 (0.015)	-0.030** (0.012)	-0.047*** (0.014)	-0.033*** (0.012)
GDP per capita (country level; WDI)	1.360*** (0.158)	-0.454*** (0.154)	0.066 (0.179)	-0.077 (0.143)	-0.395** (0.174)	-0.010 (0.145)
Urbanisation rate (country level, Log; WDI)	6.559*** (0.664)	5.193*** (0.612)	0.456 (0.842)	6.065*** (0.573)	2.083*** (0.776)	5.541*** (0.589)
Trade Openness (country level, Log; WDI)	-1.351*** (0.107)	0.712*** (0.086)	-0.805*** (0.125)	0.517*** (0.079)	-0.752*** (0.120)	0.543*** (0.080)
Constant	-34.893*** (3.115)	-19.049*** (2.937)	0.125 (3.830)	-25.211*** (2.702)	-3.003 (3.518)	-23.797*** (2.749)
Observations	69,096	69,096	71,640	71,640	68,832	68,832
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

References

- Ali, M., Fjeldstad, O., & Sjursen, I.H. (2014). [To pay or not to pay? Citizens' attitudes toward taxation in Kenya, Tanzania, Uganda, and South Africa.](#) *World Development*, **64**, 828-842.
- Alm, J. & Torgler, B. (2006). [Culture differences and tax morale in the United States and in Europe.](#) *Journal of Economic Psychology*, **27(2)**, 224–246.
- Anderson, J.E. (2017). [Trust in government and willingness to pay taxes in transition countries.](#) *Comparative Economic Studies*, **59(1)**, 1–22.
- Chandra, K., 2004. Why ethnic parties succeed: Patronage and ethnic head counts in India. Cambridge University Press.
- De Luca, G., Hodler, R., Raschky, P. A., & Valsecchi, M. (2018). Ethnic favoritism: An axiom of politics? *Journal of Development Economics*, **132**, 115-129.
- Dwenger, Nadja, Henrik Kleven, Imran Rasul, and Johannes Rincke (2014). Extrinsic and Intrinsic Motivations for Tax Compliance: Evidence from a Field Experiment in Germany. Verein für Socialpolitik/German Economic Association.
- Feld L.P. & Frey, B.S. (2007). [Tax compliance as the result of psychological tax contract: the role of incentives and responsive regulations.](#) *Law and Policy*, **29(1)**, 102-120.
- Frey, B.S. & Torgler, B. (2007). [Tax morale and conditional cooperation.](#) *Journal of Comparative Economics*, **35(1)**, 136–159.
- Franck, R., & Rainer, I. (2012). Does the leader's ethnicity matter? Ethnic favoritism, education, and health in sub-Saharan Africa. *American Political Science Review*, **106(2)**, 294-325.
- Jahnke, B. (2017). [How does petty corruption affect tax morale in sub-Saharan Africa? An empirical analysis.](#) WIDER Working Paper # 2017/8
- Kastlunger, B., Lozza, E., Kirchler, E., & Schabmann, A. (2013). Powerful authorities and trusting citizens: The Slippery Slope Framework and tax compliance in Italy. *Journal of Economic Psychology*, **34**, 36-45.
- Kirchler, E., Hoelzl, E., & Wahl, I. (2008). [Enforced versus voluntary tax compliance: The “slippery slope” framework.](#) *Journal of Economic Psychology*, **29(2)**, 210-225.
- Kleven, H. J., Knudsen, M. B., Kreiner, C. T., Pedersen, S., & Saez, E. (2011). Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark. *Econometrica*, **79(3)**, 651-692.
- Kogler, C., Muehlbacher, S., & Kirchler, E. (2015). [Testing the “slippery slope framework” among self-employed taxpayers.](#) *Economics of Governance*, **16(2)**, 125-142.
- Luttmer, Erzo F. P., and Monica Singhal. 2014. "Tax Morale." *Journal of Economic Perspectives*, **28 (4)**: 149-68.
- Moore, M., (2008), Between coercion and contract. In *Taxation and State-building in Developing Countries*, Edited by: Brautigam, D., Fjeldstad, O. H. and Moore, M. 34-63. New York: Cambridge University Press.
- Richardson, G. (2008). [The relationship between culture and tax evasion across countries: Additional evidence and extensions.](#) *Journal of International Accounting, Auditing and Taxation*, **17(2)**, 67-78.
- Sandmo, A. (2005). The theory of tax evasion: A retrospective view. *National Tax Journal*, 643-663.
- Shimeles, A., Gurara, D. Z., & Woldeyes, F. (2017). Taxman's Dilemma: Coercion or Persuasion? Evidence from a Randomized Field Experiment in Ethiopia. *American Economic Review*, **107(5)**, 420-24.
- Slemrod, J. (2007). Cheating ourselves: The economics of tax evasion. *Journal of Economic Perspectives*, **21(1)**, 25-48.
- Timmons, J.F. & Garfias, F. (2015). [Revealed corruption, taxation, and fiscal accountability: evidence from Brazil.](#) *World Development*, **70**, 13-27.

- Torgler, B. (2006). [The importance of faith: Tax morale and religiosity](#). *Journal of Economic Behaviour & Organisation*, **61(1)**, 81–109.
- Torgler, B. & Schneider, F. (2005). [Attitudes towards paying taxes in Austria: an empirical analysis](#). *Empirica*, **32(2)**, 231-250.
- Wahl, I., Kastlunger, B., & Kirchler, E. (2010). [Trust in authorities and power to enforce tax compliance: An empirical analysis of the “slippery slope framework](#). *Law and Policy*, **32(4)**, 383–406.
- Williams, C.C. & Martinez, A. (2014). [Explaining cross-national variations in tax morality in the European Union: an explanatory analysis](#). *Studies of Transition States and Societies*, **6(1)**, 5-18.

The UNU-MERIT WORKING Paper Series

- 2019-01 *From "destructive creation" to "creative destruction": Rethinking Science, Technology and innovation in a global context* by Luc Soete
- 2019-02 *Do young innovative companies create more jobs? Evidence from Pakistani textile firms* by Waqar Wadho, Micheline Goedhuys and Azam Chaudhry
- 2019-03 *What gains and distributional implications result from trade liberalization?* by Maria Bas and Caroline Paunov
- 2019-04 *FDI, multinationals and structural change in developing countries* by André Pineli, Rajneesh Narula and Rene Belderbos
- 2019-05 *The race against the robots and the fallacy of the giant cheesecake: Immediate and imagined impacts of artificial intelligence* Wim Naudé
- 2019-06 *The middle-technology trap: The case of the automotive industry in Turkey* by Ibrahim Semih Akçomak and Serkan Bürken
- 2019-07 *The impact of a mathematics computer-assisted learning platform on students' mathematics test scores* by Marcelo Perera and Diego Aboal
- 2019-08 *Health insurance and self-employment transitions in Vietnam* by Nga Le, Wim Groot, Sonila M. Tomini and Florian Tomini
- 2019-09 *Knowledge economy and economic development in the Arab region* by Samia Mohamed Nour
- 2019-10 *Migration of higher education students from the North Africa region* by Samia Mohamed Nour
- 2019-11 *Job automation risk, economic structure and trade: a European perspective* by Neil Foster-McGregor, Önder Nomaler and Bart Verspagen
- 2019-12 *The breadth of preferential trade agreements and the margins of exports* by Rod Falvey and Neil Foster-McGregor
- 2019-13 *What a firm produces matters: diversification, coherence and performance of Indian manufacturing firms* by Giovanni Dosi, Nanditha Mathew and Emanuele Pugliese
- 2019-14 *Brazilian exporters and the rise of Global Value Chains: an empirical assessment* by Caio Torres Mazzi
- 2019-15 *How has globalisation affected the economic growth, structural change and poverty reduction linkages? Insights from international comparisons* by Aradhna Aggarwal
- 2019-16 *R&D, innovation and productivity* by Pierre Mohnen
- 2019-17 *Domestic intellectual property rights protection and exports: Accessing the credit channel* by Gideon Ndubuisi
- 2019-18 *The role of early-career university prestige stratification on the future academic performance of scholars* by Mario Gonzalez-Sauri and Giulia Rossello
- 2019-19 *The employment impact of product innovations in sub-Saharan Africa: Firm-level evidence* by Elvis Korku Avenyo, Maty Konte and Pierre Mohnen
- 2019-20 *Embodied and disembodied technological change: the sectoral patterns of job-creation and job-destruction* by G. Dosi, M. Piva, M. E. Virgillito and M. Vivarelli
- 2019-21 *Can we have growth when population is stagnant? Testing linear growth rate formulas and their cross-unit cointegration of non-scale endogenous growth models* by Thomas H.W. Ziesemer

- 2019-22 *Technical progress and structural change: a long-term view* by Alessandro Nuvolari and Emanuele Russo
- 2019-23 *No evidence of an oil curse: Natural resource abundance, capital formation and productivity* by Mueid al Raee, Denis Crombrughe and Jo Ritzen
- 2019-24 *Far from random? The role of homophily in student supervision* by Giulia Rossello and Robin Cowan
- 2019-25 *Semi-endogenous growth models with domestic and foreign private and public R&D linked to VECMs* by Thomas H. W. Ziesemer
- 2019-26 *Characterizing growth instability: new evidence on unit roots and structural breaks in long run time series* by Emanuele Russo, Neil Foster-McGregor and Bart Verspagen
- 2019-27 *Measuring attitudes on gender equality and domestic violence in the Arab context: The role of framing, priming and interviewer effects* by Ann-Kristin Reitmann, Micheline Goedhuys, Michael Grimm and Eleonora E. M. Nillesen
- 2019-28 *Imported intermediates, technological capabilities and exports: Evidence from Brazilian firm-level data* by Caio Torres Mazzi and Neil Foster-McGregor
- 2019-29 *Japan's productivity and GDP growth: The role of GBAORD, public and foreign R&D* by Thomas Ziesemer
- 2019-30 *The decline in entrepreneurship in the West: Is complexity ossifying the economy?* by Wim Naudé
- 2019-31 *Modern industrial policy in Latin America: Lessons from cluster development policies* by Carlo Pietrobelli
- 2019-32 *Testing the employment and skill impact of new technologies: A survey and some methodological issues* by Laura Barbieri, Chiara Mussida, Mariacristina Piva and Marco Vivarelli
- 2019-33 *The Potential for innovation in mining value chains. Evidence from Latin America* by Michiko Iizuka, Carlo Pietrobelli and Fernando Vargas
- 2019-34 *Enforcing higher labour standards within developing country value chains: Consequences for MNEs and informal actors in a dual economy* by Rajneesh Narula
- 2019-35 *A comment on the multifaceted relationship between multinational enterprises and within-country inequality* by Rajneesh Narula and Khadija van der Straaten
- 2019-36 *The effects of R&D subsidies and publicly performed R&D on business R&D: A survey* by Thomas H.W. Ziesemer
- 2019-37 *Does it pay to do novel science? The selectivity patterns in science funding* by Charles Ayoubi, Michele Pezzoni and Fabiana Visentin
- 2019-38 *Regulation and innovation under Industry 4.0: Case of medical/healthcare robot, HAL by Cyberdyne* by Michiko Iizuka and Yoko Ikeda
- 2019-39 *The future of work and its implications for social protection and the welfare state* by Franziska Gassmann and Bruno Martorano
- 2019-40 *Return, circular, and onward migration decisions in a knowledge society* by Amelie F. Constant
- 2019-41 *Mining and quality of public services: The role of local governance and decentralisation* by Maty Konte and Rose Camille Vincent
- 2019-42 *Corruption and tax morale in Africa* by Amadou Boly, Maty Konte and Abebe Shimeles